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The Self, Perspective-Taking and Adolescent Mental Health: A Contextual Behavioural Science Approach

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Thesis submitted to University College Dublin in fulfilment of the requirements for the degree of Doctor of Philosophy.

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Statement of Original Authorship

“I hereby certify that the submitted work is my own work, was completed while registered as a candidate for the degree stated on the Title Page, and I have not obtained a degree elsewhere on the basis of the research presented in this submitted work”.

Signature: ____________________________

Date: ____________________________
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Abstract

Mental health concerns affect approximately 20% of adolescents worldwide, many of which can be linked to one’s sense of self. However, many psychological accounts of self have been shown to be poorly defined and lacking in strong theoretical foundations. The present thesis investigates the relationship between the self and adolescent mental health using evidence from Contextual Behavioural Science (CBS), which offers a coherent theory of self and identifies empirically testable units. Overall this body of research aims to empirically examine the theoretical assumptions of the CBS account of self at multiple levels of analysis and test the practical application of this with an adolescent population, while addressing issues identified across previous investigations.

Study 1 tested the ability of a model of the three senses of self (self-as-content; self-as-process; self-as-context) to predict overall mental health in adolescents. A significant model emerged with all three predictor variables contributing significantly. Study 2, tested a clinical application of this theory through a brief school based intervention, targeting the development of a healthy sense of self as articulated by CBS. Study 2 results revealed no significant improvements following this intervention, compared to a theory of mind intervention and a no intervention control group. Study 3 examined these senses of self and other relevant behaviours (e.g. relating to others) in samples of adolescent textual responses using a qualitative behavioural measure. Consistent with Study 1, higher self-as-process was related to lower depression and lower anxiety for female participants, while lower rigid self-as-content was related to higher well being. Due to insufficient occurrences of self-as-context this relationship could not be examined reliably. Results also showed how one relates to others and ability to identify emotions have important
implications for mental health, well-being, and psychological flexibility. Finally, study 4 involved a fine-grained investigation into the 2 types of self-as-context (distinction and hierarchy) at a naturally occurring level in a sample of older adolescents. Study results showed that self-as-hierarchy was significantly predictive of lower stress and depression, and that self-as-distinction was not predictive of mental health. Psychological flexibility was not found to mediate this relationship.

Overall these findings make a unique and important contribution to the CBS literature. Findings are discussed in terms of theoretical and practical implications for how this body of evidence may serve to guide future empirical work.
Chapter 1: The Self, Perspective Taking and Mental Health in Adolescents

1.1 Adolescent Mental Health

According to the World Health Organisation (WHO) mental health disorders are the most prevalent source of disability for young people (12-25) worldwide (Gore et al., 2011) with an estimated 10-20% of young people affected by some level of mental health problem (Kieling et al., 2011). In a US context, data indicates that three quarters of all mental health problems emerge before 25 years of age (Kessler et al., 2005). Almost 20% of young people experience clinical depression by the end of second level education (Lewinsohn et al., 1993) and up to 31.9% of adolescents have some form of anxiety disorder (Merikangas et al., 2010). Studies with Irish populations have observed even higher rates with one in three young people experiencing a mental health disorder by age 13, with this number increasing to 1 in 2 by 24 years (Cannon, Coughlan, Clarke, Harley & Kelleher, 2013). Moreover, depression in adolescence also increases the probability of recurrent depression in adulthood (Keenan-Miller et al., 2007). Evidence also indicates that stress during adolescence is linked to the development of mood disorders (Rao, Hammen, Ortiz, Chen, & Poland, 2008). Poor mental health in youth increases risk for difficulties with sexual and reproductive health, substance abuse, violence, and academic achievement (Patel, Flisher, Hetrick, & McGorry, 2007; Catalano, Haggerty, Osterle, Fleming, & Hawkins, 2004). According to Dawes, Tarter, and Kirisci (1997) adolescent mental health involves a sense of identity and self-worth, among other factors. The self plays a pivotal role in adolescent mental health and functioning (Harter, 1999; Dubois & Tevendale, 1999; McCullough, Huebner & Laughlin, 2000).
Positive mental health is critical for optimal functioning in terms of social relationships, psychological development, learning and physical health. Positive mental health in this sense refers to good health and well being, accompanied by feelings of contentment and stability, whereas poor mental health in young people refers to when emotions and behaviours leads to feelings of unwellness and instability (Dooley & Fitzgerald, 2012; World Health Organization, 2005).

The MyWorld survey comprising data from 6,085 Irish adolescents found those in distress were more likely to report excessive drinking, as well as having experienced being bullied at some point. Those who reported experiencing the highest levels of distress chose not to seek help despite awareness of needing support (Dooley & Fitzgerald, 2012). As with past research (e.g. Sullivan, Arensman, Keeley, Corcoran & Perry, 2004), the MyWorld survey also found notable gender differences. Female adolescents were found to report higher levels of distress, more avoidant coping, and more experience of being bullied relative to male adolescents. However, females also reported having more social support, as well as being more likely to speak about problems and seek help. Results of the survey found males to report that they coped better with problems than females however males were found to engage in more problematic behaviours when distressed. Males were also found to have higher self-esteem and life satisfaction (Dooley & Fitzgerald, 2012).

A multitude of risk and protective factors have been identified as largely influencing the risk of a young person developing a mental health issue and include age, gender, depression, anxiety, resilience, optimism, subjective well-being, self-esteem, coping, access to social support, connectedness with family and friends, and use of mental health service, family status, living arrangements, and experiences of bullying (Dooley & Fitzgerald, 2012).
During this time there is a considerable change in self-concept and self-esteem due to the changes brought about with puberty, mental abilities, social relationships, and transition to post primary education (Blyth & Monroe Traeger, 1983; Molloy, Ram, & Gest, 2011; Biro, Striegel-Moore, Frank & Padgett, 2006). Self-Concept and self-esteem are two distinct but related concepts with self-concept referring to an individual’s self-perceptions across a variety of domains while self-esteem is the overall evaluation of oneself (Harter, 1999) (further details on theories of self are discussed below). Most psychological research into the self to date has focused on self-esteem (Yu, Norton, Harrison, & McCracken, 2015; Damon & Hart, 1982) with self-esteem widely credited with being responsible for a variety of positive mental health outcomes.

1.2. Relationship to Self in Adolescents

1.2.1 Self-Esteem

A large amount of empirical support exists for the relationship between mental health outcomes during adolescence and self-esteem with low self-esteem and self concept during adolescence linked to depression, anxiety, substance abuse & risky behaviours (Biro et al., 2006; Crocker & Wolfe, 2001; Bolognini, Plancherel, Bettschart & Halfon, 1996; Molloy et al., 2011).

It was previously believed that by targeting self-esteem, this would lead to desirable mental health outcomes (Mecca, Smelser, & Vasconcellos, 1989). As a result, a lot of attention has been given to building self-esteem in young people in an attempt to improve wellbeing, with interventions centered around boosting and maintaining a positive sense of self-worth via feedback, self-talk etc. (Baumeister,
Campbell, Krueger, & Vohs, 2003). However, these attempts proved unsuccessful and moreover, such interventions have been found to increase the risk of antisocial behaviour in young people such as bullying, and narcissism (Baumeister et al., 2003; Baumeister, Smart, & Boden, 1996). Research has also shown that attempting to cling to positive self-evaluations is linked to self-serving bias (Shepperd, Malone, & Sweeney, 2008), and avoiding opportunities for learning or growth in young people (Hong, Chiu, Dweck, Lin, & Wan, 1999; Blackwell, Trzesniewski, & Dweck, 2007). Rigid attachment to self-concept has also been linked to negative reactions to social adversities including stress and aggression (Yeager et al., 2014; Yeager & Dweck, 2012).

Despite this evidence for problematic outcomes associated with attempting to bolster self-esteem and positive self-concept, these findings have been called into question. Specifically, researchers identified a number of issues associated with the findings of Baumeister et al. (2003) and argued that academic self-concept in particular is associated with a variety of educational benefits including improved academic achievement and persistence (Marsh & Craven, 2006; Marsh & O’Mara, 2008). Issues identified around Baumeister et al.’s (2003) review included: use of dated publications, limited research methodology, most importantly outcomes were investigated in terms of self-esteem as a global construct, which the authors suggested was oversimplified and that examination of self-concept in terms of distinct components was more appropriate.

Marsh and Craven (2006) concluded based on a review of reciprocal effects models, wherein unidimensional approaches focusing on global self esteem were distinguished from multidimensional approaches which examined specific components of self-concept, that academic self-concept and achievement were
mutually reinforcing. Moreover, on this basis, Marsh and O’Mara (2008) conducted reanalysis of the data upon which Baumeister et al. (2003) drew their conclusions in a later investigation and found that while self-esteem had weak to non-significant links to academic achievement, study results gave clear support to the reciprocal effects between academic self concept and educational attainment, giving support to the earlier conclusions of Marsh and Craven (2006). Recent evidence gives further support to the role of self concept in producing desired outcomes ranging from academic attainment across varying levels of ability (Seaton et al., 2015), athletic performance (Marsh & Perry, 2005) and self-compassion (Donald et al., 2017). It is also important to note, Marsh and O’Mara (2008) cautioned that while improved academic self-concept leads to better performance, if practitioners target self-concept but not performance this is unlikely to produce any lasting improvements.

1.2.2 Cognitive changes and increased introspection

A shift occurs in the nature of thinking during adolescence, wherein teenagers become more self-reflective and self-aware compared with younger children, which typically results in a dramatic change in how the adolescent views and evaluates the self (Blakemore & Choudhury, 2006). Studies have shown a developmental decline from middle childhood into adolescence across various self-concept domains (e.g. Watt, 2004), which is typically considered to be the result of increased cognitive abilities resulting in a more accurate and realistic self-view (Dweck, 2002). They evaluate themselves along multiple dimensions including academics, physical appearance, social status and morality (Masten et al., 1995). During this time, negative self-judgments play a considerable role in the high rates of mental health
concerns and attempted suicide (Sun & Hui, 2007; Lewinsohn, Rohde, & Seeley, 1994).

This change that occurs during adolescence is supported by neuropsychological evidence, which indicates that brain structures relating to self-reflection differ in adolescents to those of adults (Sebastian et al., 2011; Sebastian, Burnett, & Blackmore, 2008). One notable feature of this is adolescents occasionally describe themselves in ways that are discrepant, for example, viewing themselves as open and outgoing around their school friends and reserved around their relatives. These discrepancies decline in later adolescence when a more consistent, stable view of the self is developed (Harter & Monsour, 1992; Rosenberg, Burt, Forehand, & Paysnicket, 2016).

1.2.2 School and Peer Relationships

Adolescence is well documented as a period during which individuals begin to explore psychological aspects of the self in an attempt to discover themselves and how they fit into their social environment (Steinberg & Morris, 2001; Erikson, 1964). This involves self evaluation and social comparison in order to establish one’s identity (Brown & Lohr, 1987; Rosenberg et al., 2016). The increased importance of social relationships, particularly those with peers, during adolescence has considerable implications for self-esteem, especially in social domains. Declines in self-esteem with regard to social relationships have been observed, in particular young people are likely to experience increased self criticism around social competence if peer relationships do not meet their aspirations (Bolognini et al., 1996). Entrance to post primary school is also marked by increased attention to social comparisons as well as peer feedback (Dweck, 2002).
Adolescents have been shown to participate in false self behaviour, wherein they behave in ways that are not consistent with their true selves (Harter, Marold, Whitesell, & Cobbs, 1996). This is generally around classmates and peers and in incidents where adolescents behave in this way as a result of being self critical and disliking oneself this is related to depression and hopelessness (but not in the case of those who do this for experimentation or social approval) (Harter et al., 1996). It is also common for adolescents to display “the personal fable”- wherein they believe that their experiences are unique, and this has been associated with depression and suicide ideation (Aalsma, Lapsley, & Flannery, 2006).

1.2.4 Adolescence as period for developmental growth

As adolescence is a transitional period of development, it is also a natural period for learning and psychological growth (Graber & Brooks-Gunn, 1996). Moreover, there is a large amount of evidence suggesting that when adolescents with mental health difficulties receive appropriate support, many recover or develop effective coping strategies (Evans et al., 2005). This indicates adolescence is a critical period during which intervention may have a lasting impact. There is growing evidence to suggest that adolescence is a period during which there is some level of cognitive flexibility due to the quickly changing contexts (e.g. social) that adolescents must adjust to and learn about (Crone & Dahl, 2012).

Researchers argue that during certain phases of development across the lifespan some neural systems seem to possess “experience-expectant” features, wherein the brain is biologically prepared for learning. Due to the synaptic reorganization that occurs during puberty the brain may be more sensitive to
experiential input in terms of executive function and social cognition (Blakemore & Choudhury, 2006; Crone & Dahl, 2012). Such evidence implies that adolescence may be a crucial time for cognitive development and that specific training has the ability to actively sculpt or enhance this experience.

Due to this sensitivity in cognitive development, adolescence may be a crucial time wherein certain skills and abilities may be trained or enhanced. In order to make meaningful change in relation to self development, one must understand the self and its importance to mental health during this time.

1.3 Psychological approaches to understanding the Self

On the surface, the self can appear to be many things, including but not limited to our history, a physical organism, or an integrated repertoire of behaviour (Hayes & Gregg, 2000). It is widely agreed upon that the self plays a key role in mental health and general functioning (Dymond & Barnes, 1997; Rogers, 1961; Marshall et al., 2015). Despite the widespread attention and importance psychological research places on the self, self theories have been criticized for being imprecise and lacking in consistency (Blyth & Monroe Traeger, 1983; Yu et al., 2015). The self has played a prominent role in some of the major theoretical approaches in psychology, including developmental, humanism, and cognitive psychology.

The self first came to prominence in psychology with the work of William James (1890) who differentiated “me”, the self as object, and “I” the self as subject. The former self is made up of all of one’s descriptions about oneself, everything one can call his own, as well as the self that was known by others through social interactions, while the latter self as subject is the knower rather than the known and is
pure-consciousness. Charles Cooley (1902) was another early self theorist who implicated the importance of social interactions in the development of a sense of self. He described one’s sense of self as a “looking glass” wherein one’s self understanding is a result of how they believe others view them. This theory emphasizes the importance of key relationships, social context, and social comparison in the development of a concept of self. Similarly, George Herbert Mead (1934) believed a sense of self developed as a result of interactions with the social world and was shaped through impressions of how others see the self. Mead’s view on the role of social influence in self development was however more radical than that of James and Cooley in that he considered the self to exclusively be a result of social interactions, rather than a private mental event (Stewart, Villatte, & McHugh, 2012).

Although, these early self conceptualisations were not investigated at an empirical level and therefore remain theoretical and speculative, they have been largely influential in mainstream psychological approaches to the self into the present day. Particularly, the importance of social influence in self development and the idea that there are two distinct dimensions to the self: self as object, and self as subject, is reflected in contemporary self theories, discussed in more detail below.

1.3.1 Humanistic Approaches to the Self

The next dominant movement in psychology to view the self as critical to psychological well-being and functioning was humanistic psychology. Seminal humanistic psychologists such as Maslow and Rogers emphasized the importance of the self for psychological adjustment and behaviour. Maslow (1954) highlighted the importance of potential for self-growth, free will and reaching one’s full potential, or
“self-actualisation.” He described a hierarchy of human needs, which placed the most fundamental needs (i.e. safety and basic physiological needs) at the bottom of a hierarchy, while self-actualization was placed at the top, making it the ultimate objective for humans to strive towards.

Likewise, Rogers (1961) considered the self to be critical to personality and postulated that humans have an innate tendency towards self-actualization and development. According to this viewpoint, which became known as Self Theory, in order to fulfill one’s potential, a state of congruence is necessary, in other words, one’s actual self-image must be consistent with their ideal self for self-actualisation to occur. Rogers believed all humans had the potential to reach self-actualisation but that it was unique depending on the individual’s personality, and one’s own needs and values. Self Theory implicated the self as central in explaining human psychological and behavioural adjustment. As with earlier approaches, one’s environmental interactions, particularly, interpersonal, are critical to self development according to self theory, and the importance of positive regard from the self and others is heavily implicated (Stewart et al., 2012).

The prominence of the humanistic movement in psychology led to a large amount of effort being directed to developing programs for the improvement of self-esteem and self-regard. However, as previously mentioned, review studies looking into self-esteem across psychology found these programs to be unsuccessful across a range of outcomes (Baumeister et al., 2003). This lack of empirical support for a causal relationship between self-esteem and better psychological and behavioural outcomes, lead to a reduction in the popularity of humanistic psychology (Stewart et al., 2012).

While early attempts to understand the self, including humanistic approaches, were more philosophical and speculative, in recent years more, mainstream
psychological approaches to investigating the self and self-related variables have been more empirical in nature (Stewart et al., 2012). Specifically, developmental researchers have looked into the origins of the self, while cognitive and neuroscientific approaches, attempted to understand the nature of the self.

### 1.3.2 Developmental Approaches to the Self

Developmental investigations into the self typically focus on the ability to differentiate between the physical or bodily self and the environment (Henning & Zmyjb, 2016). Early developmental psychologists such as Maccoby (1980) stated that infants learn to discriminate between themselves and their environment as a result of body-specific associations between actions and their sensory experience. An example of this would be if a child bit their own hand, they experience sensory information that would not be experienced if they bit the hand of another person (or another object). Piaget (1970) similarly stated that in what is known as the “sensorimotor stage” young children, learn to adapt to and explore their environments, and in doing so learn to distinguish themselves from their surroundings.

A considerable amount of research looking at development of self-awareness has focused on self recognition (e.g. Amsterdam, 1972; Gallup, 1970; Lewis & Brookes-Gunn, 1979). Much research has been done on this phenomenon using the mirror-test, wherein a child has a red dot placed on their face and then the child’s reaction in front of the mirror is observed. According to many theorists, including Gallup (1998), passing of the mirror test, which typically occurs between 15-24 months, is indicative of both self-awareness and inferring mental states of others (Theory of Mind). Povinelli and Simon (1998) however observed from video
evidence that toddlers referred to themselves in the third person, and from this concluded that they failed to recognize themselves beyond their bodily selves. Results of this study indicated that a more sophisticated sense of self seemed to emerge around the 3.5-4.5 years mark, specifically a consistent, autobiographical sense of self. Likewise, Flavell, Shipstead and Croft (1978) asked small children questions regarding what they thought about themselves, and found that from 3.5 years onwards children show understanding of a private, thinking self distinct from the bodily self and from 4 years onwards Theory of Mind was evident. More recent investigations found evidence for self-awareness in infants, through recognition of self via video images wherein infants differentiated themselves when their own body was being stroked in synchrony or asynchrony to the video image of another infant (Filippetti, Johnson, Lloyd-Fox, Dragovic, & Farroni, 2013; Zmyj, Jank, Schütz-Bosbach, & Daum, 2011).

Damon and Hart (1982) suggested that self understanding may be organized into four categories of self-concept from infancy through adolescence: physical, active, social, and psychological. They argued that physical descriptions are less important from late childhood onwards, with an increased focus on psychological self understanding. From seven years onwards, children begin to describe themselves in terms of psychological experiences and qualities (e.g. values, aptitudes, spirituality) rather than physical features. School is also implicated as important for the development of self-concept as it provides a social context, allowing for comparison with peers, meeting social expectations etc. (Damon & Hart, 1982; Damon & Hart, 1988).

To summarise, developmental approaches to the self investigate the emergence of self, with many focusing on young infants differentiating between the
physical self and environment. These are consistent with earlier approaches, in that they also implicate the importance of differentiating oneself from others and the role of the self in establishing one’s identity within society. However an overall lack of consistency emerges around a definition or conceptualisation of self with the majority of investigations, particularly those with infants, focusing on a sense of self-awareness (e.g. Gallup, 1998) and others investigating the self in terms of attributes or evaluations (e.g. Damon & Hart, 1988). As young infants are non-verbal this limits the ways in which self-understanding can be researched to investigations into the most primitive sense of self.

Damon and Hart (1982) argued that while a sense of self-as-knower (self-awareness), consistent with James’ “I” is critical for the development of a self identity, particularly with regard to differentiating oneself from others, it is difficult to empirically measure due to it’s subjective nature and lack of specific definition. They argued that an understanding of self that incorporated both a conceptualized self and a knowing self was more suited to scientific investigations (Damon & Hart, 1982). A more unified approach to the self that is theoretically sound and consolidates these varying accounts is needed.

### 1.3.3 Cognitive and Neuropsychological investigations into the self

In more recent years, the study of cognitive science has dominated the field of psychology and this is reflected in more recent approaches to understanding the self (Stewart et al., 2012). Cognitive science is a mechanistic approach that conceptualizes the human mind like an information processor. There are two conceptualisations of self that have received attention within cognitive psychology, namely the Minimal
Self and the Narrative Self (Gallagher, 2000). The minimal self is made up of that which is specific and essential to the self, and is devoid of temporal extension, akin to James’ “I” or self-as-subject described in earlier approaches. The narrative self is made of the content about oneself to form one’s self-image and personal identity (which remains consistent across time), and parallels the idea of James’ “me” or self-as-object. A large amount of neuroscientific investigation has been carried out in an attempt to understand the processes involved in these two distinct conceptualisations of self, typically attempting to understand how they function and the specific neural regions involved. Neuropsychological self investigations have varied considerably in their approaches and implicate a wide variety of brain regions and processes.

Investigations into processing self-relevant information have constituted a large body of the neuroscientific self research. Rogers, Kuiper & Kirker’s (1977) seminal study into the self-referential processing (or self-reference effect) observed improved memory for trait adjectives which were processed with a self-reference, suggesting a special self region within the cognitive architecture. This finding has been supported with various self reference (SR) stimuli, across different populations and age-groups (Symons & Johnson, 1997). Functional magnetic resonance imaging (fMRI) investigations have attempted to investigate this idea more specifically by implicating which neural regions the self involves. Kelley et al. (2002) had participants judge traits across three conditions: self, other, and case, and as with Rogers et al. (1977), they found memory was best for participants in the self condition. This study implicated the role of the medial prefrontal cortex (mPFC), consistent with other investigations into self-relevant processing (Macrae, Moran, Heatherton, Banfield & Kelley, 2004). However, others implicated a wider variety of brain regions, in addition to the mPFC, that give rise to a sense of self (Northoff &
Northoff and Bermpohl (2004) suggest based on a review of self-processing neural domains, a core self is the result of integration of various processes occurring across different regions relaying self-relevant content from other non-core regions.

A number of neuroscientific investigations into the self have also looked at the Autobiographical Self. Fink et al. (1996) observed activation in the right cingulate and prefrontal regions when personal autobiographical memories were presented when compared to impersonal statements, giving support to the involvement of this area in autobiographical memory. Levine et al., (1998) also linked the right prefrontal regions to autobiographical memory in those by linking damage to the right ventral prefrontal region to profound deficits in personal autobiographical memory retrieval.

Most recently, Araujo, Kaplan and Damasio (2013) observed in their meta-analyses of investigations of the neural basis of autobiographical self-processes with a focus on personality traits, that while self and other traits engage cortical midline structures, there is more engagement for the medial prefrontal cortex for self traits (and posteromedial for other). They also observed that differentiation becomes more pronounced depending on closeness to the other. Authors suggest that mPFC may be involved in memory retrieval as well as emotion-related somatic representations. As there is likely to be a greater amount of memories for the self with a greater amount of both perceptual and semantic information. Findings from autobiographical self investigations however, remain inconsistent overall. As Araujo et al. (2013) point out, there is considerable variance across methodology and stimuli across investigations, leading to difficulty in reaching conclusions.

The self has also been examined in neuropsychology through investigations into self-face recognition. Keenan, Freund, Hamilton, Ganis, and Pascual-Leone
(2000) studied self-recognition by having participants identify their own face as an object (in other words the self was examined as the subject) and identified the involvement of the right prefrontal cortex. The right hemisphere was also implicated when patients who temporarily had their right hemisphere anesthetized displayed difficulty in recognition of their own faces (Keenan, Nelson, O'Connor, & Pascual-Leone, 2001). Preilowski (1979) observed greater right hemisphere activation while Sperry, Zaidal and Zaidal (1979) found evidence for self-face recognition in both brain hemispheres. Conflicting evidence was observed by Turk et al. (2002) who observed left hemispheric activation in a split-brain patient upon recognition of their own face, with the same effect replicated with highly familiar others. Most recently, a review by Devue and Bredart (2011) found significant evidence suggesting the involvement of the right hemisphere in self-face recognition, however it was concluded that due to the inconsistency in terms of methodology and stimuli across investigations, definite findings could not be drawn (Devue & Brédart, 2011). While stronger results exist for right hemisphere activation overall findings from self-face recognition studies, remain inconsistent with evidence for both hemispheres involvement.

Despite these findings a number of review studies into self-related processing have called its “specialness” into question. Support for the self-reference effect in memory was provided in a meta-analysis by Symons and Johnson (1997) which suggested that self-referent coding was linked to superior memory in comparison to semantic and other referent memories, however findings were inconsistent overall. Self-referencing was shown to be a highly efficient, spontaneous means of processing however this appears to be due to the fact that it is such a highly practiced task that people call upon so frequently. The authors also pointed out that the lack of
specificity around theoretical models of the self results in lack of clarity around
identification of specific criteria in self-reference investigations (Symons & Johnson,
1997). Another issue identified in investigations into self-reference effect in memory
is that reference with intimate others produces similar results which may potentially

Gillihan and Farah’s (2005) review into the claimed special status of self-
related processing, similarly observed an overall lack of a unitary, common system in
research into self-related processing. They concluded that despite the abundance of
support for the medial prefrontal cortex in self-related processing, this area is strongly
implicated in affective and person related processing regardless and given the well
rehearsed and intimate knowledge we have ourselves, this makes it difficult to make
definitive conclusions. They also identified a number of confounding variables across
studies, in particular, many studies did not have a control condition, or used
unsuitable controls (Gillihan & Farah, 2005).

Likewise, Legrand and Ruby’s (2009) review indicated that self-related
evaluation involves a wide cerebral network made up of the medial prefrontal cortex,
precuneus, temporoparietal junction, and temporal poles, however this network is also
implicated in resting state, memory recall, attention and perspective-taking, among
other processes. As the neural domains in which self processing occurs are also
responsible for these other types of information processing and as a result, it would
appear that the large array of evidence for a special “self” results from the wide array
of methods and domains in which self-specific processing has been observed. On this
basis, they suggest that activation of this network is not self-specific, rather all tasks
recruiting this network require inferential processing and memory recall. As with the
previous reviews, they emphasized the issue of the lack of a consensual definition,
linking this to the lack of consistent findings. By consequence this results in many investigations risking the exclusion of important aspects of the self, which other frameworks identify as central.

A meta-analysis by Qin and Northoff (2011) gave support to the assumptions of Gillihan and Farah (2005) and Legrand and Ruby (2009), however findings from this meta-analysis suggest that self specific processing, distinct from familiarity (using stimuli from people personally known to the participant) and other (non-self–non-familiar, i.e. strangers/well-known figures) stimuli, recruited the perigenual anterior cingulate cortex implying the self-specificity of this region. The medial prefrontal and posterior cingulate cortices were also recruited during both self-specific and familiar stimuli, suggesting that these regions are functionally non-specific. However, authors cautioned that findings must be considered cautiously due to the issues pertaining to the methodology and stimuli across this type of investigation discussed earlier.

Legrand and Ruby (2009) proposed that the subjective first person perspective makes a process self-specific, and therefore, self-related processes and their substrates should be considered on this basis. The importance of subjective first person perspective in neuropsychological self investigations was preempted by Gallagher (2000) in his discussion of the immunity principle. The Immunity Principle refers to when one speaks in the first-person pronoun (“I”) in reference to oneself, he or she cannot be incorrect about the person to whom he or she is referring to. For example, if a person were to state “I think it’s raining”, while it’s possible that may be incorrect about the rain, they will not be incorrect about the “I”, or misidentify which person thinks it is raining. The immunity principle applies to the subjective first person perspective in that self-referring, or using “I”, does not involve any cognitive process
around linking one’s first person perspective to a particular criterion to deem it to be one’s own (Gallagher, 2000).

Vogeley et al. (2001) investigated first person self perspective (SELF) using both behavioural and fMRI methods. They observed that first person self perspective and Theory of Mind (ToM) involved different cognitive states and moreover, fMRI findings showed significant overlap was observed in the neural mechanisms involved both in SELF and Theory of Mind, but also unique neural mechanisms for each. These findings suggest a wider array of neural processes are involved in SELF compared to ToM, and that various brain regions, including the mPFC are involved in SELF activation.

Decety and Sommerville (2003) reviewed evidence from psychological and neuroscientific investigations of first person perspective and suggested that the self is a multidimensional construct which is reliant on a neural network involving shared self-other representations. Predominantly based in the right hemisphere, this network includes prefrontal, posterior temporal and inferior parietal areas and may be viewed as a series of interconnected regions, which form the subjective experience of self. Similarly, another review by Vogeley and Fink (2003) identified the medial cortical structures and lateral temporoparietal cortex as basic neural mechanisms involved in first person perspective. Ruby and Decety (2003) implicated the right inferior parietal lobe in adopting the perspective of another further supporting the idea that processes involved in the representations of self, overlap with representations of other.

Another line of investigation in neuropsychological approaches to the self is Self-as-Agency. Gallagher (2000) described a sense of self-agency ("I am the cause of that action"), along with sense of self-ownership ("it’s my body that is moving") as important for a sense of self-awareness that constitutes a Minimal Self. Georgieff and
Jeannerod (1998) describe self-agency as a “Who” system, which allows us to attribute the cause of action to its correct agent, allowing us to distinguish between the self and others. Ruby and Decety (2001) used Positron Emission Tomography (PET) to investigate the neural substrates of self agency. They instructed participants to imagine either themselves or the experimenter carrying out various actions e.g. peeling a banana. For the imagined self-action, activation was observed in the left inferior parietal lobule, posterior insula, post-central gyrus, and the bilateral inferior occipital gyrus. When imagined for other activation was observed in the left posterior cingulate cortex, and frontopolar gyrus. Farrer and Frith (2002), similarly, explored sense of agency while controlling for any potentially confounds due to the sense of ownership. They assigned participants to one of two groups in an identical experimental condition, one group were given instructions wherein action would be attributed to oneself, while the other group were instructed to be aware that the action was caused by the experimenter. Findings were consistent with those of Ruby and Decety (2001) implicating the specialty of this region in sense of self as agency.

While some of the investigations discussed above have been consistent with the idea of a Narrative Self (e.g. Autobiographical Self), and others have focused more on the idea of a Minimal Self (e.g. First person perspective), attempts to examine both the Minimal and Narrative self in an integrated manner have been scarce. However, Farb et al. (2007) used fMRI to investigate any distinction between a “narrative” focus and “experiential” focus in terms of self awareness and found a neural dissociation between the two. They described the narrative self in this sense as automatic self-reference that integrates experiences over time. The minimal self however, was a more experiential self characterized by an awareness of the present moment. These findings highlight the relationship between these modes of self,
demonstrating that these two processes are normally integrated but can be separated through mindfulness training.

To summarise, cognitive neuroscientific approaches to investigating and understanding the self, have shown many similarities with early and developmental approaches. As with other approaches, two distinct self conceptualisations are described, the Minimal Self, which is consistent with the idea of James’ “I” or self-as-knower, and the Narrative Self, which parallels the idea of James’ “Me” or self-as-object. Investigations have been broadly consistent with either the Narrative or Minimal self, but investigations integrating both have been rare. There is also considerable evidence to suggest that relating to others involves shared neural regions involved in self-processing, particularly in the case of intimate others. Consistent with other psychological self approaches, this implicates the importance of relating to others in self relating.

Despite the large body of research, there are have been a number of issues that have hindered progress. Specifically, there has been lack of consensus around a definition of self, and as a result, inconsistencies with regard to measurement and a number of confounding variables across studies. A number of reviews and meta-analyses into neuroscientific self investigations have been conducted (Legrand & Ruby, 2009; Qin & Northoff, 2011; Gillihan & Farah, 2005) and yet findings remain inconclusive overall. A coherent account of self with solid theoretical foundations is necessary to rectify these issues.

1.3.4 Social Constructionist Approaches to the Self
One approach that heavily implicates the role of language in the development and maintenance of the self is social constructionism. According to this viewpoint the self is a dynamic process whereby the self is context dependent and constructed in relation to other. In other words one’s self-descriptions differ depending on who one is interacting with. Social constructionism argues that there is no objective self, rather the self is a subjective experience based on beliefs about personhood. It suggests that the experience of self, being a person and experiencing the world are contingent on representations of the concept of self available in a person’s culture, and that concepts such as “self” and “mind” are hypothetical in nature, functioning to structure our psychological experience (Harré, 1983; Potter & Wetherell, 1987). As this differs across cultures, experiences of self will differ across cultures on this basis. This Social Constructionist approach to self parallels earlier approaches to the self, in that it implicates the importance of one’s social context and interactions with others. The idea that self is a content-less, subjective experience, resonates most closely with Self-as-subject or James’ “I”.

1.3.5 Conclusion of psychological approaches to the self

Despite the popularity of self based approaches in psychology, the concept of self has remained poorly defined in operational terms (Stewart et al., 2012). Inconsistencies and a lack of specific, coherent definitions across psychological approaches to the self are prevalent across the literature. This is problematic in that it hinders conclusive findings and thereby decelerates the rate at which progress can be made both at a basic empirical level, and at an applied, clinical level. A recent review that examined self and self-related processes in chronic pain investigations, found that
conceptualisations of self across studies were inconsistent, with many studies failing to provide a self definition, and a lack of theoretical clarity overall (Yu et al., 2015).

The predominantly mechanistic approaches discussed above focus on gaining new information and building upon existing knowledge of the self and related concepts. While these approaches are very useful and provide detailed descriptive accounts, they lack in-depth explanations of the functional units underlying the self, resulting in a dearth of empirical evidence for which specific processes make up the self. In order to create change in meaningful ways a theoretically grounded bottom-up approach to understanding the self is that is evidence-based and empirically testable is needed, that results in application of these principles in useful and practical ways. One such approach that offers a theoretically coherent account of the self is Contextual Behavioural Science (CBS).

1.4 Contextual Behavioural Science

CBS is a psychological approach characterized by a unique integration of philosophical assumptions, use of multi-level research methods, and a bottom-up albeit reticulated approach to theory development (Levin, Twohig & Smith, 2015). Hayes, Barnes-Holmes, and Wilson (2012, p. 2) define CBS as:

“Contextual Behavioural Science (CBS) is a principle-focused, communitarian strategy of reticulated scientific and practical development. Grounded in contextualistic philosophical assumptions, and nested within multi-dimensional, multi-level evolution science as a contextual view of life, it seeks the development of basic and applied scientific concepts and methods that are useful in predicting-and-
influencing the contextually embedded actions of whole organisms, individually and in groups, with precision, scope, and depth; and extends that approach into knowledge development itself so as to create a behavioural science more adequate to the challenges of the human condition.”

CBS is the scientific foundation of the behavioural scientific theory Relational Frame Theory (RFT) and its clinical application, Acceptance and Commitment Therapy (ACT). While in many scientific approaches philosophical assumptions are not explicitly stated and consequently go unrecognized, CBS places particular emphasis on the importance of its philosophical underpinnings in guiding scientific strategy, namely functional contextualism.

1.4.1 Functional Contextualism

Philosopher, Stephen Pepper (1942), coined the term “World “Hypothesis” to describe an all-encompassing way of thinking about how to understand the world. Each world hypothesis consists of a root metaphor, and a truth criterion. The root metaphor refers to a way of thinking about phenomena, while the truth criterion is the standard by which the validity of analysis is assessed. In the field of psychological research, the majority of theoretical approaches are mechanistic or organic in nature. The mechanistic worldview postulates that the world can be considered a giant machine made up of interacting parts with the aim of science to discover these parts, and describe their interaction as best as possible. The truth criterion of mechanism is that science can theorize the way that a certain part of the world works and if the experimental results correspond to that prediction, the accuracy of the theory is
supported. Mechanistic approaches aim to predict behaviour in this manner. An example of this would be the cognitive psychology approach to self as outlined above.

With Organic approaches, such as the developmental approach to the self as discussed previously, the root metaphor is the process of organic development or orderly changes from one stage to the next and the truth criterion is coherence. While Mechanism and Organicism approaches are extremely useful in that they seek to provide accurate and valid accounts of relations among variables, and further develop our knowledge and understanding, they do not seek to identify influencer variables that may contribute to behavioural change. One alternative approach that aims to influence, as well as to predict behaviour, and ultimately contribute to and nurture overall human well-being is Functional Contextualism.

Functional Contextualism (FC) is the philosophical worldview underlying CBS and is a pragmatic scientific philosophy grounded in functional analysis (Biglan & Hayes, 2015; McHugh & Stewart, 2012; Vilardaga & Hayes, 2009). Unlike many existing philosophical approaches such as mechanism and organicism, FC aims to change behaviour in useful ways rather than to purely understand and describe it. The specific goal of FC is prediction and influence of behaviour, with precision, scope and depth. Specifically it postulates that what is pragmatic or useful is what allows analytical goals to be achieved and these goals should be accomplished in a way that’s specific, broadly applicable, and non-contradictory (Vilardaga & Hayes, 2009). Identifying variables shown to influence particular behaviour under investigation is considered equally as important as identifying variables, which predict and explain behaviour from a functional contextualist viewpoint.

Precision in this context refers to the extent to which events referred to by concepts used to predict and influence behaviour are unambiguous and relate to one
another unambiguously. Many concepts in psychological research, particularly cognitive, have been criticized for being ambiguous. When concepts are referred to as precise, the phenomena in question are referred to in very specific terms (Biglan & Hayes, 2015). An example of how functional contextualism adds precision to analysis is the use of relational framing to explain sophisticated behavioural processes (discussed in more detail below).

Scope refers to an analysis relative to a wide range of phenomena. While FC researchers aspire to conduct analysis with broad scope, it is not an a priori assumption that it will be found. Rather it is pursued for pragmatic reasons, as analyses which apply to a broad range of phenomena are more useful. Depth refers to when analysis resonates and is consistent with existing, well-established accounts. For example, behavioural theories should not contradict neuropsychological findings.

The root metaphor of contextualism is the event or act in context, i.e. the investigation of a phenomenon or concept requires understanding said phenomenon or concept in relation to the context in which it occurs. According to this metaphor it is necessary to know an action’s context in order to understand it’s meaning or function, for example:

“(A)n act in context is initially experienced as a whole, the behaviour of the person and the context are fused. The very quality of the act is a function of its context. Going to the store is different from going to the bank: raising one’s hand to get attention is different from raising it in the act of stretching.” (Biglan, 1995, p.32)

The truth criterion is “successful working”, i.e. an analysis is considered true or valid if it helps a goal to be achieved. This is characterized by an a-ontological stance, meaning it is unconcerned with whether what is known is “real.” It is possible
to state what can be done, and evaluate the truth of said statement in terms of the success of the outcome. If a statement works in accomplishing scientific specific goal it is considered to be true. In this way, CBS offers a progressive approach to behavioural science.

This influence of behaviour that differentiates FC from mechanistic and organic approaches, requires specification of environmental variables that allow influence. While mechanism and organicism may successfully provide accurate and valid accounts of relations among variables, they do not necessarily identify influencers that may be manipulated. According to FC, to fully understand behaviour, variables that have been found to consistently influence action must be specified and manipulated, i.e. the function of behaviour must be determined. This includes the variables occurring before behaviour (antecedents) and those that occur after (consequences). This unique emphasis on influence of behaviour in FC allows for behavioural change in useful and practical ways. Theory grounded in principles of high precision and scope also allows for the development of models that are parsimonious broadly applicable, supported at a basic analysis level and aligned toward manipulable variables allowing for prediction and influence of behaviour (Levin et al., 2015).

1.4.2 CBS approach to research

Research into CBS strives for a reticulated approach, wherein applied research using midlevel terms and basic investigations using more specific and technical terms inform one another, allowing for development and progress on both ends. A middle level term refers to a theoretically specific, non-technical term, which has not come
about as a result of basic scientific analysis (Barnes-Holmes, Hussey, McEnteggart, Barnes-Holmes, & Foody, 2015). Use of middle level terms is considered a defining feature of CBS, for their pragmatic use in making highly technical, specific terms more accessible. This allows for wider dissemination and application, in keeping with the FC goal of high scope. Middle level terms are consistent with basic science and well defined while understandable and accessible (Levin et al., 2015).

One issue however with the use of middle level terms, is that while they cohere with a specific theoretical account, they have not arisen as a direct result of experimental analysis. This means that while these terms serve an important function and are useful in a practical sense, they are ultimately proxies rather than direct, technical accounts of the phenomena under investigation, which may result in a loss of the precision and depth (Hayes, Barnes-Holmes, and Wilson, 2012). It is critical to investigate the basic scientific principles underlying these terms in order to understand the functional processes involved and advance both scientific progress and practical application. On this basis, CBS pragmatically aims to balance basic investigations and applied research using middle level terms. This reticulative research strategy is one of CBS’s defining features in which investigations into basic principles, developing and testing theories, and applied interventions are carried out in an integrated, reciprocal fashion wherein findings from each area build and inform the others. This reticulated approach ensures theories are tested, pragmatic issues are identified, in applications, and multi-level analysis with a wide range of methods is used, allowing scientific progression. CBS emphasizes the importance of examining the same behaviour with varying methods and measures to identify specific active effects of an intervention and further identify parameters, subtle differences in theory.
across type of delivery/intervention, and generalizability (Levin & Villatte, 2015; Levin et al., 2015).

CBS offers an account of the self that is theoretically coherent, empirically testable, and generalizable thereby addressing the issues identified with previous approaches and allowing for the development of pragmatic understanding of the self. To that end, the following section will provide a compendium of the scientific theory underlying CBS, Relational Frame Theory, it’s clinical application, Acceptance and Commitment Therapy, and empirical investigations into the CBS conceptualisation of self and its functional units, known as deictic relations.

1.4.3 Acceptance and Commitment Therapy and Psychological Flexibility

Acceptance and Commitment Therapy is a clinical application of CBS with the therapeutic aim of fostering psychological flexibility through 6 interrelated processes-acceptance, defusion, present moment awareness, flexible perspective-taking, values, and committed action (Hayes, Strosahl & Wilson, 2011). Psychological flexibility is considered a prerequisite for sound mental health according to RFT. Hayes et al. (2006) gave the following definition of psychological flexibility- “the ability to contact the present moment more fully as a conscious human being, and to change or persist in behaviour when doing so serves valued ends” (Hayes et al., 2006, p.7). The inverse of this process, is known as psychological inflexibility and refers to patterns of behaviour wherein actions are heavily influenced by internal experiences, in particular, unwanted feelings, rather than direct contingencies or personal values. It may be thought of as a composite of experiential avoidance, and cognitive fusion. Experiential avoidance refers to attempts to control
or remove unwanted emotions, while cognitive fusion is when internally held thoughts and beliefs are treated as literal truths, and therefore behaviour is controlled and influenced as such. There has been a plethora of studies in support of ACT and each of the six processes (Hayes et al., 2006; Ruiz, 2010; A-Tjak et al., 2015)

1.5 Relational Frame Theory

Relational Frame Theory (RFT) is a behavioural approach to language and cognition with a foundation in functional contextualism (Hayes, Barnes-Holmes & Roche, 2001; Torneke, 2010). RFT postulates that humans can relate events or stimuli on the basis of arbitrary, socially established contextual cues, in a process better known as Arbitrary Applicable Relational Responding (AARR). AARR refers to a type of relational responding unique to language-able humans that is controlled exclusively by arbitrary contextual cues rather than physical or non-arbitrary relations between stimuli. Relational Frames refer to learned patterns of relational responding. This process allows humans to learn and establish relations in an infinite number of ways, facilitating a wide array of complex behaviours.

As our language repertoire and interactions with the environment become more sophisticated we learn to derive a variety of different types of relation, including comparison (A is better than B), opposition (A is the opposite of B), coordination (A is the same as B), analogy (A is like B), distinction (A is different to or separate from B), hierarchy (A contains or is the context for B) and Deictic (A is here now, but B was there then) (Torneke, 2010). There has been increasing empirical support for these frames in recent years (Luciano, Gomez Becerra, & Rodriguez Valverde, 2007; Dymond, Roche, Forsyth, Whelan, & Rhoden, 2008; Heagle & Rehfedlt, 2006).
All relational frames possess three distinct properties: mutual entailment, combinatorial entailment, and transformation of stimulus functions. Mutual entailment refers to when a relation in one direction between two stimuli results in a second relation in the other direction. For example, if A is equal to B, then it can be entailed that B is also equal to A. Combinatorial Entailment refers to when the combination of two relations, results in a third relation. For example, if A is equal to B, and B is equal to C, we can then derive that A is also equal to C. Transformation of stimulus functions is arguably the most important property of relating, as it is this process that gives rise to influencing behaviour. Transformation of Functions refers to when a stimulus acquires new psychological functions as a result of relating.

Stimulus functions refer to when a stimulus or event has a function for behaviour, when behaviour takes places in relation to, or under the influence of the stimulus in question. The function of a stimulus is determined through analysis of the context in which it occurs, as well as the individual’s reaction to it. For example, if an individual were to turn on a light in a darkened room, this event may function differently for someone who is attempting to read but cannot see, and someone else who is frightened of the dark. The same behaviour carries different stimulus functions in both of these individuals. Transformation of these stimulus functions occurs as a result of stimulus losing or gaining functions through derived relating (Torneke, 2010).

Transformation of stimulus functions can alter the meaning or functions of events or objects in a multitude of ways and thereby, influence behaviour as a result. For example, if it is said that A should always be avoided and that B is like A, then it might be derived that B should be avoided also, as it is now has the psychological functions of A. A more naturalistic example, might be if a young child is told that a
dog is dangerous, the word “dog”, may now acquire the psychological functions of the word dangerous and when that child comes into contact with an actual dog, a fear response may be evoked, as the dog now has the psychological functions of dangerous. In this instance, an object that had once had different stimulus functions (neutral or positive), now has the functions of triggering fear or avoidance. Another example, may be if an individual were to unknowingly drink expired milk, the word milk may acquire the psychological functions of disgust for that person, and subsequently when they hear the word milk, it may evoke feelings of disgust, while previously, the word had different stimulus functions.

1.5.1 Perspective Taking as Derived Relational Responding

From an RFT point of view, deictic relating is a type of relational responding developed through interactions providing opportunities to talk about one’s perspective in relation to the perspective of others (Hayes, 1984; Barnes-Holmes, Hayes, & Dymond, 2001). One learns that their own perspective is consistent and different from that of other people (i.e. I is always from this perspective here, not from someone else's perspective there). Deictic relating corresponds to the middle level ACT process, flexible perspective taking. The process underpins many core aspects of human social and emotional development, including theory of mind, empathy, compassion, self-compassion, acceptance, and a transcendent sense of self (McHugh & Stewart, 2012; McHugh, 2015; Hayes, Strosahl & Wilson, 2011). Relating to a perspective other than our own is a behaviour that must be learned. Seeing alternative perspectives to one’s own is developed as a result of arbitrary applicable relational responding. Learning to answer the following types of question allows deictic
relations to develop: “What did you do then?”, “What are you doing now?”, “What are you doing here?”, “What are you doing now?”, “What did I do then?”, “What am I doing now?” “What am I doing here?”, “What will I do there?” The formal properties and physical environment will change across all of the above questions, however the invariant across contexts is always the relational properties of I versus You, Here Versus There, and Now Versus Then. While most other relational frames typically have formal, non-arbitrary properties in the environment, deictic relating is abstract or, in other words, it does not have physical counterparts in the environment. Deictics are based on perspective interpersonally (I-You relations), spatially (Here-There Relations), and temporally (Now-Then Relations). In other words, acquisition of these frames involves learning to differentiate one’s own behaviour (“I”) from that of others (“You”), and one’s responding in this moment is always “Here”, rather than “There”, and “Now” rather than “Then.” They emerge through a history of asking and responding to questions such as, “Where am I now?” (I-here-now) and “What were you doing yesterday?”(you-there-then) (Barnes-Holmes, McHugh & Barnes-Holmes, 2004). Upon successfully developing the deictic frames of I-You, Here-There, and Now-Then, they become inherent in most of one’s verbal interactions (Stewart et al., 2012). For example in conversations, by asking “How are you today?” the frames of I-You, Here-There and Now-Then are operating, as I-here-now, am asking about you-there-then.

McHugh and colleagues (2004) observed in their seminal study that deictic relations follow a predictable developmental trend from early childhood to middle childhood, and are then, close to fully developed by adulthood in typically developing populations. This study used a protocol using deictic relational tasks, varying in levels of complexity (see Table 1). Deictic relational tasks are a means of assessing
deictic ability using trials that require the participant to take the perspective of You and I interpersonally (“I have a red brick. You have a green brick. What do you have? What do I have?”), spatially (“I am at home. You are at school. Where am I? Where are you?”), and temporally (I was on the bus yesterday. I am at home now. Where was I yesterday? Where am I now?). The most basic type of deictic relation is a simple relation, which involves identifying the perspective. The next level of complexity is a reversed relation, which involves reversing the perspectives, and finally double-reversed relations, where the perspective is reversed twice. Protocols for the assessment and training of these competencies have been developed on this basis.

**Table 1** Types of task used in McHugh et al. (2004)

<table>
<thead>
<tr>
<th>Task Type</th>
<th>E.g.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple I-You</td>
<td>“I have a red brick. You have a green brick. What do I have? What do you have?”</td>
</tr>
<tr>
<td>Simple Here-There</td>
<td>“I am at school. You are at home. Where am I? Where are you?”</td>
</tr>
<tr>
<td>Simple Now-Then</td>
<td>“I am at home today. I was at school yesterday. Where am I today? Where was I yesterday?”</td>
</tr>
<tr>
<td>Reversed I-You</td>
<td>“I have a red brick. You have a green brick. If I were you, and you were me, What would I have? What would you have?”</td>
</tr>
<tr>
<td>Reversed Here-There</td>
<td>“I am at school. You are at home. If here were there, and there were here, where would you be? Where would I be?”</td>
</tr>
<tr>
<td>Reversed Now-Then</td>
<td>“I am at home today. I was at school yesterday. If now was then, and then was now, where would you be? Where would I be?”</td>
</tr>
<tr>
<td>Double Reversed I-You-Here-There</td>
<td>“I am at school. You are at home. If I were you, and you were me, and here were there, and there were here, where would you be? Where would I be?”</td>
</tr>
</tbody>
</table>
A number of studies in the RFT literature have examined these repertoires of deictic relational responding across different age-groups (McHugh et al., 2004; McHugh, Barnes-Holmes, Barnes-Holmes, & Stewart, 2006; McHugh, Barnes-Holmes, Barnes-Holmes, Stewart, & Dymond, 2007), among children with high-functioning autism spectrum disorder (Rehfeldt, Dillen, Ziomek, & Kowalchuk, 2007), and in those where said skills are found to be impaired or absent (Barnes-Holmes, Barnes-Holmes, & McHugh, 2004; Weil, Hayes & Capurro, 2011). A number of studies have also demonstrated the efficacy of this type of protocol in training those with impairment in deictic ability. One of the first studies to train deictic perspective-taking skills was conducted by Heagle and Rehfeldt (2006). They successfully trained deictic ability in a sample of typically developing children, and found that this training generalized to a day-to-day context, wherein the experimenter asked the questions presented in the training protocol but in a conversational manner (Heagle & Rehfeldt, 2006). Subsequently, Rehfeldt, Dillen, Ziomek, and Kowalchuck (2007) found that reinforced relational responding in a sample of autistic children led to improved performance on deictic tasks.

Lovett and Rehfeldt (2014) used multiple exemplar instruction to train deictic relations in a sample of adolescents with Asperger’s syndrome. They observed that deictic ability improved following training, with varying degrees of generalization to social interactions. Weil, Hayes & Capurro (2011) developed a brief version of
McHugh et al.’s (2004) protocol in training deictic relations in young children (4-5 years old), and found that all children displayed improvements in deictic tasks, as well as increased proficiency in ToM tasks, following improvements in reversed and double-reversed relations. O’Neill and Weil (2014) used the training protocol developed by Weil et al., (2011) to train deictic competencies in adults with schizophrenia. Results showed that all participants successfully mastered complex deictic relational tasks, and this ability was found to generalize to ToM tasks. Jackson, Mendoza & Adams (2014) successfully trained deictic skills in a sample of autistic children, but found, however, this training did not generalize to ToM perspective-taking tasks. Davlin, Rehfeldt and Lovett (2011) successfully used multiple exemplars to train deictic deficits in typically developing children using children’s stories. Similarly, Gilroy, Lorah, Dodge & Fiorello (2015) attempted to use a naturalistic story approach in training deictic repertoires in children with autistic spectrum disorder. Findings showed that all participants met criteria for mastery at all levels of relational complexity. Belisle, Dixon, Stanley, Munoz, and Daar (2016) trained single reversal deictic relations in a sample of 3 adolescents with autism using visual I-You tasks. All participants reached mastery upon completion and although only a single relation was trained (I to You), the inverse relation (You to I) was derived for 71 out of 88 trials. Following training, participants demonstrated transfer of stimulus functions to untrained formally dissimilar stimuli.

The findings of McHugh et al. (2004) are consistent with those from ToM research, the main approach to understanding perspective-taking in psychology, which suggests that performance on simple tasks typically develop by the age of 4 or 5 years and are generally established by 6 years (Taylor, 1988). Studies show that as children develop deictic ability at increasing levels of complexity, this ability maps
onto ToM skills (Weil et al., 2011). Vilatte et al., (2008) also found that performance on McHugh et al.’s protocol predicted accuracy on Corcoran et al.’s (1995) Hinting Task, wherein the participant is required to attribute intentions behind indirect speech.

These findings demonstrated the applicability and generalizability of deictics training, however to the best of the author’s knowledge, there is no empirical evidence to date testing this training in a sample of typically developing adolescents. As McHugh et al. (2004) observed deficits in adolescent accuracy on deictic tasks when compared with adults, it is critical that such a protocol is assessed for suitability with adolescent populations. The time intensive nature of this type of training has meant that the majority of previous studies have used small samples (n=3 in most investigations). Participant fatigue has also been identified as a considerable issue in deictics research with the length and repetitive nature of previous protocols affecting participant engagement and performance (Weil et al., 2011). Use of a briefer deictics protocol, would allow for more time efficient testing, easier replications and larger study samples. A recent review by Montoya-Rodríguez, Molina and McHugh (2016) examining empirical investigations into deictic relational responding also observed a limited number of outcomes variables across training studies, emphasizing the need for testing the impact of training across a wider range of variables. A lack of empirical support for certain theoretical assumptions was also observed, such as the transformation of emotional functions (i.e. empathy) across deictic relations.

On this basis, the present thesis will attempt to address some of these issues identified in deictics research to date. A briefer, more efficient deictics training protocol and measure for use with adolescents is developed and tested in Chapter 3 of this thesis. Should support be given to the use of this measure and training protocol, this would allow for a more practical, accessible means of assessing and training
deictics and would facilitate wide-reaching replication and roll-out. Consistent with the functional contextualist goal of scope, this thesis will also attempt to address some of the issues identified by Montoya-Rodríguez et al. (2016), by investigating training outcomes across a range of variables, including theoretically relevant behaviours such as empathy.

1.5.2 RFT approach to The Self

From a behavioural point of view, sense of self develops as a result of functional demands of our social environment. Unlike most other contexts, scientific and otherwise, where the word “self” is almost universally used as a noun, to “self” is a verb according to behavioural psychology, and therefore self-relevant behaviour may be referred to as “selfing”. Skinner (1974, p. 149) refers to the self as a “repertoire of behaviour imparted by an organized set of contingencies.” It allows the prediction and influence of others’ behaviour, and for others to do likewise with us. He argues that self-awareness came about as a direct result of social contingencies reinforcing discrimination of one’s own behaviour, “Self-knowledge is of social origin. It is only when a person’s private world becomes important to others that it is made important to him” (1974, pp. 30-31). As humans, we learn from an early age to label or, in behavioural terms, tact behaviour and talk about our behaviour in a social environment (Skinner, 1953). Young children develop this repertoire through social interaction; for example, if a young child is playing with a red toy and their parent asks “What are you playing with?” accurately responding with “red toy” is met with positive consequences and therefore reinforced. Likewise if the child were to respond inaccurately, this is met with negative consequences (“No, your sister is playing with
the blue toy. You are playing with the red toy.”) The words “I” and “me” become linked to one’s own behaviour. RFT builds upon this (Hayes et al., 2001; McHugh & Stewart, 2012; McHugh, 2015) and implies that verbal responding to one’s own responding brings about the experience of self. It suggests that humans’ ability to take perspective as a result of relational framing is what makes the uniquely human experience of the self possible.

In their 1994 study, Dymond and Barnes demonstrated the first RFT model of self by training self-discrimination response functions through relations of coordination. It was observed that following stimulus equivalence training, stimulus functions transformed in the expected direction, thereby establishing an empirical model of verbal self-discrimination (Dymond & Barnes, 1994). As children we go through multiple exemplar training (when relations are trained using multiple examples) in reporting our own behaviour and differentiating it from that of others. This understanding of self shares a number of similarities to the other psychological approaches to understanding the self discussed earlier, such as the construction of self through social reinforcement and verbal processes. However, such approaches lack detailed theoretically coherent accounts and depend on intuitions that view self as object rather than process, RFT provides a bottom-up, indepth account of processes involved (Atkins & Styles, 2015). RFT conceptualizes the self in terms of three selves; - self-as-content, self-as-process, and self-as-context, all a result of verbal behaviour (Hayes, 1995; Hayes & Gregg, 2001; Barnes-Holmes et al., 2001; Atkins & Styles, 2015).

1.5.3.1 Self-as-content
Early on humans learn to talk about and describe themselves and this behaviour is reinforced by the social environment. As a result of this, they develop a concept of “Who am I.” Self-as-Content is made up of our evaluations and descriptions in relation to the self, in particular things that are good and bad about oneself. The idea of self-as-content pertains to the understanding of self most widely reported in the mainstream psychological literature, including the self-concept of humanistic psychology (e.g. Rogers, 1961), the narrative self (Gallagher, 2000), and James’ (1890) “Me”. When self-as-content is operating, one’s thoughts and beliefs are seen as literal truths. A relation of coordination develops between I/the self and these thoughts and beliefs, or psychological content as they are known in RFT terms. In self-as-content, the self is coordinated with one’s descriptions and evaluations as both are located HERE-NOW.

While self-as-content is often a helpful, functional process, for example in social interactions (“I am someone who enjoys sports), or in job interviews (“I am a driven, hardworking individual”), it can also be problematic when it leads to fusion with psychological content. As the content becomes rigid and conceptualized, this often leads to content exerting some control over behaviour, as people may behave in accordance with these descriptions and evaluations. For example, if a person holds the self-conceptualisation “I am an unlovable person”, they may behave in a manner as if this conceptualisation reflected reality, regardless of any direct experience that would suggest the contrary. This person may never pursue any meaningful or intimate relationships with others, as they are behaving on the basis that this self-conceptualisation is true.

Humans inherently behave in ways that support a consistent and coherent set of self descriptions, and avoid and resist evidence that may threaten this self-story.
For example if a person holds the thought “I’m an excellent leader”, and an incident occurs that suggests otherwise, they may be resistant to criticism or change, or they attribute causality to someone or something else. A conceptualized self that is coherent is often reinforced by one’s social environment, as the behaviour of an incoherent self is typically less predictable.

This concept of coherence is comparable to the humanistic idea of incongruence, wherein the self-concept diverging from “true” self leads to psychological maladjustment. Similarly, in cognitive psychology accurate schemata (beliefs about the world) are considered critical for positive psychological functioning and pathology is thought to arise when schemata are faulty or do not reflect reality. The experience of Self-as-content focuses on descriptions and evaluations abstracted from past experiences, rather than the experience of the self in the present moment. However, there are more dynamic, flexible aspects to the self beyond this rigid, abstracted sense of self (Atkins & Styles, 2015).

1.5.3.2 Self-as-process

When we refer to Self-as-process, we are speaking about the process of self that is ongoing and observable, i.e. behaviour occurring in the moment that makes up what each of us refers to as myself- thoughts, feelings, experiences etc. Hayes et al. (2006; p.9) give the following description “A sense of self called “self as process” is actively encouraged: the defused, non-judgmental ongoing description of thoughts, feelings, and other private events” Some RFT researchers have described this process as being akin to mindfulness, or a conscious attending to what the self is experiencing in the present moment (Foody, Barnes-Holmes, & Barnes-Holmes, 2012), as it is the
ongoing awareness and describing of what the self/I is thinking, doing, and feeling right in the present moment. The benefits of mindfulness for psychological health and understanding one’s own psychological functioning have been well documented in the psychological literature (e.g. Brown & Ryan, 2003; Carmody & Baer, 2008).

It may be thought of as the way in which we talk about our content that is Here-Now, our behaviour and what we are experiencing. Our experience of self in such terms varies from moment to moment, differentiating self-as-process from self-as-context. Foody, Barnes-Holmes and Barnes-Holmes (2012) describe self-as-process as more connected to direct, non-derived stimulus functions, unlike self-as-content, which is brought about through derived stimulus functions. Self-as-process is useful in that it facilitates communication (Hayes, 1995), providing predictive information to others (e.g. I’m tired, I’m happy etc.) allowing them to predict our behaviour and respond accordingly. It also allows the individual to behave flexibly in the moment and choose to act in meaningful ways (Torneke, 2010). It is particularly important for self-rules which language-able humans produce, and use to make decisions and guide behaviours across various contexts (Luciano, Valdivia-Salas, & Ruiz, 2012). Self-as-process and self-as-content, both constitute content of self, which may be observed there-then when self-as-context is operating.

The idea of an experiencing sense of self that attends to the moment to moment experience of the self, resonates with the idea of James’ (1890) “I”, or the Minimal Self in Cognitive Psychology (Gallagher, 2000), which describes an experiential self, characterized by an awareness of the psychological present. Neuropsychological evidence also gives support to the distinction between 2 forms of self-awareness, specifically, an experiential self (akin to self-as-process), and a narrative self (akin to self-as-content) (Farb et al., 2007).
1.5.3.3 Self-as-Context

Self-as-Context refers to the invariant constant perspective from which we continuously observe all our internal experiences, including thoughts, beliefs and emotions, as well as our ongoing consciousness. According to Barnes-Holmes, Hayes & Gregg (2001), if an individual is asked multiple questions what will remain consistent is not the content of the answers given but rather the context from which they occur. This is an absence of psychological content that takes place in the perspective of “I” located “Here” and “Now.” Hayes & Gregg (2000, p.297) give the following description of self-as-context:

“I” in some meaningful sense is the location that is left behind when all of the content differences are substracted out. From this point of view, when a person is asked many questions, the “I” that is consistent in all of the answers is not just a physical organism but also a perspective”

In other words, when all content has been extracted out, self-as-context is the self that remains, observing all that we experience. Barnes-Holmes, Hayes & Gregg (2001, p.244) describe this transcendence that occur in self-as-context:

“A sense of transcendence results, in large part, from a situation in which the evaluative functions attached to Here and Now repeatedly transfer to THERE and THEN in these two relational frames… transcendence occurs because each evaluative
function that occurs during meditation immediately loses most of its psychological functions when it shifts from I, HERE and NOW to I, THERE and THEN”

While the physical properties on our context are perpetually changing, verbal relations between I and YOU, HERE and THERE, and NOW and THEN remain constant (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2001). Transcending one’s own content as a result of relational framing facilitates acceptance of that content. Content is There-then, facilitating a more stable perspective of I-HERE-NOW (Foody et al., 2012). This also includes the painful content often brought about as a result of empathy, and taking on the suffering of others, therefore self-as-context has important implications for processes such as compassion, intimacy and acceptance/willingness (McHugh, 2015). The idea that corresponds most closely to self-as-context in the mainstream psychology literature is meta-cognition or executive functioning (observing one’s own thought processes). This concept of a transcendent self is also comparable to the experience of self-actualization in humanistic psychology.

These different experiences of self are brought about as a result arbitrarily applicable relational responding. Direct experience of the experiential difference between I-here-now, and I-there-then can result in the transcendent viewpoint of observing our conceptualized self, and noticing and observing it as such. In self as process, psychological content is Here-now but with reduced transformations of stimulus functions. These functionally different types of self discrimination hold potential for one’s ability to behave and respond flexibly across contexts. Self-As-Process and Self-As-Context in particular facilitate sensitivity to context and ability to behave in more flexible ways as a result of increasing contact with direct contingencies of experience rather than one’s verbal abstractions. As verbal
competency increases, the more robust the self becomes and in turn fluency increases when operating as self-as-process (or self-as-context) with regard to psychological content (Foody et al., 2012). By undermining this verbal relating, the processes of self-as-process and self-as-context facilitate behaviour that is more dependent on the specific environment and allows an increased behavioural repertoire (Vilardaga, 2009). This has particularly important implications for a class of behaviour known as self-rules (Luciano et al., 2012; Barnes-Holmes et al., 2001; Torneke, Luciano, & Valdivia Salas, 2008).

1.5.3.4 Self-rules

Self-rules refer to a particular class of rule-governed behaviour which function to describe certain behaviours one should engage in in certain circumstances, or in order to achieve certain outcomes. The term “Rule-governed behaviour” may be used in reference to all behaviour regarding oneself influenced by verbal stimuli. In RFT terms, a rule refers to a stimulus, which modifies the psychological functions of events as a result of the transformation of stimulus functions (Barnes-Holmes et al. 2001). A self-rule typically involves an “if-then” contingency describing an individual’s specific behavioural response and desired consequence, to an experience. A frame of coordination exists between the rule and behaviour in question.

According to RFT, there are three types of rule-governed behaviour: pliance, tracking and augmenting (Zettle & Hayes, 1982; Barnes-Holmes, O’Hora, Roche, Hayes, Bissett, & Lyddy, 2001). Pliance refers to rule-governed behaviour that arises from a result of a history of multiple exemplars wherein one is reinforced for behaving in accordance with a specified rule (E.g. Mother allows a child to have a
treat if they wash their hands). With appropriate development of rule following behaviour, a child will become sensitive to the natural contingencies of rule following. Failure to contact natural consequences of rule following will result in generalized pliance. For example, when a parent provides their child with contrived social praise in order to shape certain behaviours. Generalized pliance is problematic in that it generally leads to an inflexible behavioural repertoire (Luciano et al., 2012).

Tracking refers to rule-governed behaviour resulting from a history of interactions in behaving according to a rule arises by a natural consequence, rather than an arbitrary one. Unlike pliance, this type of rule-following involves correspondence between rules and how the world operates (Barnes-Holmes et al., 2001; Zettle & Hayes, 1982; Luciano et al., 2012). When one engages in a particular behaviour, the consequence is contacted (e.g. If you study for an exam, you will get a good grade). Tracking can be problematic in some instances, particularly in contexts where it cannot work. A prime example would be attempting to apply the rule “If something does not serve me well I should get rid of it” to one’s private events. Attempting to remove unwanted psychological content will not only most likely be futile but may lead to experiential avoidance. Likewise, tracking can also be inaccurate leading to problems, for example the rule “I need to get rid of my unwanted feelings to engage in meaningful behaviours”.

Finally, the most sophisticated type of rule-governed behaviour is augmenting. Augmenting refers to “rule-governed behaviour due to relational networks that alter the degree to which events function as consequences” (Barnes-Holmes et al., 2001, p.109). In order words, augmenting is when new events are established as effective consequences through one’s relational network, or when the consequential functions of previously effective events are altered (Luciano et al., 2012). Augmenting allows
current consequences to acquire appetitive functions by relating them to abstract values. For example, if an individual disliked the taste of vegetables but chose to eat them as they value being healthy. However, augmenting may also be problematic in the case of ineffective augmenting regulation, which can establish functions of avoidance.

Higher self-as-process, and higher self-as-context are associated with more effective behavioural regulation, allowing an individual to behave in accordance with rules that specify what is meaningful (Luciano et al., 2012). Values that have been constructed as a result of self-as-context, place the individual in a better position to manage aversive or appetitive functions by establishing the conditions necessary for effective augmental regulation. On the contrary, an overly conceptualized self-as-content may hinder people from behaving in accordance with long-term values. If an individual has deficits in self-as-process, and self-as-context, they will likely derive rules in relation to evaluation of their life with high levels of fusion (Luciano et al., 2012). Atkins & Styles (2016) described two distinct types of self-rules on this basis, values-oriented self-rules and control-oriented self rules. The former has appetitive functions, increasing behaviours in valued directions, while the latter has aversive functions and increases avoidance or control behaviours. By increasing self-as-context and reducing a conceptualized self-as-content, more effective behaviour regulation and consequently more flexible values oriented rule following may occur.

While these self conceptualisations provide theoretically coherent accounts of functional processes which give rise to them, it must be considered that the Three Selves are middle level terms (Foody et al., 2013). The present thesis will attempt to bridge this relationship between basic and applied analysis by investigating the basic functional units underlying these conceptualisations of self (thesis chapters 3 and 5),
in addition to more pragmatic and practical investigation using middle level conceptualisations of self as outlined above (thesis chapters 2 and 4). If findings from these two types of investigation are consistent, this would suggest that the middle level terms in question are reliable and appropriate accounts of the functional process in question, whereas if findings are inconsistent it would suggest that theory should be revised accordingly (Barnes-Holmes et al., 2015).

1.5.3.5 Empirical investigations into the Three Selves

There has been a dearth of research into the three selves as conceptualized by RFT until recently. Researchers examined the different types of relating that give rise to self-as-context and observed two distinct forms of de-identifying from self-conceptualisations (Foody, Barnes-Holmes, Barnes-Holmes & Luciano, 2013; Foody, Barnes-Holmes, Barnes-Holmes, Rai & Luciano, 2015; Gil-Luciano, Ruiz, Valdivia-Salas & Suárez-Falcón, 2017; Luciano et al., 2011). One involves a person recognizing that they are distinct and separate from their private psychological content, understanding thoughts and beliefs about the self as not being literal truths. This involves frames of distinction and deictic relating. The second type of experience involves the person recognizing that they are the context or “container” in which their content and private mental events occur. This viewpoint facilitates observation of passing mental experience from a stable perspective, facilitating acceptance of that mental experience. This type of relating involves hierarchical and deictic frames.

Luciano et al.’s (2011) study compared these 2 ways of de-identifying from one’s psychological content in a sample of 15 adolescents ($m = 13.66$ yrs) presenting behavioural problems. The study compared a distinction condition (Deictic Framing
to discriminate thoughts and feelings (THERE-THEN) as separate to oneself (I-HERE-NOW) and hierarchical condition (Relation of inclusion between self (I-HERE-NOW) and psychological content (THERE-THEN). i.e. self perspective as consistent locus for all private events.

Four participants who were identified as low risk received the distinction protocol, while five participants identified as low-risk, and six high-risk, received the hierarchical protocol. The hierarchical condition expanded upon what distinction group participants received, with additional hierarchical framing and behavioural regulation components. Study results showed superior outcomes for the hierarchy condition, who had comparatively greater improvements in problematic behaviour, lower psychological inflexibility and higher acceptance, compared to the distinction condition. Study authors concluded from these findings that while distinction deictics training can help develop the basic functional units necessary to contact self-as-context, the addition of hierarchical training may further develop and increase fluency in this type of relating (Luciano et al., 2011). However, it is important to remember that the hierarchical training condition contained cues facilitating behavioural regulation functions, which may have also contributed to the observed outcomes for this condition. The study also relied exclusively on self-report measures, and use of a purely clinical group, which given the nature of the outcome variables may lead to larger differences due to higher scores at pre-test (Luciano et al., 2011). While these findings should be considered tentatively due to these issues and the low n, this study gives preliminary support to the efficacy of hierarchical type interventions with adolescents.

Foody, Barnes-Holmes, Barnes-Holmes, and Luciano (2013) attempted to address some of the limitations identified by Luciano et al. (2011), and compared
distinction and hierarchical training in a sample of non-clinical undergraduate students (N= 36; M= 19.78yrs). This study used briefer versions of the protocols employed by Luciano et al. (2011), and one was described as being explicitly more distinction, and the other explicitly more hierarchy. Results from this study showed discomfort, stress and anxiety increased for both groups following a distress induction protocol (i.e. generating a negative self-referential thought). Subsequent reductions were observed for discomfort, anxiety, and stress for participants in the hierarchy condition, while for those in the distinction condition, an increase in stress and a marginal increase in discomfort was observed, while anxiety decreased (however the reduction was not as large as that for the hierarchy condition). While this study not only gives further support to superiority of hierarchical self-as-context, these findings also appear to tentatively suggest that distinction may lead to increases in stress.

While this study addressed a number of the limitations identified in Luciano et al.’s (2011) study, there were still a number of issues present. Although larger than that of the previous investigation, the sample for Foody et al. (2013) remained quite small. The distinction protocol used in the study contained some prompts that may have evoked hierarchy (e.g. "Ask yourself who is having that memory?"), thereby contaminating the distinction condition. Therefore, it is critical that future studies find more controlled ways to exclusively investigate the relative impact of distinction and hierarchy. Finally, this study also relied on self-report measures, rather than more direct measures of the functional processes (deictic relations). Authors suggested that self-report measures may provide limited insight in CBS research, and suggested that objective, behavioural measures may be a more appropriate for future studies.

Foody, Barnes-Holmes, Barnes-Holmes, Rai and Luciano (2015) extended upon their previous investigation into hierarchical and distinction deictic relating, by
investigating each of the above with the addition of a condition requiring participants to focus on a neutral object (a rose), as well as a self-referential thought, as with the earlier studies. This allowed for examination of whether this type of intervention is effective due to the role of the self, or whether this way of relating to one’s thoughts in general is beneficial. This study also included a practice phase for investigation of the lasting impact of each of the above type of intervention. The study sample consisted of 48 non-clinical participants (12 per condition) ranging in age from 17 to 41.

While reductions in anxiety, discomfort, stress, and avoidance were observed across conditions, findings gave support to the superiority of the hierarchical condition for stress reduction for both self and object relative to distinction conditions. Study authors suggested that as improvements were observed for the self-hierarchy and object-hierarchy conditions that self-focus is not necessary to benefit from this type of intervention, rather that this type of relating is beneficial regardless of the content of thoughts. However, study limitations and issues pertaining to the methodology mean these findings should be considered tentatively. Even though length of practice period was found to significantly mediate study outcomes, it was not controlled for with participants deciding themselves the frequency with which they practiced. The appropriateness of the object of focus (i.e. a rose) for comparison with self-related content must also be considered. An inanimate object such as a rose may be too neutral to allow appropriate comparison, especially as research suggests that thoughts relating to the self are highly rehearsed and emotive relative to other types of thought (Gillihan & Farah, 2005; Legrand & Ruby, 2009). An arguably un-engaging stimulus such as this may result in participant’s attention wondering, quite possibly to self-related content leading to contamination (Northoff & Bernphol,
2004). Authors did not report use of any adherence measure therefore it is difficult to reach definite conclusions regarding the level of engagement (or mind wandering in this case). Finally, the study investigated outcomes solely using self-report measures.

Gil-Luciano, Ruiz, Valdivia-Salas & Suárez-Falcón (2017) attempted to address some of the limitations of these earlier investigations by comparing distinction versus hierarchical deictic interventions, with the addition of a control condition in a sample of 30 adults. While the previous studies participants screened for existing levels of distress at pretest and excluded them on that basis, this study did not exclude participants on the basis of existing distress levels, meaning the sample had greater variability compared to previous investigations. Use of a control group, who underwent a general interview unrelated to the experimental conditions, allowed for examination of the efficacy of either type of self-as-context relative to no intervention. As with Luciano et al. (2011), the hierarchical condition contained regulatory augmental functions. Specifically, elements of acceptance were included in the hierarchy condition (E.g. “realize that you have enough room to have whatever thoughts that might show up”). Due to the issue of reliance of these earlier studies on self-report outcome measures, Gil-Luciano et al. (2017) used behavioural measures, which were deemed more accurate measures of discomfort or distress. A cold pressor task and an aversive film were used to induce discomfort and measure distress tolerance.

Results of this study were consistent with the previous investigations in that participants in the hierarchy & regulatory function condition had significantly higher tolerance for pain and discomfort than those in the distinction condition, while those who received the distinction protocol had significantly higher tolerance than controls. Findings also showed no change in measures of pain intensity or discomfort
suggesting outcomes were a result of decreased avoidance functions in both types of self-as-context condition. Moreover, results suggested that both types of protocol were most effective in those who had increased psychological inflexibility at pretest. It would seem that while both types of self-as-context lead to reduced experiential avoidance, only hierarchical relating reduces distress. This was possibly due to the fact that hierarchical deictic relating facilitates increased willingness and increased contact with appetitive functions of values-consistent behaviour. Although this most recent endeavor had improved experimental control relative to its earlier counterparts, the authors emphasized the importance of a more fine-grained analysis into the separate types of relation (e.g. isolating hierarchy) in future investigations.

A behavioural measure of the three selves was developed by Atkins and Styles’ (2015), who examined the effects of mindfulness training on how one speaks about the self in a sample of seven adults. Interviews were coded for statements about the self, with codes for each of the three selves. Study results showed increases in flexible or defused self-as-content and self-as-context statements, as well as a decline in rigid or fused self-as-content, however no change was observed in the amount of self-as-process statements. Overall, participants were found to demonstrate more flexible self-discrimination behaviour. These findings seem to suggest that increased psychological flexibility as a result of mindfulness training allows for self-conceptualisations to be held less rigidly, as well as increased self-discrimination of own awareness of experiences (i.e. observing perspective).

Atkins and Styles (2016) expanded upon their previous qualitative investigation into the three selves, by also looking at self-rules, specifically values-oriented and controlled oriented self-rules. They found that an observing stance towards private experiences and content, i.e. increased levels of self-as-context, was
predictive of lower depression longterm in a sample of 29 adults. The study also found evidence to suggest that a more conceptualized self, or a less flexible self-as-content was related to decreased positive affect, and increased stress, particularly if conceptualisations were negative. Values-oriented self-rules were also found to be related to increased well-being, in addition to reliably predicting well-being longterm.

Most recently, Yu, Norton and McCracken (2017) investigated the effects of ACT treatment in a longitudinal study of 412 adults with chronic pain. They investigated the effects of this treatment on self-as-context at process level and examined its effect on treatment outcomes. Treatment was found to be associated with improved self-as-context and increases in self-as-context were related to improved functioning, in particular, work, and social adjustment, and depression, as well as reductions in pain-related interference. Although, authors cautioned that the study was not an experimental design meaning causal relationships cannot be drawn, these findings remain promising and implicate the role of self-as-context in functioning and mental health.

One issue that has emerged in CBS investigations into the three selves is lack of consistency in conceptualisations. Specifically, most papers investigating the self, or more specifically, self-as-context, define self-as-distinction as a type of self-as-context (Atkins & Styles, 2016; Yu, McCracken & Norton, 2016; Luciano et al., 2011; Foody et al., 2013), while others describe it as self-as-process rather than self-as-context. (Foody et al., 2015). This inconsistency is unsurprising considering the overlap in the processes involved in these two types of self-discrimination, as well as the functional units giving rise to them. As there is the most empirical support for self-as-distinction as a type of self-as-context, across varying types of analysis, the present thesis will use this definition. Similarly, middle level terms are used
interchangeably across studies, with different studies both using defusion (Luciano et al., 2011) and self-as-context (Foody et al., 2013) to refer to the same types of relating. For clarity purposes, only self-as-context will be used in reference to this type of relating in the present thesis.

To conclude, while these findings are promising further research is warranted, particularly more controlled investigations using multiple levels of analysis are needed. The present thesis will attempt to address some of the limitations of these previous self studies, by investigating the three selves in relation to adolescent mental health, using both behavioural and self-report measures. As deictic relating is necessary for self-as-context (Foody et al., 2012; Hayes et al., 2001; Vilardaga, 2009), this thesis will also investigate the implications of training deictic relations in an adolescent sample where deficits are present compared to older counterparts (McHugh et al., 2004). This thesis will attempt to bridge basic and applied research, by testing theoretical assumptions using both pragmatic middle level processes and more technical, functional units, as well as testing the application of this theory in a self intervention targeted at improving adolescent mental health.

1.5.4 RFT approach to empathy and relating to others

From an RFT point of view, this process of deictic relating is also critical for competencies such as empathy and social functioning. Empathy can be understood as derived relational responding according to RFT (Valdivia-Salas, Luciano, Gutierrez-Martinez, and Visdomine, 2009; Vilardaga, 2009). It identifies a number of steps that are necessary for empathic behaviour to occur. Firstly, one must be able to discriminate one’s own private events, or in other words, understand one’s own
emotions. A number of relational frames must operate in order for this process to occur. Deictic relations must be operating, in that one always discriminates one’s own experience from the perspective of I-Here-Now. A relation of coordination must also occur between one’s internal events, (feeling happy) and external events (“I feel happy”). The second step is understanding the emotions of others. This involves a shift in perspective from I-Here-Now to You-Here-Now (or You-There-Then). Transformation of emotional functions from you to me occurs. This stage also involves the ability to respond to cues that enable possible private events of others (e.g. my friend is smiling and must therefore be happy).

The final step in the RFT conceptualisation of empathy is responding empathically. As perspective-taking and relational networks develop, appropriate responding develops and an onlooker to someone else’s emotional experience learns to act in accordance with what that person is experiencing as distinct to their own experience. As an individual’s relational network becomes more sophisticated, they became more skilled in responding empathically.

When the deictic frame of I-You is operating, it integrates the functions evoked by others, contacting a larger set of social contingencies and thereby increasing the social behavioural repertoire of the individual. The individual is responding with awareness and sensitivity to what is possible in interacting with this particular individual. Operating under the contextual control of I-You as invariant, should lead to greater psychological well-being and interpersonal interactions, through responding effectively to others and the self that account for a larger set of relational discriminations, thereby increasing the response repertoire (Vilardaga, 2009). Although similar on a number of grounds, particularly at a surface level, the RFT conceptualisation of empathy differs slightly from mainstreams approaches, such
as Theory of Mind, in that the RFT approach to empathy provides a bottom-up account that is grounded in functional contextualism.

According to RFT, the same verbal relating facilitating three senses of self, also gives to three senses of other which may have implications for empathy and how one relates to others. These are: (i) conceptualized other (verbal relations about content as other), (ii) other as process (verbal relations about the process of knowing the other; and (iii) other as context (other as verbal relations in the context of verbal relations in the other) (Barnes-Holmes et al., 2001; Atkins, 2013; Atkins & Styles, 2015).

Other-as-content refers to our conceptualisations of others and how this is applied to evaluate them. While such conceptualisations of the self and others plays a key role in social interactions, by the same token they may interfere with ability to empathize due to the rigidity and context insensitivity of such conceptualisations (Atkins & Parker, 2012). Other as process refers to a person’s ongoing experience of the other in the present moment and is an important component of both perspective-taking and empathic responding. Barnes-Holmes, Hayes, & Dymond (2001, p.134) describe other as process as being “based on a moment-to-moment construction of reactions of the other”.

Finally, other-as-context is a rather uncommon occurrence, and is typically seen in religious, intimate, or therapeutic interactions. Barnes-Holmes et al., (2001, p.135) describe other-as-context as

“when the speaker is psychologically connected to the listener as a purely conscious person. In this aspect, the speaker and the listener are one, since “HERE and NOW” is imputed to be a singular event (i.e. one cannot be here and now, simultaneously, at
different times and places). Perhaps for this reason, the level of self-as-context is associated with a sense of the transcendent other-the two go hand in hand.”

While there have been no published empirical investigations to date attempting to develop empathy according to the RFT conceptualisation, Vilardaga and colleagues created a model of social functioning with predictors of deictic ability, empathy, and experiential avoidance (Vilardaga, Levin, Hayes & Estevez, 2012). According to the Flexible Connectedness Model, perspective-taking, empathy, and psychological flexibility are key processes for social connection and deficits in any of these processes may lead to maladaptive social functioning (Vilardaga et al., 2012). This model was developed on the following theoretical grounds: as the deictic framing repertoire of an individual increases, individuals should become more skillful in discriminating the thoughts and feelings of others with increased empathy levels. However inability to effectively manage emotions experienced towards others (empathic concern) may set the stage for attempts to control or remove unwanted feelings due to psychological inflexibility. As a result, meaningful and satisfying social experiences may be missed out on. On this basis, it was postulated that a third skill may be necessary, specifically the ability to mindfully accept the uncomfortable thoughts and feelings brought on through derived relational responding. McHugh (2015) suggests self-as-context allows transcendence of one’s private psychological events, facilitating acceptance. This acceptance extends to the painful emotions and suffering of other, transformed from you to me as a result of empathy, meaning self-as-context has important implication for social functioning. This model has been found to be predictive of social anhedonia (Vilardaga et al., 2012) and generalised prejudice (Levin, Luoma, Vilardaga, Lillis, Nobles, & Hayes, 2015) in samples of
college students.

1.6 School Based Programmes

On account of the increasing rates of mental health concerns in adolescent populations (Cannon et al., 2013), school based programmes have received increasing attention as an effective means of delivering interventions for the promotion of adolescent well-being and mental health (Franklin, Kim, Ryan, Kelly, & Montgomery, 2012; Mass Levitt, Saka, Hunter Romanelli, & Hoagwood, 2007). According to Greenberg (2010, p. 28) “By virtue of their central role in lives of children and families and their broad reach, schools are the primary setting in which many initial concerns arise and can be effectively remediated” Schools are often the delivery point for child and adolescent mental health services. School mental health is a broad category encompassing a variety of psychosocial interventions for students with social, emotional, and learning difficulties (Franklin et al., 2012). Typically school-based programs are divided into three prevention categories- universal, selected and indicated (Mrazek & Haggerty, 1994). Universal programs are delivered to every student regardless of whether symptoms or mental health concerns have been identified, as a means of prevention. Selective programs are directed at those at risk of developing a mental health concern (e.g. students referred to a guidance counselor). Indicated programs are directed at those who present early symptoms of mental illness. A Cochrane review from 2011 showed evidence for the efficacy of universal type programs (Merry et al., 2011).

Universal programs are an attractive option, as it is more cost effective and efficient to prevent mental health concerns than to treat existing ones (Mass Levitt et
This type of program may promote well-being and positive mental health, as well as, effectively “immunize” young people who are vulnerable, against difficulties later in life (Merrell & Gueldner, 2010). In addition to helping young people overcome difficulties and adverse experiences (Patel et al., 2007), bolstering adolescent mental health and well being can enhance skills and resources necessary for managing one’s mental health (Barry & Jenkins 2007). Interventions for mental health promotion have been linked to improved life skills and social functioning in addition to better mental health outcomes (Barry, Clarke, Jenkins & Patel, 2013). Universal type interventions may also help reduce the risk of stigmatization often associated with other, more targeted types of intervention (Greenberg, 2010) and increase mental health awareness in schools (Dawood, 2014). Additionally, evidence from reviews suggest that school staff are just as effective as external specialists in the delivery of these interventions (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger., 2011; Franklin et al., 2012), eliminating the need to bring in any outside mental health professionals.

However, while it can be concluded that universal type programmes produce positive short-term effects, findings on whether such effects are maintained are mixed. In a systematic review of school-based interventions for anxiety, Neil and Christensen (2009) observed that 78% of these programs were Cognitive Behavioural Therapy (CBT) programmes. Calear and Christensen’s (2010) systematic review of school-based intervention programs for depressive symptoms found that CBT programs showed good efficacy, with indicated programs more effective over selective and universal programs. However, they also noted that none of the universal programs showed a significant difference at post-test or follow-up. Ruffolo and Fischer (2009) adapted and carried out a clinical CBT programme in the form of an
adolescent school based intervention, and while they observed reductions in
depressive symptoms at post, these changes were not maintained at follow-up, despite
students reporting they still practiced the skills taught through the intervention.
Likewise, Weisz, McCarty and Valeri (2006) reported that the effects of CBT
treatments with young people diminish over time. However, more recently Clarke,
Knosmanen and Barry (2015) found CBT found to retain improvements at follow-up
in their review of young people’s promotion and prevention interventions.

1.6.1 School Based Programmes using online technology

Online mental health interventions offer numerous benefits including wide
accessibility, privacy, and cost-effectiveness (Oh, Jorm, & Wright, 2008). Oh et al.
(2008) found in a survey of 3,746 adolescents aged 12–25 years that more young
people rated mental health websites as helpful over face-to-face mental health
services. Clarke and colleagues’ (2015) systematic review examined the effectiveness
of online mental health promotion and prevention interventions for young people aged
12-25. Results indicated that such interventions may have a significant impact on
adolescent mental health, with positive outcomes for adolescent anxiety and
depression symptoms in particular. However findings are tentative due to a low
number of high-quality studies with many studies not having control groups, not
providing information regarding sampling and having participants who were recruited
via self selection (Clarke, Knosmanen & Barry, 2015).

A key issue seems to be that adolescent interventions have focused on
reducing mental health problems rather than building life skills. Lack of evidence-
based programmes, and poor fidelity have also been identified as considerable issues
with school based interventions (Gottfredson & Gottfredson, 2002). Therefore,
moving forward it seems critical that evidence-based universal programmes are developed aimed at building life skills, and thereby optimizing not just mental health and well-being, but general functioning in young people.

However, several gaps remain in the literature that have yet to be addressed. To date, there are no conclusive findings regarding optimal program and session length, or for specific strategies and methods for the most effective programme delivery. Higher levels of adherence were associated with better outcomes however further research is needed to understand participant motivation and other factors affecting it (Clarke et al., 2015). It was found that program fidelity was important in achieving outcomes and that outcomes were best for at-risk adolescents (e.g. O’Kearney, Gibson, Christensen, & Griffiths, 2006). However, higher distress levels at pre-test were also found to predict participant dropout (e.g. Calear, Christensen, Mackinnion, & Griffiths, 2013; van der Zanden, Kramer, Gerritis, & Cuijpers, 2013).

Dropout and non-completion have been found to be a considerable issues with online interventions (Richardson, Stallard, & Velleman, 2010; Clarke et al., 2015). Samples of studies conducted to date are also typically imbalanced with well-educated females found to be more likely to participate in youth mental health promotion/intervention programmes (Clarke et al., 2015). While, it is beyond the scope of the present research to control for all the above issues identified in previous research, they will be addressed where possible. Specifically, adherence measures will be included, mental health levels will be measured at pre-test, and every attempt will be made to ensure that the sample is gender balanced (i. e. equal numbers of mixed sex, female-only and male-only schools will be invited to participate in the research).
1.6.2 CBS School Based Interventions

There have been a small number of empirical investigations using ACT, school based interventions with adolescent samples. Livheim et al. (2014) found significant improvements in two clinical adolescent samples, one presenting depressive symptoms (n=66) and the other stress (n=32), following a brief ACT intervention. The majority (91%) of participants gave largely positive feedback. Livheim’s (2004; as cited in Livheim et al., 2014) unpublished study delivered a universal preventative ACT program where participants received 9hrs of ACT Training. Results showed significantly improved outcomes up to 2 years later on measures of stress, anxiety and psychological flexibility (Livheim et al., 2014). Levin and colleagues recently tested the feasibility of a web based ACT prevention program with a sample of college students and found promising results with reductions in symptoms of depression and anxiety, relative to controls (Levin, Pistorello, Seeley & Hayes, 2014).

Most recently Van der Gucht and colleagues (2016) carried out a large scale randomized control trial wherein they investigated the efficacy of a universal type ACT programme in a sample of 586 adolescents. Results showed no improvements following four teacher led ACT sessions relative to controls on measures of quality of life, psychological flexibility, externalizing problems, and thought and attention issues. Authors offered several possible explanations as to why the intervention was unsuccessful, including lack of a fidelity measure and control for treatment contamination effects. They also postulated that use of a teacher for the delivery of the programme may not have been suitable. Previous research has found mixed results with teacher delivery of universal programmes, with issues such as teacher motivation and attitude towards the programme affecting outcomes (Wahl, Adelson, Patak,
Poessel, & Hautzinger, 2014). Therefore, it is important that future studies control for such issues. Use of an online intervention, would ensure participants receive standard consistent treatment and help eliminate many of these issues identified by Van der Gucht et al., (2016).

1.7 Current Research

The aim of this thesis is to examine the ability of the CBS conceptualisation of self to predict mental health in adolescents using multiple levels of analysis, as well as testing the application of this theory. This theoretically coherent account of self, which identifies manipulable variables, should address the shortcomings of previous psychological approaches to self, allowing selfing behaviours to be influenced in meaningful ways.

Given the importance of a reticulated approach in CBS, this body of research will attempt to bridge basic scientific theory and application. The first study will test the theoretical assumption on which the thesis is based; that the three self-discriminations are related to adolescent mental health. Specifically, this study will examine whether more flexible self-as-content, higher self-as-process, and higher self-as-context are related to lower levels of mental health issues in adolescents. A model of the three selves will be tested using pragmatic middle level terms.

The second study will attempt to train the relational units underlying flexible selfing behaviour, and thereby testing the application of this theory, in a school-based intervention targeted at improving adolescent mental health. This study will aim to bridge the gap between basic and applied science by examining the functional units that theory suggests underlie selfing behaviour and testing if the application resonates
with the theory. According to CBS, flexible selfing behaviour facilitates a number of social and emotional behaviours including empathy, self-compassion, acceptance, and transcendence of one’s psychological content (Hayes, 2011; McHugh, 2015). On this basis, consistent with the functional contextualist aim of scope, outcomes will also be examined in relation to these behaviours to investigate the generalizability of flexible selfing. The feasibility of this type of intervention using a brief, accessible online format will also be tested.

The third empirical study will examine how self-relating according to CBS relates to mental health and well-being at a behavioural level, by measuring occurrences of the three self discriminations in naturally occurring speech in relation to mental health, well-being, and psychological flexibility. This will be investigated using a previously developed coding framework by Atkins and Styles (2016) that examines occurrences of the three senses of self in speech or text.

Finally, the last empirical study will involve a more fine-grained analysis of self-as-context. Specifically, this study will investigate the relative importance of self-as-hierarchy and self-as-distinction for adolescent mental health, while controlling for deictic ability. This study will attempt to address some of the shortcomings of previous investigations by examining the relationship between these variables in a more, precise and controlled manner. Thesis findings will be of interest to clinicians, teachers, policy makers and youth mental health researchers.
Chapter 2: An investigation into the relationship between the three selves (Self-as-Content, Self-as-Process, and Self-as-Context) and mental health in adolescents

2.1 Introduction

2.1.1 Mental Health and Relationship to Self in Adolescents

It is estimated that globally, up to 20% of young people experience a mental health disorder in a given year (World Health Organisation, 2011). US studies have shown that three quarters of all mental health issues emerge before the age of 25 (Kessler et al., 2005) with approximately 20% of adolescents experiencing clinical depression (Lewinsohn et al., 1993) and up to 31.9% showing some form of anxiety disorder (Merikangas et al., 2010). These rates have been found to be higher in an Irish context, where by 13 years, one in three young people experience a mental health concern with that figure rising to 1 in 2 by 24 years (Cannon et al., 2013). The emergence of many issues in adolescence can be linked to a dysfunctional sense of self (Molloy et al., 2011; Bolognini et al., 1996).

The self is concept that has been widely regarded in psychology as critical to adolescent mental health and functioning (Harter, 1999; Molloy et al., 2011; Marshall et al., 2015). Over the past twenty years there has been an increase in research on the development of an individual’s sense of self during adolescence (Molloy et al., 2011; Biro et al., 2006; Harter et al., 1996). One area that has received considerable attention is the issue of self-esteem and its role in adolescent mental health (Bolognini et al., 1996; Orth, Robins, & Roberts, 2008; Rieger, Göllner, Trautwein, & Roberts, 2016). Findings from work in this area have found that negative self-esteem is implicated in the high rates of mental health concerns, and attempted suicide in this group (Sun & Hui, 2007; Lewinsohn et al., 1994).
Therefore, a number of attempts at improving mental health in adolescents have focused on building self-esteem (Mecca et al., 1989). However, most of these programmes have not only failed but it has been observed that these attempts to bolster self-esteem appeared to contribute to problematic behaviours including aggression, bullying, and narcissism (Baumeister et al., 2000; Baumeister et al., 1996; Baumeister et al., 2003). Research has also shown that attempts to maintain positive self-worth is linked with self-serving bias (Shepperd et al., 2008), and similarly rigid attachment to positive self-concepts results in young people avoiding constructive feedback and opportunities for positive development that may potentially threaten their self concept (Hong et al., 1999; Blackwell et al., 2007). Likewise, believing one’s self-concept is fixed has been linked to stress, as well as feelings of exclusion and victimization (Yeager et al., 2014; Yeager & Dweck, 2012). Notwithstanding these criticisms, some researchers argue that positive self concept is associated with a number of benefits, in particular academic achievement, and that the lack of desired outcomes associated with self esteem are a result of examining outcomes in terms of global self esteem rather than individual components of self-concept (Marsh & Craven, 2006; Marsh & O’Mara, 2008).

Despite the widespread attention and importance psychological research places on the self, self theories, such as self-esteem, have been criticized for being imprecise and lacking strong theoretical foundations (Blyth & Monroe Traeger, 1983; Stewart et al., 2012). In a review of the self and self-related processes in chronic pain research, Yu and colleagues (2015) identified three categories of self research, specifically a sense of self based on evaluation (e.g. self-esteem), self based on attributes or description (e.g. role change), and finally, a detached sense of self (e.g. self-compassion). Self-esteem was identified as the most researched self-related
variable and authors found that the conceptualisation of self-esteem across studies was inconsistent. Moreover, the authors observed an overall lack of theoretical clarity across studies with most studies providing inconsistent definitions of self, and many failing to explicitly provide a definition (Yu et al., 2015).

A well defined, theoretically coherent account of the self is necessary for an in-depth understanding of the specific processes underlying this construct. In order to foster a healthy self-concept in adolescents, it is critical that the functional units underlying the self are understood. If the underlying processes involved in the development of a healthy sense of self are not understood then the design of interventions will be unlikely to be successful. As was reflected in the results of self esteem interventions with adolescents. What is needed is a bottom-up account of the specific processes and functional units underlying a healthy self-concept (and how they are developed) allowing for empirical investigation. One bottom up approach to issues such as the self can be found under the remit of Contextual Behavioural Science (CBS).

2.1.2 Contextual Behavioural Science account of Self

From a behavioural point of view, self or self-awareness may be defined as discrimination of one’s own behaviour (Skinner, 1974). CBS builds upon this, describing human self-awareness as follows “not simply behaving with regard to his behaviour, but is also behaving verbally with regard to his behaviour” (Hayes & Wilson, 1993, p. 297). In other words verbal discrimination of one’s own behaviour (Hayes et al., 2001). According to CBS, the self is a learned behavioural repertoire unique to language-able humans, based on the learned ability to take perspective
Perspective Taking, or deictic relating, is a language-based skill that underpins many core aspects of human social and emotional development including theory of mind, empathy, compassion, self-compassion, acceptance, and a transcendent sense of self (Hayes et al., 2011; Ciarrochi et al., 2015; McHugh, 2015). Perspective Taking develops as a result of interactions wherein one talks about one’s own perspective in relation to the perspective of others (Hayes, 1984). It is learned that one’s own perspective is consistent and distinct from that of other people. CBS postulates that this ability gives rise to three different experiences of self. The CBS literature pragmatically conceptualizes the self in terms of three selves- self-as-content, self-as-process, and self-as-context, each of which has important implications for a healthy, functional sense of self (Hayes, 1995; Hayes & Gregg, 2000; Barnes-Holmes et al., 2001).

2.1.2.1 Self-as-Content

Self-as-content, also known as self-as-story or the conceptualized self, refers to one’s private thoughts and beliefs about the self, and how one relates to them (Barnes-Holmes et al., 2001; Torneke, 2010; Atkins & Styles, 2015; Atkins & Styles, 2016). It is made up of the complex evaluative/descriptive relational networks an individual develops about themselves throughout their lives. According to CBS, one internalizes conceptualized self-discrimination over time and this is functionally the same as speaking about oneself, but once internalized, the private conceptualized self is different to that which we display publicly (Atkins & Styles, 2015). For example, one might describe themselves as hardworking and reliable in a job interview to appear favorable, whereas they may privately feel that they do not possess these
Humans naturally strive for coherence and therefore attempt to organize self-descriptions and evaluations into a coherent network to create a consistent sense of self. This behaviour is reinforced early on in life by one’s social environment, as it is learned during childhood that is very helpful to describe personal characteristics, abilities, likes, dislikes etc. This allows others to predict our behaviour and provides a succinct summary of our experience. A conceptualized self that is coherent is often reinforced, as the behaviour of an incoherent self is typically less predictable (e.g. someone says they don’t like something but behaviour suggests otherwise, it is inconsistent/unhelpful for the other person involved). This idea of a conceptualized self made up of one’s evaluations and descriptions reflects the approach to understanding the self seen in the majority of mainstream psychological approaches, including the self-concept of humanistic psychology (e.g. Rogers, 1961), self-schemas of mainstream cognitivist psychology, and the narrative self (Gallagher, 2000).

As the content becomes rigid and conceptualized, this may lead to comparisons and evaluations being treated as literal truths. This often leads to content exerting some control over the behaviour, as individuals behave in accordance with these conceptualisations. This commonly results in dysfunctional behaviour (e.g. experiential avoidance). On the contrary, when one is defused (recognizes content as not literal) from self-beliefs and evaluations, it facilitates a more flexible self-concept. On this basis, researchers describe two separate components of self-as-content, self-as-rigid-content and self-as-flexible-content (Atkins & Styles, 2015; Hayes et al., 2011). Self-as-rigid-content involves abstracted psychological content that is relatively inflexible, therefore often exerting some level of control over behaviour. Self-as-flexible-content however involves descriptions that are part of a
conceptualized self but which are not rigidly impacting behaviour. Typically in this case, self-conceptualisations held lightly and as more interpretative than as literal truths, or the individual does not identify with conceptualisations (Atkins & Styles, 2015). This usually involves descriptions of self-characteristics discussed in ways suggesting alternatives are possible.

Self-as-content is considered to be overly simplified in the sense that it does not capture the full extent of our life history, and simply refers to the sense of self someone has abstracted over time through observing their own behaviour and others’ descriptions of their own behaviour. The experience of Self-as-content is akin to the “remembering self”, as it is more focused on characteristics/qualities abstracted from past experiences, rather than the experience of the self in the present moment, however there are more dynamic aspects to the self (Atkins & Styles, 2015).

### 2.1.2.2 Self-as-process

Self-as-process, or the experiencing or knowing self, refers to the ongoing of one’s moment to moment experiences of self and the flexible verbal self-knowledge in the here and now (Barnes-Holmes et al., 2001; Torneke, 2010; Atkins & Styles, 2015; Atkins & Styles, 2016), in other words behaviour occurring in the moment that constitutes what one refers to as the self- thoughts, feelings, experiences etc. Self-As-Process feeds Self-As-Content, as one must be aware of what one feels and experiences across multiple contexts. Foody, Barnes-Holmes and Barnes-Holmes (2012) describe self-as-process as being synonymous with mindfulness or present moment awareness. Neuropsychological data provides empirical support for the differentiation between Self-as-Content and Self-as-Process. Farb et al. (2007)
describes narrative self (Self-as-Content) as automatic self-reference that integrates experiences over time, while experiential self (Self-as-Process) was characterized by an awareness of the psychological present.

This ability to monitor one’s self experience from moment to moment is important for successful self-monitoring (Atkins & Styles, 2016). Self-as-Process is also important and useful for social contexts, in that it provides predictive information to others (e.g. I’m tired, I’m hungry etc.) It can be used to guide behaviour in the moment, allowing others and ourselves to predict behaviour and respond accordingly. Self-as-Process is also important for self-rules which, which are a class of rule governed behaviour used to guide one’s own actions in various life situations (e.g. noticing a particular emotional response around a certain context might tell us something important about how we feel about that situation or event, and should behave accordingly) (Atkins & Styles, 2016; Luciano et al., 2012). Issues pertaining to Self-As-Process include experiential avoidance (attempting to avoid awareness of one’s experience) and fixation with a conceptualized past or future leading to excessive rumination in the present.

2.1.2.3 Self-as-Context

The third self is known as Self-as-Context and refers to a transcendence of one’s own private events, known as psychological content, facilitating acceptance of that content (Barnes-Holmes et al., 2001; Torneke, 2010; Atkins & Styles, 2015; Atkins & Styles, 2016). Self-as-Context, also referred to as the Observing Self, Self-as-Perspective, or the Transcendent Self, is an observing sense of self, wherein the self is a perspective or observer of one’s experience. It is the viewpoint from which one’s experience and content is observed. The idea that corresponds most closely in
mainstream psychology literature to Self-as-Context is meta-cognition or executive functioning (observing one’s own thought processes). The concept of Self-as-Context according to CBS is brought about as a result of deictic relational responding, as competencies in deictic relations allow us to observe and take perspective on our experience. The experience of self-as-context is the invariant in all perspective discriminations (Foody et al., 2012).

It is the pure awareness or context of experience, which exists pre-verbally (Hayes, 1984) and is an ever present content-less experience as it cannot be observed. It is known as the transcendent self due to it being difficult to verbally describe or contact, despite it being a product of relational framing and on this basis, has been described as being synonymous with spirituality (Barnes-Holmes, Hayes, & Gregg, 2001). Self-As-Context facilitates acceptance of unwanted psychological experience and pain. This has important implications for relationships with others and social connection as it facilitates processes such as compassion, intimacy and acceptance/willingness. Deficits in Self-As-Context lead to an array of social and psychological issues such as unstable identity or sense of self, issues with intimacy or connecting with others, as well as lack of empathy or self-compassion (McHugh, 2015).

CBS postulates that in order to minimize rigid attachment to self-content, one must learn to switch flexibly from self-as-content to self-as-process, and from self-as-process to self-as-context. As verbal competency increases, the more robust the self becomes and in turn fluency increases when operating as self-as-process (or self-as-context) with regard to psychological content (Foody et al., 2012; Atkins & Parker, 2012; Atkins & Styles, 2015). By undermining this verbal relating, the processes of self-as-process and self-as-context facilitate behaviour that is more dependent on the
specific environment and allows an increased behavioural repertoire (Vilardaga, 2009).

### 2.1.3 Empirical Investigations into the CBS account of self

While the three selves as conceptualized by CBS have an abundance of theoretical support, there was a dearth of empirical investigations on the topic until recently. Atkins and Styles (2016) coded qualitative interviews in a sample of 29 adults for incidents of a conceptualized self (negative Self-as-Content), experiential self (Self-as-Process), and an observing self (Self-as-Context). They examined the transcripts as predictive of positive affect and well-being. They observed that an observing sense of self (self-as-context) is predictive of lower depression long-term, while an overly conceptualized sense of self (self-as-content) is related to higher stress and more negative affect. Similarly Yu et al. (2017) found that increased self-as-context was related to improved functioning and lower depression in a sample of 412 adults with chronic pain.

There have also been specific investigations into 2 distinct types of Self-as-Context. Two types of relating have been found to give rise to Self-as-Context, and each of which has separate implications for mental health (Foody et al., 2013; Luciano et al., 2011; Foody et al., 2015; Gil-Luciano et al., 2017). The first, known as distinction, involves one relating to one’s own private psychological content as distinct and separate to themselves, while the second, known as hierarchy, involves the individual viewing themselves as the “container” or context of their private events, facilitating observation of ongoing psychological experience from a constant perspective, facilitating acceptance of said psychological experience.
Foody et al. (2013; 2015) demonstrated in two investigations that hierarchy was associated with less distress relative to distinction in samples of university students, while Gil-Luciano et al., (2017) found that hierarchy was associated with greater distress tolerance in a sample of adults. Luciano et al. (2011) similarly observed greater improvements in problem behaviour, acceptance, and psychological flexibility for hierarchy relative to distinction in a sample of 15 clinically “at-risk” adolescents \( (m = 13.66 \text{ yrs}) \). Although, no study has investigated these self-discriminations in a non-clinical sample of adolescents, these studies highlight the relationship of the three selves to mental health. On the basis of this, and due to the importance of a sense of self during adolescent development (Harter, 1999; Marshall et al., 2015), it is pertinent that these self-discriminations are investigated in relation to mental health in a non-clinical typically developing sample of adolescents. Findings may have important implications for self-based therapeutic work or self-based interventions with adolescent populations.

2.1.4 The Present Study

Due to the apparent importance of a healthy, functional self to adolescent mental health, this study has two primary aims. The first is to investigate the relationship between three self-related variables as articulated by CBS, specifically self-as-content, self-as-process, self-as-context, and mental health, in order to understand how each functionally distinct type of self-discrimination relates to mental health, and the strength and direction of these relationships. Higher levels of self-as-context, higher self-as-process, and a less conceptualized self-as-content are predicted to be related to lower levels of distress. The second is to examine the ability of a
model of the three selves according to CBS, to predict mental health in adolescents. It is predicted that a more flexible relationship to self-as-content, higher self-as-process, and higher self-as-context will be predictive of lower levels of distress in adolescents. Participant gender will also be controlled for due to the well documented gender differences in self-relating, and their implications for mental health during adolescence (Crocetti et al., 2016; Dooley & Fitzgerald, 2012; Bolognini et al., 1996).

As no specific measure of self-as-content exists to date, the present study will use the Self-Kindness Subscale of the Self Compassion Scale-Short Form. Self-kindness in this sense is described as taking a non-judgmental attitude towards unwanted aspects of the self, and treating them with kindness, rather than with harsh judgment. It means less evaluation of the self (positive or negative) with a greater focus on patience and understanding (Neff, 2003; Raes, Pommier, Neff, & Van Gucht, 2011). This mirrors the idea of flexible-self-as-content, wherein one is defused from self-content, and limiting self-beliefs are not held rigidly. Therefore, the Self-Kindness subscale will be used as a measure of flexible self-as-content.

Likewise, to the best of the author’s knowledge, there is no specific measure of self-as-process. Self-as-process has been described as awareness of the self in the present moment and is considered synonymous to mindfulness (Foody et al., 2012). Foody et al. (2012, p.19) give the following description of self-as-process “This sense of self is experiential awareness of the present moment and thus facilitates acceptance of thoughts, feelings, and emotions as what they are in that moment and nothing else (e.g., in past or future, etc.)”. For this reason, a measure of mindfulness will be an appropriate test of self-as-process. The Child and Adolescent Mindfulness Measure, a measure of mindfulness in young people, will be used to measure self-as-process in the present study (Greco, Baer, & Smith, 2011).
Self-as-Context will be measured using the Self-as-Context Scale (Gird, Zettle, Webster, & Hardage-Bundy, 2012). This scale is the only specific measure of Self-as-Context at the time of testing and while there are no published studies where it is used with adolescent samples, it has been found to have good validity and reliability in adult populations (Gird & Zettle, 2013). Although, differences have been observed in different types of self-as-context as discussed previously, scale authors do not describe the scale as differentiating between distinction and hierarchy. However, scale items are more consistent with hierarchical relating (e.g. 'Even though there have been many changes in my life, I’m aware of a part of me that has witnessed it all.')

Finally, the Depression Anxiety and Stress Scale-21 will be used to measure mental health in adolescents. This scale has been used to measure mental health and well being in previous research looking at the three selves (Atkins & Styles, 2016) and has been found to be appropriate for use with both clinical and non-clinical populations (Antony, Bieling, Cox, Enns, & Swinson, 1998; Szabo, 2010), as well as adolescent samples (Mellor et al., 2015; Szabo, 2010).

2.2 Method

2.2.1 Ethics

Ethical approval was granted from the University College Dublin Human Research Ethics Committee – Humanities (HS-14-02-Moran-McHugh). All requirements were complied with in full as outlined by the research ethics committee. Participants who were under 18 years needed to provide written parental consent and participant assent to partake in the research. Parents and guardians were given information sheets and consent forms in advance of the study. Only those who
presented a signed form, on or prior to the day on which the study took place were
allowed to participate

As some of the measures were of a sensitive nature and asking questions
relating to mood and mental health, participants were provided with contact details of
counselling services, including Headstrong, the Samaritans, AWARE, and Childline
(phone and email), in case of the event that they became upset by anything. School
guidance counselors were informed that the study would be taking place prior to
commencement. They were also given the option of calling a parent if they wished to
do so. Participants were not asked to provide their name or any other identifying
information at any time and every effort was made to protect the identity of the
participants involved in the study.

2.2.2 Participants

176 adolescents ranging in age from 15-19 ($M=15.69; SD= .561; 54$ male)
from Irish Post Primary schools participated in this study. A selection of schools that
offered Transition Year in Counties Louth and Dublin were selected at random from
the online Department of Education database and invited to participate in the research.
Transition Year students were selected, as this is a non-exam year and therefore
caus[ed] the least disruption to class

Transition Year refers to a one year programme offered in most Irish
secondary schools. It is the fourth of six years of secondary school in Ireland. The
majority of transition year programmes offered are optional and function to bridge the
gap between Junior and Leaving Certificate exam cycles. The Transition Year
programme intends to allow students to explore their options in terms of subject
choice for the Leaving Cert cycle, to sample a variety of work experience opportunities, as well as to engage in personal development activities (sport, home economics etc.) (See Jeffers, 2011).

2.2.3 Measures

**Predictor Variables**

*Self Compassion Scale Short Form* (SCS-SF; Raes et al., 2011) is a 12 item self-report measure of self-compassion. The SCS-SF is a shortened version of the Self Compassion Scale (Neff, 2003). Previous studies show the two scales have a near perfect correlation (Raes et al., 2011). The scale is made of 6 subscales measuring self-kindness (“I try to be understanding and patient towards those aspects of my personality I don’t like”), self-judgment (“I’m disapproving and judgmental about my own flaws and inadequacies”), common humanity (“I try to see my failings as part of the human condition”), isolation (“When I’m feeling down, I tend to feel like most other people are probably happier than I am”), mindfulness (“When something painful happens I try to take a balanced view of the situation”) and over-identification (“When I fail at something important to me I become consumed by feelings of inadequacy”), with the negative subscales reversed scored. Items are answered on a 5-point Likert scale ranging from “Almost never” to “Almost always” with higher scores indicative of higher self compassion. The SCS-SF has been shown to have good reliability (Raes et al., 2011). The Self Kindness subscale (SCS-Self) measures how one relates to the self-content, and is calculated by summing items from the self kindness subscale and the reverse scores of the self judgment subscale. Higher scores on the Self Kindness subscale are indicative of a more flexible, defused self-concept.
Cronbach’s alpha for the self subscale is .581. The Self Kindness subscale will be used to measure self-as-content in the present study.

*Child and Adolescent Mindfulness Measure* (CAMM; Greco et al., 2011) is a 10 item self-report measure of mindfulness in young people. Items are scored on a 5-point Likert Scale with responses ranging from “Never True” to “Always True”, and include statements such as “I get upset with myself for having feelings that don’t make sense” and “I tell myself that I shouldn’t feel the way I’m feeling.” Lower scores on the CAMM indicate higher levels of mindfulness with higher scores indicating higher distraction. The CAMM has been shown to have good reliability and validity (Greco et al., 2011). Cronbach’s alpha for the present study was .819. The CAMM will be used as a measure of self-as-process in the present study, with lower scores on the CAMM indicative of higher self-as-process.

*Self-as-Context Scale* (SACS; Gird et al., 2012) assesses self-as-context using an 11 item self-report scale. Items include statements such as “I have a perspective on life that allows me to deal with life’s disappointments without getting overwhelmed by them” and “Even though there have been many changes in my life, I’m aware of a part of me that has witnessed it all.” Items are scored on a 7-point Likert scale with responses ranging from “Strongly Agree” to “Strongly Disagree.” Higher scores are indicative of higher levels of self-as-context. This scale has been found to have good validity and reliability (Gird, 2013). Cronbach’s alpha for the present study was .819.

**Outcome Variable**

*The Depression Anxiety and Stress Scale-21* (DASS-21; Lovibond, S.H. &
Lovibond, P.F., 1995) was used to measure depression, anxiety and stress. The DASS is a 21 item self-report measure answered on a 4-point Likert scale, made up of 3 subscales, measuring depression (“I couldn’t seem to experience any positive feeling at all.”), anxiety (“I was aware of dryness of my mouth”), and stress (“I found it hard to wind down). Higher scores indicate higher levels of each. The three subscales may be added for an overall measure of mental health. Higher scores are indicative of higher overall distress. Research has shown the scale to have acceptable to excellent reliability for both clinical and non-clinical samples (Antony et al., 1998; Szabo, 2010). Cronbach’s alpha for the overall scale for the present study was .916.

2.2.4 Design and Procedure

This study used a quantitative, cross-sectional design. Participants completed the measures online using www.Qualtrics.com (Qualtrics Labs Inc., 2009) an online research tool during class time in the school computer room. They were instructed to focus solely on their own participation and to avoid looking into their neighbours’ computer due to the sensitive nature of the study. If any student chose to stop or withdraw their participation they were told to discreetly inform the researcher or class teacher and were instructed to begin their homework. Participants were asked to attract the attention of the researcher or class teacher if they encountered any difficulties or did not understand any part of the study.

2.2.5 Data Analysis

Pearson’s Product Moment correlations were used to investigate the relationship between study variables and hierarchical multiple regressions were used
to examine the ability of the Three Selves (SCS-Self; CAMM; SACS) to significantly predict mental health (DASS-21).

Sequential multiple regressions examined the differential effect of each predictor after controlling for each other, thereby, evaluating the relative importance of each. One of the goals of Acceptance and Commitment Therapy is to move clients away from a rigid conceptualized self, towards self-as-process, and ultimately towards self-as-context for improved psychological and behavioural outcomes (Foody et al., 2013). Variables were entered into the regression model on this basis. Gender was entered first to control for any possible gender effects. This was followed by SCSSelf (Self-as-Content), then SCSSelf and CAMM (Self-as-Process), and finally SCSSelf, CAMM, and SACS (Self-as-Context).

2.3 Results

2.3.1 Descriptive statistics

Data were entered into SPSS (Statistical Package for the Social Sciences) Version 20 file. Means, standard deviations, ranges and normality values are reported in Table 2. Skewness and Kurtosis values fell in the normal range for all measures (George & Mallery, 2001). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. All predictor variables found to have acceptable inter-item correlation levels, ensuring no violation of multicollinearity (r=.9 or above; Pallant, 2010; tolerance= .01 or less; Brace, Kemp, & Snelgar, 2006). No significant outliers were identified in the data based on z scores +/- 3.29 (Tabachnick & Fidell, 2007). For multiple regression, Tabachnick and Fidell (2007) suggest that the number of participants included in a sample be the number of predictors times 8, plus 50. The current study sample exceeds this number (n= 176). There were no missing data in the present study, bar
the score for one participant on one item on the SACS, which was not recorded due to a technological error with the online survey. As there was only one missing item, mean substitution was deemed suitable to replace the scale item for this participant.

Table 2 Descriptive Statistics and Normality Scores for Study 1 variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD) Total</th>
<th>M (SD) Males</th>
<th>M (SD) Females</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Content (SCS-Self)</td>
<td>11.26 (2.97)</td>
<td>12.32 (2.67)</td>
<td>10.77 (3.02)</td>
<td>5-19</td>
<td>.059</td>
<td>-.515</td>
</tr>
<tr>
<td>Self-as-Process (CAMM)</td>
<td>18.40 (7.38)</td>
<td>15.76 (5.71)</td>
<td>19.59 (7.74)</td>
<td>1-37</td>
<td>.041</td>
<td>-.142</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>52.46 (9.58)</td>
<td>55.35 (7.61)</td>
<td>51.18 (10.09)</td>
<td>24-72</td>
<td>-.632</td>
<td>.043</td>
</tr>
<tr>
<td>Distress (DASS-21)</td>
<td>18.49 (11.52)</td>
<td>14.13 (9.82)</td>
<td>20.47 (11.58)</td>
<td>1-58</td>
<td>.710</td>
<td>.170</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation.

2.3.2 Correlations for Self and Mental Health variables

Table 3 Correlations on measures of Self-as-Content, Self-as-Process, and Self-as-Context, Mental Health and Gender

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>.554**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>-.476**</td>
<td>-.336**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>-.527**</td>
<td>-.399**</td>
<td>.389**</td>
<td></td>
</tr>
</tbody>
</table>
Higher levels of overall mental health issues as measured by the DASS 21 were related significantly to lower self-as-process as measured by the CAMM (r = .554, *p < .001), lower self-as-context as measured by the SACS (r = -.476, *p < .001), and a more conceptualised self-as-content as measured by the SCS-Self (r = -.527, *p < .001). Higher self-as-process scores were related to higher scores on self-as-context (r = -.336, *p < .001), and a less conceptualised self-as-content (r = -.399, *p < .001).

Higher self-as-context was related to a less conceptualized self-as-content (r = .389, *p < .001). Finally, female participants were found to have higher distress (r = .258, *p < .001), while males participants had higher self-as-process (r = .243, *p < .001), less conceptualized self-as-content (r = -.201, *p < .001), and higher self-as-context (r = -.238, *p < .001) (See Table 3 for Summary).

### 2.3.3 Hierarchical multiple regression with Self variables as predictors of mental health

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Adjusted $R^2$</th>
<th>$\Delta R^2$</th>
<th>$\beta$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.061</td>
<td>.066**</td>
<td>.258**</td>
<td>[2.789, 9.918]</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.288</td>
<td>.230**</td>
<td>.141*</td>
<td>[.268, 6.660]</td>
</tr>
<tr>
<td>Self-as-Content</td>
<td></td>
<td></td>
<td>- .493**</td>
<td>[-2.369, -1.383]</td>
</tr>
</tbody>
</table>
2.3.4 Summary of Results

Hierarchical multiple regression tested the ability of a model of the three selves as conceptualized by RFT, self-as-content, self-as-process, and self-as-context (SCSSelf; CAMM; SACS) to predict the criterion variable Mental Health (DASSTot) in adolescents, while controlling for participant gender (See Table 4 for summary). A significant model emerged from the overall analysis of the final step, $F(4, 175) = 37.843; p < .001$, indicating that the three selves model is predictive of mental health in adolescents. The first variable entered into the model was gender which accounted for 6.6% of variance, $\Delta F (1, 175)= 12.377; p < .001$.

In the second step, self-as-content was added to the model which accounted for an additional 23% of variance, $\Delta F (2, 175)=36.379; p < .001$. In the third step, self-as-process was added, accounting for an additional 12.8% of variance, $\Delta F (3, 175)=42.178; p < .001$. Finally, self-as-context was added, accounting for an additional 4.6% of variance, $\Delta F (4, 175)=37.843; p < .001$. Overall, the model accounted for 47% of variance with all three self variables emerging as significant predictors, however gender did not emerge as a significant predictor in the third and final steps.
Table 5: The unstandardized and standardized regression coefficients for the significant variables entered into the Self model (N=176)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Content</td>
<td>-1.070</td>
<td>.244</td>
<td>-.281</td>
<td>.000</td>
</tr>
<tr>
<td>Self-as-Process</td>
<td>.541</td>
<td>.098</td>
<td>.348</td>
<td>.000</td>
</tr>
<tr>
<td>Self-as-Context</td>
<td>-.284</td>
<td>.074</td>
<td>-.238</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note: B= standardized beta; SE= Standard Error.

Unstandardized and standardized regression coefficients for significant predictor variables are summarized in Table 5. To summarize, measures of the three self discriminations according to CBS were found to relate significantly to adolescent mental health, while a model of the three selves was found to be predictive of mental health in adolescents with a total of 47% of variance accounted for and all three self variables found to significantly contribute to the model (See Figure 1). While all three self variables significantly contributed to variance in each step, gender only emerged as a significant predictor in the first two steps, suggesting that self variables were predictive of distress above and beyond participant gender.
The current study had two primary aims. The first was to investigate the role of the self in relation to adolescent mental health. Higher levels of self-as-context, higher self-as-process, and a less conceptualized self-as-content were found to be related to lower levels of distress as measured by the DASS 21. The second aim of this study was to investigate the ability of a model of a healthy, functional self-based on evidence from CBS to predict mental health in adolescents. This model, comprised of the three selves according to CBS (i.e. self-as-process; self-as-content; self-as-context), was supported with results indicating that a more flexible relationship to self-as-content, higher self-as-process, and higher self-as-context were related to lower levels of mental health issues in adolescents, while controlling for participant gender. While gender did not significantly contribute to variance above and beyond a
model of the three selves, gender alone emerged as a significant predictor of adolescent mental health with higher distress for female participants indicating that future investigations should account for participant gender where possible.

Findings from the present study were in line with Atkins and Styles’ (2016), whose findings that self-as-context is predictive of lower depression long-term, while an overly conceptualized sense of self indicates increased distress and lower positive affect. Likewise, it is consistent with that of Yu et al. (2017) who observed that increases in self-as-context were associated with reductions in depression.

It has been suggested that the three selves hold potential for the development of more effective self interventions (Atkins & Styles, 2015) and findings from this study support the relationship between a functionally healthy self from a CBS point of view and lower distress. On the basis of these results, future studies should directly investigate the impact of training a healthy, flexible self on adolescent mental health by developing and piloting an intervention based on the three selves. Such an intervention should provide a theoretically grounded, evidence-based means of developing a psychologically healthy, flexible self. This should facilitate competencies such as self-compassion and psychological flexibility (Atkins & Styles, 2016; Atkins, 2013; McHugh, 2015), thereby having positive implications for mental health and well being in adolescents. It has also been suggested that one’s relationship to self has important implications for relationships with others. Atkins and Parker (2012) argued that changing self relations had implications for the relationship between compassion for self and others. Specifically, improved awareness of one’s own responding (good and bad) may increase empathy.
2.4.1 Strengths & Limitations

There were several strengths to the present study. Measures that were age appropriate and used straightforward language were chosen where possible for the sample under investigation. Although evidence suggests that adolescents typically provide reliable self-reports of internal experiences (Loeber, Green, & Lahey, 1990) difficulty with scale items may result in choosing inaccurate responses on study measures. The CAMM, which was used to measure self-as-process in the present study, was designed specifically for use with young people (Greco et al., 2011). Likewise, the DASS 21 (Mellor et al., 2015; Szabo, 2010) and Self Compassion Scale (Neff & McGehee, 2010) have been shown to be suitable for use with adolescent populations. While there have been no published studies examining the use of the Self-as-Context Scale with adolescents, strong reliability scores were observed in the present study. Use of an online computer based survey also meant increased levels of privacy and confidentiality for participants and thereby, a reduced risk of participants altering their responses for fear of classmates seeing what they had written, especially given the sensitive nature of the subject matter.

One limitation that emerged from the present study was that the reliability score for the Self-as-Content measure (.581) fell outside the range of what is considered a good reliability score (.70). Raes et al., (2011) who constructed and validated the Self Compassion Scale-Short Form, similarly found the Self-Kindness subscale (specifically the self-kindness items) to have low internal consistency ($\alpha$=.55), and attributed this to choosing items from the original Self-Compassion Scale (Neff, 2003) that were not highly inter-correlated but that were deemed more appropriate for preserving the full breadth of the original scale. It was also observed that the subscale had good psychometric properties otherwise (Raes et al., 2011).
Another reason for this may also be the low number of items in the subscale (4), which has been shown to artificially decrease Cronbach’s alpha score (Graham, 2006).

### 2.4.2 Implications

Another issue in the present study, which frequently presents in CBS research, is the use of middle level terms (Foody et al., 2013). The terms used to describe the three self-discriminations are middle level terms, which are terms referring to theoretically specific, non-technical terms, which have not come about as a result of basic scientific analysis (Barnes-Holmes et al., 2015). While these are typically functional and reliable measures of the phenomena under investigation, they are proxies, rather than direct measures of the behaviours in questions and therefore may result in loss of precision and depth (Barnes-Holmes et al., 2015). Future studies should investigate the functional units underlying these self-discriminations at a basic level, by specifically looking into the deictic relational units that give to flexible selfing behaviour. Deictic relating is particularly important for self-as-context, as this experience requires the psychological “I” (observing from the perspective of I-Here-Now) to transcend and take perspective on psychological content (thoughts and feelings observed as there-then) (Foody et al., 2012; Barnes-Holmes et al., 2001).

McHugh, Barnes-Holmes and Barnes-Holmes (2004) found that adolescents displayed deficits on deictic tasks when compared with their adult counterparts, indicating that sophisticated levels of perspective taking are not as developed in this group as they are with older adults. As it is critical that basic deictic competencies are in place to develop flexible perspective taking and ultimately flexible selfing behaviour, future research should directly examine deictic ability and its implications.
for selfing behaviour in future self research with adolescent populations. McHugh et al.’s (2004) seminal study outlines a specific protocol to assess and train these abilities, which a number of studies have successfully applied (Weil et al., 2011; Vilardaga et al., 2012; Villatte et al., 2010). However, no study has attempted to train these abilities with a sample of typically developing adolescents to date. On this basis, the next step is to develop a deictic training protocol for use with typically developing adolescents. In line with recent attempts to create deictic protocols that are more naturalistic and use everyday scenarios and language (Davlin et al. 2011, Gilroy et al., 2015; Vilardaga et al., 2012), future studies should attempt to create a protocol for adolescents that is engaging and relevant to everyday situations.

While the present study identified Self-as-Context as predictive of adolescent mental health, empirical evidence suggests that there are two patterns of relational framing that give rise to self-as-context, specifically distinction and hierarchy. Self as Context interventions that emphasize hierarchical relational responding (e.g., you are a container of your experiences) have been found to be associated with better mental health outcomes relative to Self as Context interventions that emphasize relations of distinction (e.g., you are not your thoughts and feelings), in a population of adults, university students and clinically at-risk adolescents (Luciano et al., 2011; Foody et al., 2013; Foody et al., 2015; Gil-Luciano et al., 2017). Until recently, no measure of these two types of selfing repertoires existed. However, following testing for the present study, Yu, McCracken and Norton (2016) developed the Self Experiences Questionnaire (SEQ) that differentiates between Self as distinction and Self as observer (hierarchy) using two separate subscales. Therefore, future studies should investigate the relative impact of each of these two types of relating for adolescent mental health, in typically developing adolescent samples. This could provide crucial
information for the development of future self-based interventions. Overall the findings from this study support the relationship between the three functionally different patterns of selfing behaviour according to CBS and better adolescent mental health, giving support to development of CBS self interventions for young people.
Chapter 3: Training a Flexible Self and Perspective-Taking in Adolescents: Piloting a Brief School Based Intervention

3.1 Introduction

3.1.1 School based interventions for adolescents

With youth mental health problems at such high rates (Kieling et al., 2011; Cannon et al., 2013), in recent years researchers have invested heavily in Universal Type Programmes (delivered to students regardless of whether symptoms or mental health concerns have been identified) as a cost-effective and efficient means of preventing and ameliorating mental health concerns and promoting well being in adolescents (Mass Levitt et al., 2007). Use of online web based programmes has been particularly on the rise as they allow for cost-effective, confidential means of delivering intervention programmes (Oh et al., 2008; Clarke et al., 2015). Web based programmes also eliminate the need for training staff or bringing in outside mental health professionals, while allowing for wide reaching programme dissemination. However, a recent Cochrane review revealed that while Universal programs are effective short-term, they do not have long lasting measurable outcomes (Merry et al., 2011). A key issue seems to be that adolescent interventions lack strong theoretical foundations. While many programmes have also focused heavily on reducing mental health problems, it’s also important to target skills building (Durlak et al., 2011).

3.1.1.1 School-based interventions targeting the self

A lot of the issues faced by adolescents are connected to the considerable changes undergone cognitively, biologically, and emotionally (Rutter & Rutter, 1993;
Blakemore & Choudhury, 2006). This is linked to considerable change in how one relates to oneself (Molloy et al., 2011; Biro et al., 2006), which has implications for mental health and well-being during this time (Harter, 1999; McCullough et al., 2000). Most self research has focused on self-esteem (Yu et al., 2015) with the relationship between higher self-esteem and positive mental health well-documented in adolescents (Crocker & Wolfe, 2001; Bolognini et al., 1996; Molloy et al., 2011).

As a result a large number of adolescent interventions have targeted self-esteem, however a review by Baumeister et al. (2003) examining various efforts targeted at the self and improving self-concept in young people, specifically through attempts to bolster self-esteem, found that not only did such programmes fail to produce desired results across a range of outcomes, they also contributed to problematic behaviours. A major reason for this is that the concept of self-esteem lacks well-defined theoretical underpinnings and thorough understanding of the units involved (Stewart et al., 2012; Yu et al., 2015).

In order to develop effective self-based interventions that create change in meaningful ways, an indepth knowledge of the processes involved and how these processes can be manipulated to create change in useful ways is critical. One framework that offers such an account is Contextual Behavioural Science (CBS), and the scientific theory underlying it, Relational Frame Theory (RFT). Findings from thesis Study 1 gave support to the CBS account of self as predictive of mental health in adolescents.

3.1.1.2 School-based interventions targeting perspective-taking and socio-emotional development
Social relationships and the changes in how one relates to others are also critical during this period, with consideration of the perspectives of self and other undergoing significant development (Crone & Dahl, 2012). It has been shown that typically from 12 years onwards young people have better understanding of others’ intentions, and increasingly take other people’s perspective (Guroglu, van den Bos, & Crone, 2009) and from between the ages of 15 to 17 increases in perspective-taking occur (Davis & Franzoi, 1991).

Neuropsychological evidence suggests that perspective-taking increases during adolescence as a result of cognitive development and maturation of relevant brain regions in order to adapt to new quickly developing social environments. (Blakemore, 2008; Van der Graaff et al., 2014; Crone & Dahl, 2012). Moreover, neuropsychological researchers argue that the adolescent brain is biologically prepared for social-affective development as it is sensitive to experiential input in terms of social cognition, providing unique opportunities for developing social-affective learning (Blakemore & Choudhury, 2006; Crone & Dahl, 2012). On this basis, they called for early intervention programs aimed at increasing social-affective skills and prosocial tendencies during this period of development.

Durlak and colleagues’ review of 213 Social and Emotional Learning programmes, found promising results with school based programmes producing gains in social and emotional competencies such as empathy and conflict resolution, however a lack of theory driven research was identified as a considerable issue and authors stressed the need for further theoretically grounded research (Durlak et al., 2011).

As with self-based approaches, approaches targeting socio-emotional skills such as perspective-taking lack strong theoretical foundations. In order to create
change in meaningful ways a theoretically grounded, bottom-up approach to understanding these processes that is empirically testable is needed. As mentioned previously, by providing a theoretically coherent account that identifies functional processes and manipulable variables, CBS allows for investigations in useful and practical ways, and creating progress at both a theoretical and applied level.

3.1.2 RFT approach to the Self and Flexible Perspective Taking

According to RFT, deictic relational responding or flexible perspective-taking is a skill unique to language-able humans which provides the basis for the development of a complex, dynamic “self” repertoire, as well as the ability to understand and relate to others (McHugh & Stewart, 2012). According to Hayes (2011), this dynamic self repertoire (broadly referred to as self-as-context) involves the flexible social extension of deictic framing facilitating observation from a point of view that enables a variety of processes including acceptance, compassion, defusion, and a transcendent sense of self. From an RFT point of view, the process of deictic relating that gives rise to a healthy, flexible sense of self, is also critical for the development of processes such as psychological flexibility, empathy and transcendence of psychological content (Barnes-Holmes et al., 2001; McHugh & Stewart, 2012; McHugh, 2015).

3.1.2.1 Deictic Relational Responding

According to RFT, this deictic relating initially develops in early childhood (Barnes-Holmes et al., 2001). As children grow older, they learn to accurately respond to the words I and YOU, and thereby learn to relate one’s own behaviour and
compare to that of others. In development terms, one learns to discriminate one’s own behaviour as distinct to that of others through learning to relate deictically. The three most important deictic relations are interpersonal (I versus You), spatial (Here versus There), and temporal (Now versus Then). These develop as one learns to respond appropriately to questions such as “What am I doing here?”, “What were you doing yesterday?”, and “Where will you be tomorrow?” One learns through answering such questions one’s own perspective is distinct from that of other people and is consistently observed from the viewpoint of I-HERE-NOW. Upon reaching adolescence, these deictic repertoires become increasingly fluid. A self concept is abstracted as a result of this relating, as well as the ability to understand the perspective of others.

McHugh et al. (2004) examined the developmental profile of the emergence of deictic relational responding across the lifespan in typically developing populations. The study observed that while adolescents outperformed younger counterparts on deictic trials, there were deficits present when compared with adults, indicating that deictic ability is not fully developed in adolescence. This study employed a protocol wherein accuracy was tested on deictic trials of varying levels of complexity, specifically simple (identification of the perspective), reversed (the perspective is reversed), and double-reversed (the perspective is reversed twice). These repertoires have been investigated across various populations where deficits or impairments may be present (Barnes-Holmes, McHugh, & Barnes-Holmes, 2004; Rehfeldt et al., 2007; Weil et al., 2011) as well as across different age-groups (McHugh et al., 2004; McHugh et al., 2006; McHugh et al., 2007). A number of studies have demonstrated that not only can deictic relations be successfully trained but that this type of training may generalize to other types of task.
Heagle and Rehfeldt (2006) trained deictic relations in a sample of typically developing children and found that training generalized to a typical everyday context when participants were asked deictic style questions in a conversational manner. Rehfeldt et al. (2007) observed that reinforced relational responding led to improved deictic performance in a sample of children diagnosed with autistic spectrum conditions. Weil et al., (2011) found that deictic competencies could be successfully trained in adults diagnosed with schizophrenia and that this training generalized to improved performance on Theory of Mind tasks (a mainstream psychological account of perspective taking (Premack & Woodruff, 1978)). Lovett and Rehfeldt (2014) observed improvements in deictic ability as well as various levels of generalization to a natural social interaction in a sample of adolescents with Asperger’s Syndrome, however they did not observe any significant increase in performance on Theory of Mind tasks. Likewise, Jackson et al. (2014) observed improvements in deictic ability in a sample of autistic children following training, however it was found that this did not generalize to performance on ToM perspective-taking tasks. Weil et al. (2011) trained deictic relations in typically developing young children and observed improvements in deictic tasks, and in ToM tasks, following increased proficiency in reversed and double-reversed relations.

Davlin et al. (2011) successfully remediated deictic deficits in typically developing children via multiple exemplar training using children’s stories and most recently Gilroy et al. (2015) trained deictic repertoires to proficiency in a sample of autistic children using a naturalistic story approach. Similarly, Belisle et al. (2016) successfully trained single reversal deictics and observed derivation of the inverse relation (I-You to You-I) in three adolescents with autism. Participants were also found to demonstrate transfer of stimulus functions to untrained formally dissimilar
stimuli. To date, no study has attempted train deictic repertoires in a sample of typically developing adolescents. Montoya-Rodríguez, Molina and McHugh (2016) observed in their review of empirical investigations into deictic relational responding that roughly half of investigations were non-manipulative, and focused on measurement. While these type of studies are informative in nature, by not identifying manipulable variables the amount of progress that can be made at an applied level is limited. They also observed a limited number of outcomes variables across training studies, emphasizing the need for testing the impact of training across a wider range of variables, consistent with the functional contextualist goal of scope.

On this basis, the present study will adapt McHugh et al.’s (2004) measure of deictic relational ability (i.e., perspective taking) for use with an adolescent group. Consistent with the efforts of recent studies to develop protocols that are naturalistic and generalize to everyday life (e.g. Davlin et al. 2011, Gilroy et al., 2015), an interactive trial format is used (i.e., using video clips rather than solely pen and paper written tasks). Due to participant fatigue (Weil et al., 2011) and practicality issues associated the longer deictics tasks, the number of deictic trials will be reduced to allow for more time efficient testing. The time intensive nature of this type of training has also meant that the majority of previous studies have used small samples (n=3). Use of a briefer deictic measure will facilitate easier replications with larger study samples.

3.1.2.2 Self as Deictic Relational Responding

From an RFT point of view, deictic relating gives rise to the three distinct experiences of self (or selfing behaviours) (Foody et al., 2012). These are self-as-content wherein one’s psychological content is framed as Here-Now, self-as-process
wherein one’s content is also here-now but with reduced transformation of stimulus functions (in order words content is experienced in a less conceptualized and more flexible, experiential manner compared to with self-as-content), and self-as-context where one’s psychological content is there-then. Deictic relating is particularly important for self-as-context as this experience requires the psychological “I” (observing from I-here-now) to transcend and observe one’s psychological content (observed as there-then) (Foody et al., 2012; Barnes-Holmes et al., 2001). As self-as-content becomes less conceptualized and more flexible, and fluency in self-as-process and self-as-context increases, increased sensitivity in responding to one’s context occurs resulting in a more flexible behavioural repertoire (Foody et al., 2012).

The findings from Study 1 in the present thesis demonstrate the importance of these self discriminations according to RFT for mental health in adolescents, with more flexible selfing behaviours significantly predictive of lower levels of distress. Similar findings have been observed in investigations with adult samples. Aktins & Styles (2016) found that increased self-as-context was predictive of lower depression while Yu et al. (2017) found increased self-as-context to be related to improved functioning and decreases in depression in adults with chronic pain. Despite the limited number of investigations into self-as-context, evidence for improved psychological outcomes is promising to date, particularly for depression.

3.1.3 Theory of Mind

The most prominent approach in the psychological literature to understanding perspective-taking in recent years has been Theory of Mind (ToM). Premack and Woodruff (1978) define ToM as the ability to attribute mental states to oneself and
others. According to ToM, perspective-taking is based on the ability to mentally represent the mind (including beliefs, intentions, feelings) of another (Howlin, Baron-Cohen, & Hadwin, 1999). These mental states are mental representations of reality which determine behaviour. While this ability exists in young children, it is not developed relative to adult counterparts.

Corcoran’s Hinting Task is one of the most widely used ToM tasks with older populations. The Hinting Task involves asking participants to infer the intentions and mental states of characters presented who are using indirect speech. The task involves participants reading about (or being read) a scenario involving a dialogue between two characters, and they must determine what one of the characters is actually suggesting or hinting at. For example, one of the items presents the following scenario:

Paul has to go to an interview and he’s running late. While he’s cleaning his shoes, he says to his wife Jane “I want to wear that blue shirt but its very creased.” What does Paul really mean when he says this? From this excerpt, the participant must deduce what Paul really wishes for his wife to do, demonstrating that they understand his mental process. The Hinting Task has been used and contrasted with deictics tasks in research testing perspective-taking in young adults, typically in populations where deficits are present (Villatte, Monestès, McHugh, Freixa i Baqué & Loas, 2008; Villatte, Monestès, McHugh, Freixa i Baqué & Loas, 2010). Accuracy on McHugh et al.’s protocol has been shown to be predictive of accuracy on Corcoran et al.’s Hinting Task (Vilatte et al., 2008)

Theory of Mind research identifies five levels of understanding of informational states that children must acquire in order to take the perspective of another (Howlin et al., 1999). Level 1 entails simple visual perspective-taking (knowing that two people can see the same thing), level 2 describes more complex
visual perspective-taking (two people seeing the same thing differently), at level 3 the idea of seeing leads to knowing comes into play (E.g. A young child is asked what is contained within a box, despite not having seen what was placed in the box), level 4 involves true beliefs and predicting someone’s actions based on their knowledge (Knowing that a person will only know what has been seen and will behave accordingly), and finally level 5, involves understanding false belief and predicting actions based on false, rather than true, beliefs (Acting on the basis of prior beliefs that are false, as well as current beliefs that are true). This developmental trajectory of perspective taking is consistent with that of RFT (Weil et al., 2011). In RFT terms, tasks relating to ToM Levels 1 and 2, map onto interpersonal, and indirectly, temporal deictic relations and thereby, increase contextual control of I-You and Now-Then relations. ToM Level 3 tasks, increases contextual of I-You and indirectly, Now-Then. Level 4 tasks seem to indirectly train all three deictic relational frames. Likewise, Level 5 indirectly trains the three perspective-taking relational frames, with the additional flexibility of requiring control of relational frame of logical not (Doherty, 2012; Barnes-Holmes et al., 2004).

It’s postulated that from age 5 onwards, children begin to reason about the effects of mental states on other mental states, in what is referred to as “Second Order” theory of mind. Around this time, children begin to understand the role of emotions in cognitive states, based on beliefs about a situation. This requires young children to understand that people have mental states about mental states, beliefs, and emotions. At present, it is unknown whether this requires new conceptual developments regarding the potentially recursive nature of mental states or simply adequate information processing resources (Doherty, 2012).
While ToM provides detailed accounts of perspective-taking and related processes (e.g. empathy), it lacks indepth explanation of the processes involved. A contextual behavioural approach should address some of these weaknesses by providing a more thorough account with an indepth understanding of the psychological processes involved in perspective taking and for application of these principles in useful and practical ways.

### 3.1.4 School based approaches using CBS

To date only a small number of school based interventions using CBS with adolescents have been carried out. These empirical investigations have used the clinical application of RFT, Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2011). These have produced mixed results. Livheim et al. (2014), found significant improvements following a brief ACT intervention in 2 clinical adolescent samples presenting depressive symptoms (n=66) and stress (n=32), respectively. The authors also reported that results from an unpublished universal preventative nine hour ACT program showed significant improvements on stress, anxiety and psychological flexibility (Livheim, 2004; as cited in Livheim et al., 2014). Levin et al. (2014) gave support to the use of ACT in the format of an online prevention program in a sample of college students with results showing decreases on measures of depression and anxiety, compared to controls.

Despite these promising findings, most recently Van der Gucht and colleagues (2016) failed to find any improvements on measures of quality of life, psychological flexibility, externalizing problems and thought and attention issues, following a large scale randomized control trial wherein the efficacy of a universal type ACT programme was investigated in a sample of 586 adolescents. Authors made a number
of suggestions as to why these findings emerged. They argued that treatment contamination might have occurred, as this was not controlled for, that teacher led delivery may have been unsuitable, and that there may have been issues surrounding programme fidelity as this was not measured. Therefore, it is critical that issues such as these are controlled for in future investigations. The present study will attempt to do so through use of an online intervention, thereby ensuring that the intervention is delivered consistently across participants and risks identified by Van der Gucht et al., (2016) are eliminated.

The lack of consensus around efficacy of a CBS type program highlights the need for further investigation. Another issue identified with CBS interventions, is that while the ACT model identifies 6 interrelated processes, only a handful of studies have investigated the role of individual processes (Luciano et al., 2011). In order to understand which specific processes within the ACT model are active in producing desired outcomes, it is critical that investigations focused on the role of individual processes are carried out (Luciano et al., 2011; Levin & Villatte, 2015). Most empirical ACT investigations also use non-technical or middle level terms for processes under investigation. While this is useful at a practical level, middle level terms are proxies for the behaviours under investigation and not direct measures, which can result in loss of precision and depth. Therefore, it is also critical to investigate the functional units that underlie these processes at more technical level (Barnes-Holmes et al., 2015; Foody et al., 2013). On this basis, the present study will adopt a bottom-up approach and attempt to train the relational units that underlie flexible perspective-taking and selfing behaviours. Thereby, this study will attempt to bridge basic investigation and middle level theory.
3.1.5 The Present Study

The RFT understanding of the self and perspective-taking provides a bottom-up account of these concepts and unlike many previous approaches, it identifies specific processes and functional units underlying such experiences and accounts for how they are developed. This allows for empirical investigation and in keeping with the Functional Contextualist underpinnings of CBS, for prediction and influence of the development of these repertoires in useful and meaningful ways.

The findings from Study 1 in the present thesis, support the importance of a flexible self for adolescent mental health. The present study will test the application of this theory, by developing and testing a school-based intervention for the development of flexible selfing in adolescents. The intervention will attempt to train the functional units underlying selfing behaviour (i.e. deictic relations), and thereby also examine if the application resonates with the basic theory underlying it.

According to the CBS, flexible selfing and perspective-taking also underlie number of social and emotional competencies (McHugh, 2015; Hayes et al., 2011). In addition to the findings of Study 1, the relationship between better self-relating from a CBS point of view, and mental health and well-being has been demonstrated in adult populations (Atkins & Styles, 2016; Yu et al., 2017). Self-as-process is considered synonymous with mindfulness in the CBS literature (Foody et al., 2012). Mindfulness is related to positive outcomes in adolescents (Thompson & Gauntlett-Gilbert, 2008; Broderick & Metz, 2009). Flexible selfing behaviours are also critical for self-compassion (Raes, Pommier, Neff, & Van Gucht, 2011) which is regarded for its role in adolescent mental health (Neff and McGehee, 2010; Leary, Tate, Adams, Allen, & Hancock, 2007). Self-flexibility is also related to higher levels of psychological flexibility according to CBS (Aktins & Styles, 2016; Foody et al., 2012) with
numerous studies having demonstrated the relationship between adolescent mental health and psychological flexibility (Greco et al. 2008; Ciarrochi et al., 2011). Deictic relating is also critical for empathy and social functioning according to RFT (Vilardaga et al., 2012; Valdivia-Salas et al., 2009). Therefore consistent with the functional contextualist goal of scope, study outcomes will be examined in relation to the above to test the generalizability of selfing and perspective taking to related behaviours.

The feasibility of this type of intervention using a brief, accessible online format in a typical school environment will also be tested. Despite the benefits of conducting research in highly controlled contexts, one of the goals of CBS is successful working and therefore, it is critical to carry out research in more naturalistic settings and to understand the efficacy of interventions in a less controlled, more real-world context. This allows the practicality and suitability of the intervention to be examined, while ensuring that it is delivered consistently and with fidelity, through use of an online delivery.

The flexible self intervention will use interactive training exercises that target broad flexible repertoires of perspective taking from a CBS point of view. Firstly, participants will complete an interactive training exercise with corrective feedback to train deictic ability, followed by standardized ACT exercises designed to target flexible selfing repertoires in adolescents. This intervention will be compared to a control group receiving no intervention, and an active control, who will complete a Theory of Mind based training intervention, based on Corcoran’s Hinting Task. Use of the Hinting Task as a means of training perspective-taking will allow a comparison between the mainstream psychology approach to perspective-taking and the RFT approach. The use of an additional active control group is considered to give a better
indication of the efficacy of the intervention as researchers argue that use of an active control group means that any potential placebo effects in the intervention phase will be controlled for (Boot, Simons, Stothart, & Stutts, 2013). Testing processes of change is also heavily emphasized in CBS research for informing theory development and understanding which specific components are active in producing outcomes (Levin et al., 2015). Therefore, process measures are used at pre, midway, post, and follow-up. Should support be found for this CBS approach, it may answer the call for a theoretically grounded universal type intervention targeting better self-relating and perspective-taking skills for improved mental health and interpersonal relationships.

3.2 Method

3.2.1 Ethics

Ethical approval was granted from the University College Dublin Human Research Ethics Committee – Humanities (HS-14-02-Moran-McHugh). All requirements were complied with in full as outlined by the research ethics committee. Any participants who were under 18 years of age were required to provide written parental consent and participant assent to partake in the research. Parents and guardians were given information sheets and consent forms in advance of the study. Only those who presented a signed form, on or prior to the day on which the study took place could participate.

Due to the sensitive nature of some of the measures, participants were provided with contact details of support services and school guidance counselors were informed that the study would be taking place prior to commencement. They were also given the option of calling a parent if they wished to do so. Participants were not
asked to provide any identifying information at any point and every effort was made to protect the identity of the participants involved in the study.

3.2.2 Sample and Design

This study used a 2x3 mixed design with time (k= 2; pre vs. post) as the within subject variable, group (k=3; intervention group, active control, or control) as the between subjects factor, and scores on study measures as the dependent variables. Irish Post Primary schools that offered Transition Year in Counties Louth and Dublin were selected at random from the online Department of Education database and invited to participate in the research. G*Power (α=.05; Effect size=.25; Power=.8) was used to calculate sample size and gave an estimated N of 108. In order to account for the well documented attrition associated with school based intervention studies (Clarke et al., 2015), a larger sample of 157 was recruited at Time 1 to account for dropout.

The sessions of this study, and the measures completed at each of these points across the three groups of the study are presented in Table 6. Participants in the Intervention and Active Control groups completed measures prior to undergoing the first condition, directly after completing the first condition, at session 2 (where there were no intervention components), at post, following the final session, and finally at follow-up. Control group participants completed only study measures at each session. Following completion of testing, both control groups had the option of completing the interactive stages of the intervention.
Table 6 Layout of study 2 sessions for Intervention, Active Control and Control Group

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group</th>
<th>Active Control Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Visit</strong></td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
</tr>
<tr>
<td>Deictics Training</td>
<td>Hinting Tasks</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Process Measures</td>
<td>Process Measures</td>
<td>Process Measures</td>
<td></td>
</tr>
<tr>
<td><strong>Second Visit</strong></td>
<td>Process Measures</td>
<td>Process Measures</td>
<td>Process Measures</td>
</tr>
<tr>
<td><strong>Third Visit</strong></td>
<td>Flexible Self</td>
<td>Hinting Tasks</td>
<td>-</td>
</tr>
<tr>
<td>Intervention</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
</tr>
<tr>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
<td></td>
</tr>
<tr>
<td><strong>Fourth Visit</strong>*</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
<td>Outcome Measures</td>
</tr>
</tbody>
</table>

*Due to low n at Fourth Visit these data were not included in analysis

3.2.3 Participants

A convenience sample of 157 participants ranging in age from 15 to 19 ($M=15.71; SD=.567; 52$ Male) agreed to take part in the intervention study. The study had a gender imbalance in favour of females due to mostly All Girls Schools agreeing to participate in the research. A one month follow-up session was originally included in the study which participants would complete online in their own time, however as only a small number of participants returned to complete the follow-up (Intervention=3; Control=10; Active Control=2), there was not a sufficient n to reliably run analysis, therefore only data from pre to post are analysed. Following participant attrition (school absence/dropout), the study had 67 participants ($M=15.67; SD=.561; 15$ Male) at post (see Figure 2). The smallest cell had 20 participants at post-test on all variables, apart from the DRT (n=15 smallest cell),
which is considered to be sufficiently powered (Simmons, Nelson, & Simonsohn, 2011).

Figure 2 Study flow of intervention, control and active control groups in Study 2

3.2.4 Study Measures

See Table 7 for a full list of study measures, with what they are measuring, and Cronbach’s Alphas at each timepoint. Self-as-context, empathy, distraction, and
deictic ability, were measured at each time-point to examine which components of the intervention were active in producing outcomes and at which point.

Table 7 Study 2 measures with reliabilities at each timepoint

<table>
<thead>
<tr>
<th>Measure</th>
<th>Type</th>
<th>Measuring</th>
<th>$\alpha_{T1}$</th>
<th>$\alpha_{T2}$</th>
<th>$\alpha_{T3}$</th>
<th>$\alpha_{T4}$</th>
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</thead>
<tbody>
<tr>
<td>SACS</td>
<td>Process</td>
<td>Self-as-Context</td>
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<td>.842</td>
<td>.871</td>
<td>.873</td>
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<td>Process</td>
<td>Empathy</td>
<td>.812</td>
<td>.841</td>
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<td>.813</td>
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<td>-</td>
<td>-</td>
<td>.848</td>
</tr>
<tr>
<td>DASS-Dep</td>
<td>Outcome</td>
<td>Depression</td>
<td>.867</td>
<td>-</td>
<td>-</td>
<td>.895</td>
</tr>
<tr>
<td>DASS-Anx</td>
<td>Outcome</td>
<td>Anxiety</td>
<td>.808</td>
<td>-</td>
<td>-</td>
<td>.887</td>
</tr>
<tr>
<td>DASS-Str</td>
<td>Outcome</td>
<td>Stress</td>
<td>.782</td>
<td>-</td>
<td>-</td>
<td>.838</td>
</tr>
<tr>
<td>SWEMWBS</td>
<td>Outcome</td>
<td>Well-being</td>
<td>.755</td>
<td>-</td>
<td>-</td>
<td>.837</td>
</tr>
<tr>
<td>AFQ-Y8</td>
<td>Outcome</td>
<td>Psychological Inflexibility</td>
<td>.811</td>
<td>-</td>
<td>-</td>
<td>.846</td>
</tr>
</tbody>
</table>

Self Compassion Scale Short Form (SCS-SF; Neff, 2011) is a shortened version of Self-Compassion Scale which is a self-report measure of self-compassion (Neff, 2003a; Neff & Vonk, 2009). The 12 item short form has been shown to have near perfect correlation with the original (Raes et al., 2011). It contains 6 subscales measuring common humanity (“When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people”), isolation (“When I fail at something that’s important to me, I tend to feel alone in my failure”), self-kindness (“When I’m going through a very hard time, I give myself the caring and
tenderness I need”), self-judgment (“I’m intolerant and impatient towards those aspects of my personality I don’t like”), mindfulness (“When something upsets me I try to keep my emotions in balance”) and overidentification (“When I’m feeling down I tend to obsess and fixate on everything that’s wrong”). Scores for negative items are reversed. Responses are measured on a 5-point Likert scale with responses ranging from “Almost never” to “Almost always” and higher scores indicate higher self-compassion. This scale has been found to have good reliability (Raes et al., 2011).

The Depression Anxiety and Stress Scale-21 (DASS-21; Lovibond, S.H. & Lovibond, P.F., 1995) is a self-report measure of depression, anxiety, and stress. It is made up of three 7-item subscales (21 items for overall distress) measuring depression (“I felt down-hearted and blue”), anxiety (“I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)”), and stress (“I tended to overreact to situations”). Higher scores indicate higher levels of each of the above. Items are measured on a 4 point Likert scale and responses range from “Did not apply to me at all” to “Applied to me very much.” This has been shown to be reliable in clinical and non-clinical samples (Antony et al., 1998; Szabo, 2010).

Avoidance and Fusion Questionnaire for Youth (AFQ-Y8; Greco, Lambert, & Baer, 2008) is an eight item self-report measure of experiential avoidance and psychological inflexibility for use with adolescents. Higher scores are indicative of higher levels of experiential avoidance and lower psychological flexibility. The AFQ-Y8 has been shown to have good reliability (Greco et al., 2008). It uses a 5 point Likert scale with responses ranging from “Not at all True” to “Very True”, with
items such as “My life won’t be good until I feel happy” and “I am afraid of my feelings.”

The Short Warwick Edinburgh Mental Well-being Scale (SWEMWBS; Tennant et al., 2007) was used to measure mental well-being. This scale is an eight item self-report measure and items are answered on a 5 point Likert scale ranging from “None of the time” to “All of the time” with higher scores indicating higher wellbeing. Statements include “I’ve been feeling useful” and “I have been dealing with problems well.” The SWEMWBS has been shown to have acceptable reliability and inter-item correlations (Haver, Akerjordet, Caputi, Furunes, & Magee, 2015).

Toronto Empathy Questionnaire (TEQ; Spreng, Kinnon, Mar, & Levine, 2009) was used to measure empathy. The scale has 16-items answered on a 5-point self-report Likert scale ranging from “Never” to “Always”. Eight of these items are reverse scored. Statements include “When someone else is feeling excited, I tend to get excited too”, “I remain unaffected when someone close to me is happy”, and “I can tell when others are sad even when they do not say anything.” Higher scores indicate higher levels of empathy. The TEQ has been shown to have good internal consistency and reliability (Totan, Doğan, & Sapmaz, 2012).

Self-as-Context Scale (SACS; Gird, Zettle, Webster, & Hardage-Bundy, 2012) is a self-report measure of self-as-context. It contains 11 items that are scored on a 7-point Likert scale with responses ranging from “Strongly Agree” to “Strongly Disagree.” Scale items include “I am able to access a perspective from which I can notice my thoughts, feelings, and emotions” and “When I think back to when I was
younger, I recognize that a part of me that was there then is still here now”. Higher scores indicate self-as-context. This self-as-context scale has been shown to have good validity and reliability (Gird, 2013).

*Child and Adolescent Mindfulness Measure* (CAMM; Greco et al., 2011) is a self-report measure of distraction (the inverse of mindfulness) for use with young people. It contains 10 items which are scored on 5-point Likert Scale with responses ranging from “Never True” to “Always True”. Items include “I get upset with myself for having certain thoughts” and “I stop myself from having feelings that I don’t like”. Higher scores on the CAMM indicate higher distraction or lower mindfulness. This scale has been found to have good reliability and validity (Greco et al., 2011).

*Deictic Relations Task* (PersTot) Ten basic perspective taking trials were adapted from the protocol designed by McHugh et al. (2004) as a test of deictic relating. Items were similar to those used in the Deictic Relational Task (Vilaradaga et al., 2012) in that tasks used naturalistic language and everyday scenarios (See Figure 3 for example). Participants completed tasks wherein they were asked to take the perspective of characters temporally, spatially, and interpersonally. Previous studies have observed a clear ceiling effect when training simple relations with adult populations (Vilaradaga et al., 2008; Vilaradaga, Waltz et al., 2009), and McHugh et al. (2004) found that typically developing adolescents produced minimal errors on simple relations. Therefore, it seems to sufficient to assess adolescent ability on reversed and double-reversed relations (See Appendix E). Tasks consisted of 2 I-You trials, 2 Here-There trials, 3 Now-Then trails, 2 I-You-Here-There trials and 2 Here-There-Now-Then trails (See Table 8). Participants were not provided with any
feedback as to whether or not they responded accurately on trials. These responses were cross-checked by an independent scorer to check for errors and ensure responses were marked accurately.

**Figure 3** Sample I-You reversal from the Deictic Relations Task

**Table 8** Deictic Trials used in Study 2

<table>
<thead>
<tr>
<th>Basic Deictic Trials</th>
<th>E.g.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x I-You Reversals</td>
<td><em>I am drinking Coke. You are drinking Fanta. If I were you and you were me, what would I be drinking? What would you be drinking?</em></td>
</tr>
<tr>
<td>2x Here-There Reversals</td>
<td><em>I am here at school, and you are there at home. If here was there, and there was here, where would I be? Where would you be?</em></td>
</tr>
<tr>
<td>2x Now-Then Reversals</td>
<td><em>I am hanging out with friends today, yesterday I was at work. If now was then, and then was now, where would I be today? Where would I be yesterday?</em></td>
</tr>
<tr>
<td>2x I-You-Here-There Double Reversals</td>
<td><em>I am here at the gym, and you were there at work. If here was there and there was here, and I was you and you were me, where would I be? Where would you be?</em></td>
</tr>
<tr>
<td>2x Here-There-Now-Then Double Reversals</td>
<td><em>I was there at the bowling alley yesterday. I am here at my friend’s house today. If now was then, and then was now, and here</em></td>
</tr>
</tbody>
</table>
3.2.5 Procedure

Participants completed the study online using www.Qualtrics.com (Qualtrics Labs Inc., 2009). Participants completed three interactive sessions in the school computer room that lasted up to one hour each. Sessions were scheduled to be a minimum of one week apart. Sessions took place one week apart to track progress of the variables being targeted and to ensure that they are being moved at process level. Although, every effort was made to ensure that sessions were as close to one week apart as possible to keep conditions consistent between schools, in some cases due to unexpected changes in school schedules (e.g. teacher illness/absence) some sessions were completed a number of weeks a part. The class teacher and researcher were present to provide support and any necessary help throughout. Participants were assigned at random to one of three conditions: Intervention Group; Control Group; Active Control Group.

3.2.5.1 Intervention Group

The intervention group completed a deictics training protocol, and flexible self intervention in sessions 1 and 3 respectively, completed process measures in session 2.

3.2.5.1.1 Deictics Training

was there and there was here, where would I be today? Where would I be yesterday?
This involved a series of between 10 and 20 deictic trials, with corrective feedback throughout to train deictic competencies. Items were similar to those used in the Deictic Relational Task (Vilaradaga et al., 2012) in that tasks used naturalistic language and everyday scenarios, however short video clips were also used to make the tasks more engaging. Participants were asked to select the correct answer from a selection of four options (See Figure 4). Participants completed trials wherein they were asked to take the perspective of characters temporally, spatially, and interpersonally. Reversed and double-reversed relations were utilised (See Appendix A). If they responded incorrectly, they were given the answer, before being presented with the trial again and being asked to reattempt it (See Figure 5). If they responded incorrectly on the second attempt, participants were told that their response was incorrect once again and told the correct answer, before being asked to attempt the next question. Each time a participant answered correctly, they were cycled onto the next trial. This process continued until all 10 trials were complete. See Appendix A for full list of trials.
Figure 4 *Sample Deictic Training trial*

Figure 5 *Sample Corrective Feedback from Deictic Training Trial*
3.2.5.1.2 Flexible Self Intervention

This session intended to help develop flexible selfing repertoires using an age appropriate intervention from ACT. Participants listened to two guided mindfulness audios: “The Observer You”, to facilitate a sense of self that transcends one’s psychological content, and "Being Kind to Me”, to facilitate an accepting and more compassionate stance towards one’s unwanted self-content and evaluations. Brief psycho-educational pieces with interactive exercises were also used to facilitate defusion from unhelpful or unwanted self-conceptualisations (“The Sticky Thoughts Exercise”) (See Appendix B). The exercises were adapted from Get Out of Your Mind and Into Your Life for Teens, which is an ACT guide designed specifically for use with adolescents, and contains age-appropriate exercises and material (Ciarrochi, Hayes, & Bailey, 2012). Participants completed brief measures of adherence, following the mindfulness audios to assess level of engagement and understanding. Participants were informed prior to the meditation that they would be asked about what they had just listened to upon completion. Finally, participants were invited to write a compassionate letter to themselves wherein they were explicitly instructed to express self-kindness and acceptance. This allowed participants to apply what they had just learned and served as a means of measuring adherence.

3.2.5.2 Active Control Group

As a comparison, the active control group completed a ToM based exercise, as an alternative approach to training and assessing perspective taking ability. As these
ToM sessions served as a comparison to sessions being completed at each of the
timepoints, rather than an alternative type of intervention, participants in the Active
Control group completed the same type of task at each step.

ToM tasks were based on Corcoran et al.’s (1995) Hinting tasks and gave
corrective feedback as with the deictic tasks in the intervention group (See Appendix
C). Participants completed 8 tasks per session. Participants were given a scenario with
two characters engaging in a dialogue, wherein one character is giving a hint to the
other character (E.g. *Paul has to go to an interview and he’s running late. While he’s
cleaning his shoes, he says to his wife Jane* "I want to wear that blue shirt but its very
creased." *What does Paul really mean when he says this?*) They are asked to infer
what the character really means by what they are saying, and write their answer in a
space provided. The participant is then provided with more information on what the
character is hinting. Specifically, they are told what the character goes on to say in the
interaction (a further clue) regardless of response (correct or incorrect), as did
Corcoran et al.’s study (E.g. cont. *Paul goes on to say: “It’s in the ironing basket.”
What does Paul want Jane to do?*). Following this, they are asked to choose the
correct response from a list of options, and were provided with corrective feedback if
they chose the incorrect option (See Figure 6).
3.2.5.3 Control Group

The control group received no intervention and just completed study measures for each of the sessions.

3.2.6 Data Analytic Strategy

3.2.6.1 Quantitative Analysis

A series of (ten) 3x2 mixed between-within subjects ANOVAs were used to examine the impact of group (between subjects factor: Intervention group; Control group; Active control group) and time (within subjects factor: Pre; Post) on study outcome measures. Additionally, to investigate which components of the intervention were active in producing outcomes, process measures were examined following each session. A series of (four) 3x4 mixed between-within subjects ANOVAs were used to examine the impact of group (between subjects factor: Intervention group; Control group; Active control group) and time (within subjects factor: Time 1(Pre); Time 2; Time 3; Time 4 (Post)) on study process measures.

Due to the reported gender differences in both perspective-taking (Mestre, Samper, Frias, & Tur, 2009; Van der Graaff et al., 2014) and how one relates to the
self during adolescence (Dooley & Fitzgerald, 2012; Bolognini et al., 1996), in order to control for effects of gender, the above analysis was repeated with female participants only. Analysis was not carried out with males only, due to the low n for male participants (15 at post). Subset analyses were chosen over analysis of covariance, as they are considered to be more accurate than estimates associated with ANCOVA, and more robust to certain violations (Little, An, Johanns, & Giordani, 2000).

3.2.6.2 Inter rater analysis

The Hinting tasks involved open-ended responses, meaning some responses may be subjective in nature and open to some degree of interpretation. Therefore, an independent inter-rater scored the participants responses to these tasks. Participant responses were marked as correct or incorrect by the primary researcher and subsequently by an independent inter-rater. In order to be marked correctly on the Hinting Tasks, participants had to demonstrate a clear and accurate understanding of what the character in the task is inferring. If the participant was inaccurate, unclear or was deemed to be clearly guessing, they were marked as incorrect. 90.28% inter-rater agreement was found on responses, which is considered a reliable level of percentage agreement (Birkimer & Brown, 1979).

3.3 Results

3.3.1 Handling of Missing Data

Data were entered into SPSS (Statistical Package for the Social Sciences) Version 20 file. Missing data analysis revealed that there were 29.45% missing values
overall. The main cause of missing data in the present study was participant attrition. Five participants formally withdrew from participation. In order to protect participant confidentiality, the data from these participants were not withdrawn from the analysis. Some participants also did not complete all measures in each session due to time constraints (taking longer than the allotted one hour allowed). All other missingness was due to participants being absent from school on the day of testing. Little's MCAR test (1988) revealed that data were missing completely at random (MCAR) based on Chi-square analysis.

Due to the large amount of missing data, particularly at post (58%) the Expectation Maximisation (EM) algorithm was used to impute missing values. EM is considered superior to alternative methods of managing missing data, such as listwise, pairwise, or mean substitution (Graham, Hofer & MacKinnon, 1996; Tabachnick & Fidell, 2007). While Scheffer (2002) observed that when data are MCAR, very minimal changes are observed in the mean with up to 50% missingness, EM is better suited when there is not a large amount of missing data. On this basis, analysis with both the final sample with a complete dataset, and those with imputed values are presented, and if findings are similar we can have confidence in them (Tabachnick & Fidell, 2007).

In the case of analysis without imputed values, the SPSS default for Mixed within-between subjects ANOVA, listwise deletion, was used. Due to a methodological issue with one item on the DRT at Time 1, and one item at Time 4, mean scores were adjusted for this variable. For methodological reasons, the DRT had higher missingness relative to other study measures (this measure was completed last causing participants to run out of time, particularly those in the intervention condition, for whom testing took the longest). Due to both the higher level of missingness on
this variable and the dichotomous nature of the tasks, EM was not considered suitable for use on DRT scores, therefore only findings from the final sample with complete data are presented (n=53).

### 3.3.2 Preliminary Analysis

Preliminary analyses were conducted to ensure there were no significant differences across groups in scores at pre-test (See Table 9 for summary). As multiple tests were carried out, the rough false discovery rate was used to control for type 1 error associated with making multiple comparisons (Benjamini & Hochberg, 1995). Using this procedure, the \( p \) value was reduced by multiplying it by \((n+1)/2n\), where \( n \) is the number of tests. This procedure is less conservative and has greater power than the Bonferroni correction, where \( p \) is divided by the number of tests. Using this method, the \( p \) value was reduced to .027. One-way ANOVA revealed no significant difference across the three groups on study variables at \( p < .027 \), however as it was noted that anxiety would have been significant at \( p < .05 \), separate analysis which was more robust to baseline differences was also carried out for scrutiny (See Appendix I). As results of this separate analysis did not differ considerably from the planned analyses, results from mixed between-within ANOVAs are presented below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measuring</th>
<th>Df</th>
<th>( F )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS-SF</td>
<td>Self Compassion</td>
<td>(2, 154)</td>
<td>1.175</td>
<td>.311</td>
</tr>
<tr>
<td>DASS-Str</td>
<td>Stress</td>
<td>(2, 154)</td>
<td>1.667</td>
<td>.192</td>
</tr>
<tr>
<td>DASS-Dep</td>
<td>Depression</td>
<td>(2, 154)</td>
<td>1.456</td>
<td>.236</td>
</tr>
</tbody>
</table>
### 3.3.3 Descriptive Statistics & Management of Data

Imputed and original data were checked for violations of normality to ensure use of ANOVA was appropriate. For the non-imputed data, all values of skewness and kurtosis were found to fall into the range of +/-1 which is considered excellent (George & Mallery, 2001), apart from the skewness value for the depression subscale for the DASS-21 (1.004) which was marginally higher than 1, however still within the acceptable range (Mindrila 2010) indicating that all data were normally distributed (See Table 10).

**Table 10** Descriptive Statistics and Normality Scores for study 2 variables for full sample (non-imputed)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$ (SD) Total</th>
<th>$M$ (SD) Males</th>
<th>$M$ (SD) Females</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Compassion (SCS-SF) T1</td>
<td>34.27 (6.62)</td>
<td>36.81 (5.78)</td>
<td>32.97 (6.75)</td>
<td>16-51</td>
<td>.028</td>
<td>-.094</td>
</tr>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>5.52 (4.54)</td>
<td>4.09 (3.43)</td>
<td>6.24 (4.86)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>5.48 (4.24)</td>
<td>4.51 (3.94)</td>
<td>5.98 (4.31)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>7.39 (4.00)</td>
<td>5.72 (3.59)</td>
<td>8.25 (3.94)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>23.49 (4.34)</td>
<td>25.04 (3.78)</td>
<td>22.72 (4.40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>11.44 (6.59)</td>
<td>9.81 (5.79)</td>
<td>12.26 (6.84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>52.27 (9.30)</td>
<td>55.53 (7.60)</td>
<td>50.67 (9.65)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T1</td>
<td>46.44 (7.68)</td>
<td>44.10 (7.29)</td>
<td>47.55 (7.68)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T1</td>
<td>18.28 (7.17)</td>
<td>15.78 (5.60)</td>
<td>19.41 (7.56)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic Ability (PersTot) T1</td>
<td>5.19 (2.59)</td>
<td>5.16 (2.80)</td>
<td>5.2 (2.53)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>52.84 (10.16)</td>
<td>55.29 (8.98)</td>
<td>50.17 (10.31)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T2</td>
<td>45.87 (8.41)</td>
<td>43.8 (7.61)</td>
<td>46.87 (8.68)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T2</td>
<td>18.16 (6.99)</td>
<td>15.53 (5.43)</td>
<td>19.32 (7.32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic Ability (PersTot) T2</td>
<td>5.61 (2.74)</td>
<td>2.00 (2.83)</td>
<td>5.72 (2.68)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>51.71 (10.13)</td>
<td>55.73 (8.78)</td>
<td>50.23 (10.24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T3</td>
<td>46.69 (8.57)</td>
<td>44.77 (7.12)</td>
<td>47.39 (8.98)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T3</td>
<td>19.03 (6.51)</td>
<td>15.83 (6.75)</td>
<td>20.16 (6.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic Ability (PersTot) T3</td>
<td>5.03 (2.67)</td>
<td>1.5 (2.12)</td>
<td>5.14 (2.62)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>34.70 (7.34)</td>
<td>37.20 (5.32)</td>
<td>33.96 (7.72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>4.92 (4.64)</td>
<td>3.27 (2.89)</td>
<td>5.41 (4.96)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>5.24 (4.75)</td>
<td>2.73 (2.66)</td>
<td>5.98 (4.99)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the imputed data, depression, at time 4 (post) fell outside the acceptable range of +/-7 for kurtosis (See Table 11), therefore, for scrutiny, this value was transformed using log transformation. Results using log transformation did not deviate from untransformed data, therefore results using original data are presented.

Table 11 Descriptive Statistics and Normality Scores for study 2 variables for full sample (Imputed)
<table>
<thead>
<tr>
<th>Test</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T1-Mean</th>
<th>T2-Mean</th>
<th>T3-Mean</th>
<th>T1-SD</th>
<th>T2-SD</th>
<th>T3-SD</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Inflexibility</td>
<td>11.44 (6.59)</td>
<td>9.81 (5.79)</td>
<td>12.26 (6.84)</td>
<td>0-30</td>
<td>.572</td>
<td>-.238</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(AFQ-Y8) T1</td>
<td>52.27 (9.29)</td>
<td>55.53 (7.60)</td>
<td>50.67 (9.65)</td>
<td>26-72</td>
<td>-.524</td>
<td>-.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS) T1</td>
<td>46.44 (7.68)</td>
<td>44.10 (7.29)</td>
<td>47.55 (7.68)</td>
<td>21-62</td>
<td>-.582</td>
<td>.366</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T1</td>
<td>18.28 (7.17)</td>
<td>15.78 (5.60)</td>
<td>19.41 (7.56)</td>
<td>1-37</td>
<td>.084</td>
<td>.161</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T1</td>
<td>52.11 (9.60)</td>
<td>55.21 (8.34)</td>
<td>50.52 (9.85)</td>
<td>21-77</td>
<td>-.585</td>
<td>.634</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS) T1</td>
<td>46.69 (7.24)</td>
<td>43.88 (7.29)</td>
<td>46.75 (8.21)</td>
<td>20-64</td>
<td>-.705</td>
<td>1.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T2</td>
<td>17.77 (6.78)</td>
<td>15.50 (5.48)</td>
<td>18.92 (7.13)</td>
<td>0-37</td>
<td>.026</td>
<td>.511</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T2</td>
<td>51.64 (8.60)</td>
<td>53.96 (6.87)</td>
<td>50.46 (9.16)</td>
<td>23-77</td>
<td>-.458</td>
<td>.840</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic Ability (PersTot) T1</td>
<td>46.69 (7.24)</td>
<td>45.60 (5.41)</td>
<td>47.25 (7.98)</td>
<td>20-64</td>
<td>-.705</td>
<td>1.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-as-Context (SACS) T2</td>
<td>19.04 (5.56)</td>
<td>17.23 (5.29)</td>
<td>19.97 (5.50)</td>
<td>0-38</td>
<td>-.309</td>
<td>1.934</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empathy (TEQ) T3</td>
<td>34.67 (4.74)</td>
<td>35.38 (2.99)</td>
<td>34.30 (5.40)</td>
<td>12-50</td>
<td>-.749</td>
<td>6.497</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction (CAMM) T3</td>
<td>5.00 (3.02)</td>
<td>4.51 (1.69)</td>
<td>5.25 (3.49)</td>
<td>0-21</td>
<td>2.154</td>
<td>9.268</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deictic Ability (PersTot) T3</td>
<td>5.32 (3.09)</td>
<td>4.59 (1.81)</td>
<td>5.69 (3.52)</td>
<td>0-17</td>
<td>1.025</td>
<td>2.461</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Compassion (SCS-SF) T2</td>
<td>7.08 (2.62)</td>
<td>6.49 (1.77)</td>
<td>7.38 (2.92)</td>
<td>0-16</td>
<td>.358</td>
<td>2.897</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (DASS-Dep) T2</td>
<td>23.27 (3.20)</td>
<td>23.95 (1.89)</td>
<td>22.92 (3.65)</td>
<td>11-34</td>
<td>-.761</td>
<td>3.674</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (DASS-Anx) T2</td>
<td>10.52 (4.19)</td>
<td>9.50 (2.72)</td>
<td>11.03 (4.70)</td>
<td>0-26</td>
<td>.738</td>
<td>2.655</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress (DASS-Str) T2</td>
<td>52.21 (6.52)</td>
<td>53.30 (4.42)</td>
<td>51.65 (7.32)</td>
<td>26-72</td>
<td>-.663</td>
<td>3.803</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well being (SWEMWBS) T2</td>
<td>45.20 (6.15)</td>
<td>44.33 (4.04)</td>
<td>45.64 (6.96)</td>
<td>17-61</td>
<td>-.834</td>
<td>3.663</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y) T2</td>
<td>17.45 (4.77)</td>
<td>16.29 (3.90)</td>
<td>18.04 (5.07)</td>
<td>0-37</td>
<td>-.580</td>
<td>4.300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: M=Mean ; SD=Standard Deviation*
Due to missingness on the DRT, there was an unequal n for this variable (Intervention=15, Control=21, Active Control=17), which can heighten the negative effects of heteroscedasticity. However, ANOVA is considered robust to assumptions of homogeneity of variance, therefore n was not adjusted for this variable. Finally, less than 1% of the data were identified as outlying based on z scores +/- 3.29 (Tabachnick & Fidell, 2007), and due to the robust nature of ANOVA, these data were retained and not altered.

### 3.3.4 Hinting tasks and Adherence measures

**3.3.4.1 Hinting Tasks**

No significant improvement was observed on Corcoran et al.’s (1995) Hinting Task across time $t(19) = -1.143; p = .267$. This was most likely due to ceiling effects with participants showing high mean scores to begin with ($M_{T1} = 13.80; M_{T2} = 14.25$, out of a possible of 16.)

**3.3.4.2 Adherence**

Brief adherence measures were used after each phase of the self intervention to ensure participant engagement. Three participants reported not engaging with The Observer You exercise, and one did not engage with the Being Kind to Me exercise, so analysis was carried out with these participants removed. No difference was observed in results regardless of the exclusion of these participants, therefore they were included in the final analysis to retain study power and variability.
3.3.5 Mixed between-within subject ANOVA analyses

A series of (ten) 3x2 mixed between-within subjects ANOVAs were used to examine the impact of group (between subjects factor: Intervention group; Control group; Active control group) and time (within subjects factor: Pre; Post) on study outcome measures, using both the final sample with complete data, and imputed data. Analyses using females only and analyses of process measures did not reveal any notable differences to original analyses, therefore these are not reported here. Only significant effects are presented below. Analysis using the final sample with complete data is presented first and then analysis using imputed data are presented in each case.

3.3.5.1 Full Sample-Final Sample with Complete data (Non-imputed)

Summaries of mean scores, standard deviations, n, and interaction effects for the final sample with complete data are provided in Table 12. As multiple tests were carried out the rough false discovery rate was used to control for type 1 error associated with making multiple comparisons. Using this method, the $p$ value was reduced to .0275. A significant main effect for time emerged for deictic ability, $F(1, 50)$= 8.274; $p$=.006; partial $\eta^2$=.142, with scores increasing for all groups from pre ($M$=5.11; $SD$=2.65) to post ($M$=6.02; $SD$=2.76) regardless of condition. No other significant effects emerged.
Table 12 Summary of Mixed between-within subject ANOVA for the Intervention, Active Control and Control group (All participants)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Intervention Pre M (SD)</th>
<th>Post M (SD)</th>
<th>Control Pre M (SD)</th>
<th>Post M (SD)</th>
<th>Active Control Pre M (SD)</th>
<th>Post M (SD)</th>
<th>Interaction F statistic</th>
<th>p-values</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deictic Ability (DRT)</td>
<td>5.20 (2.01)</td>
<td>6.87 (2.45)</td>
<td>4.67 (2.65)</td>
<td>5.38 (2.94)</td>
<td>5.59 (3.16)</td>
<td>6.06 (2.75)</td>
<td>1.116</td>
<td>.336</td>
<td>53</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>20.58 (7.63)</td>
<td>20.79 (6.61)</td>
<td>17.61 (8.03)</td>
<td>16.52 (6.76)</td>
<td>15.43 (8.44)</td>
<td>15.57 (8.08)</td>
<td>.470</td>
<td>.627</td>
<td>65</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>47.60 (7.57)</td>
<td>45.75 (11.48)</td>
<td>45.74 (5.88)</td>
<td>44.00 (8.71)</td>
<td>48.09 (6.99)</td>
<td>46.00 (8.70)</td>
<td>.012</td>
<td>.988</td>
<td>66</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>49.86 (10.47)</td>
<td>50.48 (10.61)</td>
<td>52.74 (8.88)</td>
<td>51.57 (8.63)</td>
<td>56.30 (7.26)</td>
<td>54.43 (10.79)</td>
<td>.849</td>
<td>.432</td>
<td>67</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>7.50 (3.46)</td>
<td>8.70 (3.69)</td>
<td>8.78 (5.09)</td>
<td>7.48 (4.37)</td>
<td>5.83 (3.38)</td>
<td>5.13 (3.28)</td>
<td>3.378</td>
<td>.040</td>
<td>66</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>6.85 (6.34)</td>
<td>6.65 (5.55)</td>
<td>5.83 (4.57)</td>
<td>5.17 (4.32)</td>
<td>3.52 (3.98)</td>
<td>3.17 (3.51)</td>
<td>.105</td>
<td>.901</td>
<td>66</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>5.60 (4.37)</td>
<td>6.70 (4.51)</td>
<td>6.78 (4.96)</td>
<td>6.26 (5.18)</td>
<td>2.78 (3.09)</td>
<td>2.96 (3.71)</td>
<td>1.058</td>
<td>.353</td>
<td>66</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>22.81 (4.51)</td>
<td>21.38 (5.29)</td>
<td>24.43 (4.81)</td>
<td>23.52 (5.33)</td>
<td>24.39 (3.56)</td>
<td>24.74 (3.60)</td>
<td>2.025</td>
<td>.140</td>
<td>67</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>12.80 (6.83)</td>
<td>13.40 (6.95)</td>
<td>11.13 (7.5)</td>
<td>10.22 (5.82)</td>
<td>9.26 (6.72)</td>
<td>8.13 (5.87)</td>
<td>.920</td>
<td>.404</td>
<td>66</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>33.45 (8.26)</td>
<td>31.00 (7.37)</td>
<td>36.04 (7.91)</td>
<td>36.22 (6.76)</td>
<td>34.91 (6.37)</td>
<td>36.39 (6.97)</td>
<td>2.239</td>
<td>.115</td>
<td>66</td>
</tr>
</tbody>
</table>

*Note: M=Mean; SD=Standard Deviation*
3.3.4.2 Full Sample-Imputed data

Summaries of mean scores, standard deviations, n, and interaction effects for the full sample with imputed data are provided in Table 13. Using the rough false discovery rate to control for type 1 error associated with making multiple comparisons, the \( p \) value was reduced to .0278. A significant group effect emerged for anxiety, \( F(2, 154)= 4.999, \ p= .008, \ \text{partial } \eta^2= .061 \). Pairwise comparisons revealed significant differences between intervention and active control groups, and control and active control groups regardless of timepoint. Box’s M statistic revealed a violation of homogeneity of intercorrelations for anxiety, therefore this finding must be interpreted with caution.
Table 13 Summary for Mixed between-within subject ANOVA for the Intervention, Active Control and Control group (All participants with imputed missing values)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Intervention</th>
<th>Control</th>
<th>Active Control</th>
<th>Interaction F statistic, p-values &amp; n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>19.18 (7.17)</td>
<td>18.63 (4.14)</td>
<td>18.29 (7.32)</td>
<td>17.04 (4.46)</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>45.96 (8.67)</td>
<td>45.37 (6.88)</td>
<td>47.35 (6.84)</td>
<td>44.67 (5.75)</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>51.95 (9.78)</td>
<td>51.55 (6.51)</td>
<td>52.21 (8.88)</td>
<td>51.92 (5.68)</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>7.53 (4.09)</td>
<td>7.74 (2.36)</td>
<td>8.02 (4.38)</td>
<td>7.26 (2.88)</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>6.29 (5.41)</td>
<td>5.69 (3.44)</td>
<td>5.38 (4.10)</td>
<td>5.08 (2.84)</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>5.78 (4.53)</td>
<td>5.91 (2.82)</td>
<td>6.31 (4.42)</td>
<td>5.74 (3.45)</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>23.22 (5.08)</td>
<td>22.55 (3.35)</td>
<td>24.15 (4.07)</td>
<td>23.38 (3.51)</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>11.95 (6.62)</td>
<td>11.64 (4.37)</td>
<td>10.83 (6.56)</td>
<td>10.38 (3.83)</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>33.31 (7.2)</td>
<td>33.29 (4.17)</td>
<td>35.27 (6.50)</td>
<td>35.35 (4.51)</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation
3.3.5 Summary of study findings

To summarize, no significant interactions were observed across outcome measures. The following significant main effects emerged: for the original or non-imputed sample, deictic ability was found to improve across time-points regardless of condition. For the imputed sample, a significant main group effect revealed higher anxiety for the intervention and control groups compared to the active control group regardless of time-point.

3.4 Discussion

According to RFT, the ability to deictically relate underlies many important social and emotional competencies in humans, including a healthy relationship to the self, empathy and relating to others, and ability to transcend and ultimately accept one’s psychological content, including painful and unwanted content. Deictic relating gives rise to three functionally different senses of self. Findings from Study 1 in the present thesis, demonstrated the implications for adolescent mental health, specifically significantly lower levels of distress in a sample of typically developing adolescents when these self-discriminations are healthy and functioning well. On this basis, the present study specifically attempted to train flexible perspective taking repertoires using a brief school-based intervention, and outcomes were investigated in terms of self-compassion, depression, anxiety, stress, well-being, psychological flexibility, empathy, mindfulness/self-as-process, and self-as-context. This intervention was compared to an active control group who received Theory of Mind training, and a pure control group.
Analysis revealed no significant improvement in the intervention condition across timepoints relative to control groups, however it was noted stress would have been significant at $p < .05$ for analysis with non-imputed data, with intervention group participants showing increased stress following the intervention relative to both control groups. The analysis was also repeated with female participants only to control for possible gender effects. Again, no significant changes emerged.

Two distinct types of self-as-context, known as self-as-distinction and self-as-hierarchy, have been investigated in CBS (Foody et al., 2013; Luciano et al., 2011; Foody et al., 2015; Gil-Luciano et al., 2017). Self-as-distinction, or distinction deictic relating, involves relating to one’s psychological content as distinct to oneself, wherein one recognizes that one’s thoughts are not literal truths (Hayes et al., 2011). When self-as-distinction is operating, one’s psychological content (THERE-THEN) is framed as separate to oneself (I-HERE-NOW). Self-as-hierarchy, or hierarchical deictic relating involves the person recognizing that they are the context of their psychological experience, facilitating observation of passing mental experience from a stable perspective, allowing acceptance of that experience. When self-as-hierarchy is operating, one’s psychological content (THERE-THEN) is framed as a part of oneself (I-HERE-NOW). Self-as-hierarchy interventions have been found to be superior to self-as-distinction interventions across a range of outcomes including depression, anxiety, stress, and psychological flexibility (Foody et al., 2013; Luciano et al., 2011; Foody et al., 2015; Gil-Luciano et al., 2017). Moreover, Foody et al. (2013) also observed an increase in stress levels following the self-as-distinction training condition in their study suggesting findings from the present study are consistent with those of Foody et al.’s (2013) self-as-distinction training condition. While no significant changes were observed on the Self-as-Context scale in the
present study, it’s possible that this is a result of scale items being more consistent with self-as-hierarchy than self-as-distinction.

As discussed in Chapter 2, authors did not differentiate between the two types of self-as-context, however the items in this scale do appear to be more reflective of self-as-hierarchy and viewing oneself as the context of experience (e.g. “There is a basic sense I have of myself that doesn’t change even though my thoughts and feelings do”). Further validation is necessary to confirm.

Foody et al. (2013) observed that following a median-split analysis those who scored lower in discomfort, anxiety, and stress, always showed increased distress following distinction training, while those who showed higher levels of these measures at pre-test showed decreased distress.

On this basis a median-split on the basis of pre-test distress scores (as measured by the DASS-21) was applied to the data in the present study to further examine how the findings of the present study relate to those of Foody et al. (2013) (see Appendix H). While use of a median-split is crude indicator and as the sample size is halved in each case, and therefore the analysis is underpowered some interesting findings worth noting were observed. Specifically, those in the intervention condition who had lower distress at pre-test showing significant reductions in well-being. Also notable was that a near significant interactions at \( p = 0.054 \) emerged for deictic ability with inspection of mean scores for deictic ability suggested high accuracy for intervention group participants relative to control and active control group participants from pre to post. On the other hand, intervention group participants with high distress did not demonstrate the same mean increases in deictic ability, suggesting the deictics training was more effective with those who had lower distress at pre-test. With regard to measures of distress (depression, anxiety,
and stress), increases were observed in mean scores for the intervention and control conditions (and a smaller increase for the active control group) from pre to post in those lower in distress at pre-test. These increases were not observed in those with higher distress at pre-test with mean scores decreasing across groups. As Foody et al. (2013) did not have a control condition these findings are not directly comparable to those from the present study, however they do appear to follow the same trend.

Overall, this appears to further suggest that the present study findings are consistent with what Foody et al. (2013) observed in the distinction condition of their study. This would suggest that while the present study utilized a self-as-context intervention with components of hierarchy and distinction, only the distinction component of the study was effective and just self-as-distinction was successfully trained. Luciano et al., (2011) suggested that while a more basic level of relational responding is sufficient for distinction, a more complex level of relating is implicated in hierarchical relating. This would suggest that despite deictics training, more explicit training in frames of hierarchy may be necessary. The distinction component of the self training was delivered in the format of an interactive exercise with a brief psycho-educational piece, while the hierarchy component was delivered as a guided mindfulness audio. It’s possible that participants found the former easier to engage with and understand, leading to greater impact from this component. Luciano et al. (2011) observed improvements in a sample of 15 “at-risk” adolescents ($M=13.66$ yrs) following training with deictic hierarchical relations using guided mindfulness audios implying this format was suitable for use with this age-group, however a more extensive protocol was used in this study with additional behavioural regulation cues. Despite these findings, a number of issues were identified across these studies, including lack of controls, small sample sizes, and interventions containing elements
of other types of training. Therefore, further, more controlled investigations are warranted to fully understand the implications of this type of intervention, particularly with adolescent populations.

One of the aims of the present study was to develop a brief training protocol and measure of deictic ability in order to assess and train deictic ability sufficiently and more practically while reducing the risk of participant fatigue/boredom which has been identified as an issue in deictics research (Weil et al., 2011). Only a small battery of 10 deictic relational trials at each time-point was used to measure deictic ability, with 40 in total from pre to post. Similarly, between 10 and 20 interactive trials were used in the deictics training protocol. This was very brief compared to previous studies where a much larger array of tasks was used (e.g. 42; McHugh et al., 2004; 62; Weil et al., 2011). Study results suggested improvements in deictic ability for all three conditions suggesting practice effects due to exposure, as was found by Hooper, Erdogan, Keen, Lawton, and McHugh (2015), who observed that deictic relating could be improved in an adult sample following exposure to McHugh et al.’s (2004) 42 item deictics protocol. However, means scores indicated notable improvements in the intervention group relative to both control groups. While mean performance improved, only 4 participants performed to full accuracy following training. While perhaps, more extensive training would lead to mastery of deictic tasks and it is a worthwhile avenue of investigation for future studies, the results from the present study offer a convenient and time efficient means of deictics training. Interestingly, participants low in distress at pre-test showed close to significant improvements in deictic ability following training while those who had high distress did not. This appears to suggest that existing distress levels impact deictic
performance or one’s ability to learn these repertoires. This should be examined more closely in future investigations.

Ceiling effects on Theory of Mind tasks prevent accurate comparisons from being made between performance on this task and that on deictics. However mean scores fell within a similar range to studies using a larger range of tasks with this age-group (McHugh et al., 2004). This study was the first of its kind to target flexible perspective taking repertoires in a sample of typically developing adolescents. These findings suggest that although the brief deictics training is effective, it is not sufficient for the development of perspective-taking repertoires to full proficiency.

Corcoran et al.’s (1995) Hinting Task was chosen for use in the active control condition as it has been used and deemed suitable for this purpose in previous deictics studies (Villatte et al., 2008; Villatte et al., 2010). However, these investigations were carried out in populations with impairments linked to issues with mental states attribution (i.e. social anhedonia and schizophrenia) meaning that perhaps the Hinting Task is only suited to samples with more profound impairments, resulting in the ceiling effects observed in the present study.

While standardized ACT exercises for the development of flexible selfing behaviour in adolescence were used in the study and adapted where necessary, more recently it has been suggested that the traditional ACT model is unsuitable for use with adolescent samples due to their developmental stage (Hayes & Ciarrochi, 2015). On this basis, Hayes and Ciarrochi (2015) recently proposed a CBS based model of psychological flexibility, specifically for use with young people. This model is known as the DNA-V, and there are no published empirical investigations into this model to date. Although the DNA-V model was developed following the design and testing of the present study, the aims outlined in this model are broadly consistent with those of
this study in implicating the importance of flexible perspective-taking and selfing behaviours. The DNA-V model describes two higher order skills that are important for adolescent development and engaging in meaningful behaviours. These are Self and Social View, flexible perspectives on the self and others, respectively (Hayes & Ciarrochi, 2015). One aspect of the DNA-V model that the intervention in the present study did not target however is values. According to the DNA-V, values are critical during adolescent development, particularly in guiding the behaviours described above. Therefore it is important that future investigations fully examine the DNA-V model by looking at values in addition to flexible selfing and perspective-taking behaviours, in relation to adolescent mental health and well-being.

3.4.1 Strengths & Limitations

The present study had several strengths. Use of an active control group in addition to just a pure control ensured that any potential placebo effects were controlled for (Boot et al., 2013). Measures used in the present study were considered appropriate for the age group under investigation (Greco et al., 2011; Brewer & Kerslake, 2015; Mellor et al., 2015; Szabo, 2010) and were clear and easy to understand. Study measures also demonstrated good reliabilities at each timepoint. Use of online intervention meant that the intervention could be delivered in a convenient manner that helped ensure confidentiality and fidelity, which was identified as an important issue by Van der Gucht et al. (2016).

Use of a screening measure for levels of depression, anxiety and stress at pretest also meant that participants who were higher in distress could be discreetly identified, allowing participants with varying levels of distress to be considered
separately. Previous studies have shown levels of distress (depression, anxiety, and stress) may mediate outcomes (Foody et al., 2013) and findings from the present study seemed to further indicate that this is the case. Finally, the present study used adherence measures to gauge participant attention and understanding. It is critical that adequate checks are in place to determine whether or not an experiment provides adequate impact (Levin & Villatte, 2015), and the present study’s use of adherence measures meant that issues around participants not understanding or engaging with any component of the intervention could be controlled for.

This study also aimed to test the feasibility of this type of intervention. While lab-based studies allow for more controlled investigations into the behaviours of interest, feasibility studies such as this allow for examination of the efficacy of the intervention under less controlled, real-world conditions. In addition to the outcome measures suggesting the unsuitability of this type of intervention with this age-group, a number of issues emerged. The study had a considerable amount of attrition with 58% missingness due to participant dropout at post. Technical glitches occurred in the online research tool resulting in participant responses not being recorded for certain items. Time constraints and lack of resources were also a considerable issue during testing. Some schools did not have a sufficient number of computers, resulting in participants taking turns in completing the intervention and considerably reducing the amount of time allowed for testing. This resulted in some participants running out of time during testing and not completing the deictic relational task (the last measure to be completed), leading to considerable missingness on this variable.

There were a number of other limitations to the present study also. The gender imbalance in the present study was problematic due to the nature of the variables under investigation. There are considerable gender differences in perspective-taking
abilities during adolescence. Mestre et al. (2009) observed a stronger increase in perspective-taking in females aged 13 to 14 years relative to their male counterparts. Likewise, Van der Graaff et al. (2014) found that while perspective-taking increased for males and females during adolescence, increases were steeper in females, with perspective-taking only beginning to increase from age 15 onwards for males.

Similarly there is evidence indicating that males and females diverge in terms of empathic behaviour as they develop through adolescence (Fabes, Carlo, Kupanoff, & Laible, 1999; Van der Graaff et al., 2014; Ciarrochi et al., 2016) and differences in how males and females relate to the self have been documented in the adolescent mental health literature with higher self esteem in males (Dooley and Fitzgerald, 2012), and adolescent females typically more critical of their self-concept (Crocetti et al., 2016).

Females were examined independently in an attempt to control for this, however the low n for male participants meant tests were insufficiently powered and therefore, male participants could not be examined reliably. Therefore, future studies should ensure that samples are balanced for gender and consider males and females separately. The lack of a follow-up group in the present study was also an issue, as ideally maintenance in outcomes should be tested. However this may be considered less problematic in the present study, as no significant improvements were observed at post.

While it was beyond the scope of the present study to consider competencies such as IQ, previous studies have found intelligence scores to be associated with better performance on deictic tasks and therefore future research should investigate and control for intelligence at baseline (Gore, Barnes-Holmes, & Murphy. 2010).
3.4.2 Implications

One limitation identified in the present research is reliance on the use of self-report for all outcome measures bar deictics. Although self-report measures are arguably the most practical option for this type of research, their accuracy has been called into question (Schwarz, 1999; Schwarz & Strack, 1999). Previous CBS self research has also identified this as an issue, suggesting that behavioural measures may be more appropriate (Foody et al., 2013). As behavioural measures may give a more accurate indication of how adolescents relate to the self and others, a natural next step would be to investigate this in relation to mental health, Atkins and Styles (2015; 2016) developed a behavioural measure of the three selves. To date this has only been examined with adult populations (Atkins & Styles, 2015; Atkins & Styles, 2016; Styles, 2015) but findings have demonstrated a clear relationship between a healthier relationship to self in RFT terms and lower distress.

As with the three functionally distinct selves as conceptualized by RFT, deictic relating also gives rise to three distinct ways of relating to other. These include the conceptualized other (content as other), other as process (the process of knowing the other), and other as context (in the context of verbal relations in the other) (Barnes-Holmes et al., 2001). As perspective-taking repertoires are critical to these processes but are not fully developed during adolescence, a behavioural investigation examining how adolescents relate to self and other and how this relates to mental health and well-being at this developmental stage would make for an informative and fruitful investigation, providing a more detailed understanding of these processes. This coding frame also measures occurrences of rule governed behaviour which flexible selfing and perspective-taking have important implications for (Luciano et al., 2012; Atkins & Styles, 2016). As expected outcomes were not observed in the present
study, it is critical that further, more fine-grained basic investigations are carried out in order to better understand how flexible selfing and perspective-taking repertoires impact adolescent mental health and well-being. Findings of such an investigation would inform future development of more effective self-based interventions for adolescents using evidence from CBS.
Chapter 4: Measuring occurrences of Self and Other discriminations in relation to mental health in adolescent textual responses

4.1 Introduction

The first study in the present thesis gave support to a model of the three self-discriminations according to CBS as predictive of adolescent mental health. As CBS underlines the importance of testing theoretical models at both a basic level, and at an applied level (Levin & Villatte, 2015), Study 2 developed a brief school based intervention for the development of flexible selfing repertoires according to CBS, and investigated outcomes using various measures of mental health and well-being. Results from Study 2 did not reveal expected improvements and therefore did not cohere with the findings of Study 1. Various explanations exist as to why this is the case, including the fact that brief interventions, such as that in Study 2, frequently do not provide sufficient training to develop a skill or to undermine existing relational networks (Levin & Villatte, 2015).

However, one notable issue identified in both investigations, which persists across psychological research, is dependence on self-report measures, which can be unreliable (Schwarz, 1999; Schwarz & Strack, 1999). CBS postulates that behavioural measures are a more desirable alternative to self-report (Foody et al., 2013; Gil-Luciano et al., 2017). The importance of examining behaviours at multiple levels of analysis is also considered critical in CBS to advance scientific progress at both an applied and basic theoretical level (Levin et al., 2015). Recently such a behavioural measure of the self-discriminations under investigation in this thesis (and other corresponding behaviours) was developed and found to be predictive of mental health and well being in adult samples (Atkins & Styles, 2016). Therefore, the present study uses this measure to examine occurrences of self and other discriminations in
adolescent textual responses in relation to measures of mental health, well-being, and psychological flexibility.

### 4.1.1 Self relating during adolescence

Adolescence has been widely remarked as period of self-development, and has been characterized as a time during which a lot of self directed evaluation, rumination, and re-conceptualisation occurs (Blakemore & Choudhury, 2006; Masten et al., 1995; Sebastian et al., 2011; Rosenberg et al., 2016). How one relates to the self, particularly one’s self-conceptualisations, during this time has been shown to have considerable implications for well-being, mental health, and social functioning (Sun & Hui, 2007; Yeager & Dweck, 2012; Yeager, Trzesniewski & Dweck, 2013; Yeager et al., 2014). Rosenberg et al. (2016) found that self-concept is more rigid and influential during adolescence, with adolescents between the ages of 14 and 17 showing less stable and a less malleable sense of self relative to adult counterparts. This holds implications for behavioural and psychological adjustment, with poorer coping and increased symptoms of psychopathology as a result of a fixed or rigid self-concept (Rosenberg et al., 2016).

Yeager and Dweck’s (2012) review of students’ self-views showed if one held beliefs that a person’s individual characteristics or attributes can be developed or changed, this was associated with better academic outcomes, in addition to lower aggression and stress associated with aversive social experiences. Yeager, Trzesniewski and Dweck (2013) similarly found that interventions for the development of a more malleable personality theory (i.e. belief that personality characteristics can be changed) led to less aggressive and more pro-social behaviour, as well as less depressive symptoms in response to experiences of exclusion and
victimization. Likewise, Yeager et al., (2014) found correlational and experimental evidence to suggest that this type of training was associated with less negative reaction to social adversity and lower reported stress and physical illness in high school students.

Research has also found evidence to suggest that in addition to individuals holding rigid beliefs around about the self that influence behaviour, people often hold beliefs about others’ personalities and social-moral reality, or in other words, how the world should function (Chiu, Dweck, Tong & Fu, 1997). Specifically, Chiu et al. (1997) observed that when individuals view how the world functions in a fixed or rigid way, they hold beliefs wherein duties within the system in question are fundamental, whereas individuals with a less rigid, more flexible viewpoint hold beliefs on the basis of personal moral beliefs.

4.1.2 Relating to Others during adolescence

Social-emotional cognition undergoes significant development during adolescence due to the significant neural and hormonal changes that occur during this period (Crone & Dahl, 2012; Blakemore, 2008). One notable aspect of this development is that a shift occurs from self-orientated behaviour towards other-orientated behaviour (Eisenberg & Fabes, 2006) with research suggesting that perspective-taking increases during adolescence as a result of cognitive development and maturation of neural regions (Blakemore, 2008; Van der Graaff et al., 2014; Crone & Dahl, 2012).

It has been reported that from upwards of around 12 years young people have better understanding of others’ intentions, and increasingly take other people’s
perspective (van den Bos, Westenberg, van Dijk & Crone, 2010; Steinbeis, Bernhardt & Singer 2012; Humprey & Dumontheil, 2016). During this time the final stage of cognitive development is reached according to Piaget (1965), allowing adolescents the ability to externally observe an interaction and simultaneously consider the perspectives of self and other from a third person point of view. Findings from studies on adolescent perspective-taking show increases between the age of 15 upwards (Eisenberg, Cumberland, Guthrie, Murphy, & Shepard, 2005; Humphrey & Dumontheil, 2016), and development of sophisticated social-cognitive skills, such as mentalising (seeing one’s self as other’s sees them) (Burnett et al., 2011). Development of these skills are important for peer relationships (Crone & Dahl, 2012; Blakemore & Choudhury, 2006) which in turn are important for adolescent mental health and well-being (Schaefer, Kornienko, & Fox, 2011; Masten et al., 2009). Peer groups also strongly influence adolescent identity development and contribute to how adolescents consider both themselves and others (Steinberg & Morris, 2001) with adolescents who strongly identify with a friendship group reporting high self-esteem and better personal and relational development (Tarrant, MacKenzie, & Hewitt, 2006).

4.1.3 Deictic relating and three senses of self and other

According to RFT deictic relational responding (or flexible perspective-taking) give rise to the uniquely human experience of self and identifies three distinct self-discriminations on this basis: self-as-content of verbal relations, self-as-process of verbal relations, and self-as-context of verbal relations (Barnes-Holmes et al., 2001; Atkins & Styles, 2016; Atkins, 2013). Foody et al. (2013) describe the goals of acceptance and commitment therapy as to decrease conceptualized self-as-content,
increase self-as-process, and ultimately increase fluency in self-as-context. This will result in improved and more flexible behavioural outcomes (Foody et al., 2013). Self-as-context is also considered to be important for social-emotional competencies such as compassion and willingness (McHugh, 2015). There is no “I” without “you”, therefore as deictic ability develops this process allows us to also take the perspective of others. In addition to the three behaviourally distinct senses of self, according to RFT, deictic relating also gives rise to three corresponding senses of other: Other-as-Content; Other-as-process; and Other-as-Context.

Other-as-Content, or Other-as-Story (Aktins, 2013; Styles & Atkins, 2016; Barnes-Holmes et al., 2001) refers to the verbal relating with reference to the enduring characteristics of others, which facilitates prediction and understanding the behaviour of others. As with Self-as-Content, Other-as-Content is helpful in social contexts, in that it functions to provide summaries of specific features and characteristics relating to the person in question that allows prediction and understanding of that person’s behaviour. For example, if one conceptualizes another as “sensitive”, they may behave in ways to accommodate this when in the presence of this person. This process can help appropriately target empathic responding. However, as with self-as-content, rigidity of such conceptualisations may interfere with empathy. For example, if someone is fused with the idea that another is deserving and/or responsible for their current emotional state, they are unlikely to respond empathically (Atkins & Parker, 2012). Making judgments based around other-as-content is also a fallible process, as it neglects to account for ongoing cues occurring in the moment (Atkins, 2013).

Other-as-process (Aktins, 2013; Styles & Atkins, 2016; Barnes-Holmes et al., 2001) refers to the dynamic, ongoing verbal relating in reference to the ongoing
present moment experience of other. Barnes-Holmes et al. (2001, p. 134) describe it as “based on a moment-to-moment construction of reactions of the other.” Other-as-Process involves relating verbally and constructing a relational network regarding the state of the other as a result of noticing cues provided by the other. It is critical for modulation of another’s behaviour in interpersonal interactions. It is typically seen in conversations, particularly when others are displaying their reactions and ongoing emotions in an open manner. It is also important during client therapist interactions during psychotherapy (Barnes-Holmes et al., 2001). Batson (2009) differentiates between an “imagine-other” perspective wherein one imagines the other person’s specific point of view in a situation and how that person would feel, while “imagine-self” perspective involves imagining how oneself would feel if one was in the specific situation in question. Other-as-Process may refer to either of the above, however only an “imagine-other” perspective would be empathic in a sense of directly taking another’s viewpoint (Atkins, 2013).

Finally, Other-as-Context (Aktins, 2013; Styles & Atkins, 2016; Barnes-Holmes et al., 2001) refers to experiencing the other outside the realms of time, space and separation. Barnes-Holmes et al. (2001, p.135) describe Other-as-Context as follows:

“When speaker connected to listener as purely conscious person. In this aspect, the speaker and the listener are one, since “HERE and NOW” is imputed to be singular event (i.e. one cannot be HERE and NOW, simultaneously, at different times and places). Perhaps for this reason, the level of self-as-context is associated with a sense of the transcendent other- the two go hand and hand”
Other-as-Context is considered to be a very rare occurrence, when one relates to other purely at a level of bare awareness, or awareness of another’s awareness. As with a transcendent sense of self, it involves defusion from literal content. This is thought to occur mostly in spiritual, intimate, and therapeutic contexts.

Issues that may arise around verbal communication and relating to others may be linked to these verbal discriminations of other. For example, if an individual has difficulty judging the ongoing cues of another (deficits in Other-as-Process), this may cause issues around communicating appropriately, or indeed lack of empathy. Likewise, if one conceptualizes another negatively (“cruel”, “unfriendly” etc.) they may behave accordingly, and therefore fail to interact effectively with this person (Barnes-Holmes et al., 2001).

While thesis Study 1 and other previous investigations (Atkins & Styles, 2015; 2016; Styles, 2015) have demonstrated the relationship between the self discriminations and mental health and well being, these senses of self and other also have important implications for social functioning. Evidence from a review by Atkins (2013) suggests that when interacting with an other and taking on their perspective emotionally, unless one can additionally construct a discrete relational network regarding one’s own experience and holds these two networks in a frame of distinction, one’s own experience will reflect that of the other and result in personal distress. The awareness of a constant, enduring sense of self that occurs when self-as-context is operating is therefore important in facilitating this experience (Atkins & Parker, 2012; McHugh, 2015). Self-other differentiation is important for positive social functioning and responding empathically without experiencing distress. This is a mature process and can take a long time to develop; therefore it is most likely underdeveloped in adolescents (Atkins, 2013). While self-other differentiation at
content level (i.e. self-as-story and other-as-story) leads to fusion with conceptualisations of other and judgment, such differentiation at a more experiential process level is critical for relating to others experience in the present without personal distress (Self-as-Context and Other-as-Context) (Atkins, 2013; Atkins & Parker, 2012).

4.1.4 Rule-governed behaviour and Self-rules

The self-discriminations described above also hold implications for a class of behaviour described in the CBS literature as Self-rules (Luciano et al., 2012; Barnes-Holmes et al., 2001). These are a class of rule-governed behaviour (i.e. behaviour in relation to oneself which are influenced by verbal stimuli), and function to describe specific ways in which one must behave under given circumstances or context, or for the purpose of achieving a particular outcome or endgoal. Self-rules involve “if-then” contingencies, which describe a specific behavioural response and desired consequence to a particular experience.

CBS describes three distinct types of rule-governed behaviour: pliance, tracking, and augmenting (Zettle & Hayes, 1982; Barnes-Holmes, O’Hora et al., 2001; Torneke et al., 2008). Pliance describes the behaviour that arises as a result of multiple exemplar training through a history of reinforcement for behaving in accordance with specified rules (E.g. Parents praise child for good behaviour). If the natural contingencies of rule-following that develop as a result of appropriate rule-following behaviour are not contacted, this can lead to generalized pliance resulting in an inflexible behavioural repertoire. Tracking occurs when behaving in accordance with a rule arises as a result of natural consequences. An example of tracking would be if someone lost weight as a result of exercising. Issues can arise with tracking
under certain circumstances, particularly in contexts where it is unworkable. Such an example would be attempting to remove or avoid unwanted psychological experiences by behaving in accordance rules such as “It’s bad to feel to pain or discomfort so I must not have these feelings” or “I cannot do the things that are important to me when I feel bad.” Tracks such as these will most likely lead to experiential avoidance and psychological inflexibility (Luciano et al., 2012; Torneke et al., 2008).

Finally, augmenting refers to the most complex type of rule-governed behaviour, which is described by Barnes-Holmes et al. (2001, p.109) as “rule-governed behaviour due to relational networks that alter the degree to which events function as consequences.” Put simply augmenting refers to the establishment of new events as effective consequences as a result of one’s relational network. Augmenting is important for personally held values as it allows current consequences to acquire appetitive function by relating them to values, for example if a person chooses to walk to work instead of driving because they hold the long-term abstract value of being fit and healthy. Ineffective augmenting on the other hand may lead to experiential avoidance (Luciano et al., 2012; Torneke et al., 2008).

As a more flexible selfing repertoire is developed, one should be able to respond more effectively to self-rules. Specifically, as self-as-content becomes less rigid, and self-as-process and self-as-context increase, one is better able to contact and behave in accordance with direct contingencies of experience rather than verbal abstractions thereby increasing sensitivity to one’s context and facilitating a more flexible behavioural repertoire (Vilardaga, 2009; Luciano et al., 2012; Atkins & Styles, 2016). This allows the individual to behave in accordance with personally held values, effectively managing aversive or appetitive functions by establishing the
conditions necessary for effective augmental regulation. Therefore, deficits in self-as-process and self-as-context, and a highly fused self-as-content will most likely lead to rigid rule-following and generalized pliance, hindering people from engaging with long-term values and increasing psychological inflexibility (Luciano et al., 2012).

4.1.5 Empirical investigations into CBS account of self and other

Until recently, there has been a dearth of empirical investigations into the CBS conceptualisation of self and rule-governed behaviour, and to the best of the author’s knowledge, there have been no published investigations examining the three senses of other. However, a recent string of studies have been carried out which examine these self and other discriminations, and different types of rule at a behavioural level (Atkins & Styles, 2015; Atkins & Styles, 2016; Styles, 2015). Specifically a coding frame was developed to qualitatively measure occurrences of each of these types of behaviour in speech samples (Styles & Atkins, 2016; See Table 14 for summary). Atkins and Styles (2015) first measured 5 self codes (Self-as-rigid story; Self-as-flexible story; Self-as-process; Self-as-Distinction; Self-as-Hierarchy) and 3 other codes (Other-as-Story; Other-as-process; Other-as-Context) (however authors ultimately only reported the senses of self), in a sample of seven adults who were participating in a Mindfulness Based Stress Reduction programme. Authors completed semi-structured interviews with participants before and after the course, and participants were asked to report on their hopes and aspirations for the programme and once they had completed the programme they were asked to reflect on and discuss their experience. The main purpose of these interviews was to get a sense of how the participant made sense of different life experiences and behaved in accordance with this. Study findings showed a reduction in self-as-rigid-story, while
self-as-flexible-story increased. No significant changes were observed for self-as-process, while self-as-distinction increased, as did self-as-hierarchy, however this increase was non-significant. These findings seem to imply that increased mindfulness is associated with more flexible selfing behaviours. Although these findings reached significance, authors cautioned that due to the low n they must be considered tentatively.

In their subsequent study, Atkins and Styles (2016) further refined and developed their coding frame so it also measured self-rules (Values oriented self rules-VOR; and control oriented self rules-COR) in addition to self-discriminations (Self-as-Story Positive-SS-Pos; Self-as-Story Negative-SS-Neg; Self-as-Process-SP; Self-as-context-SX). Although self-as-context was initially separated into self-as-distinction (SX1) and self-as-hierarchy (SX2), no occurrences of self-as-hierarchy emerged therefore self-as-distinction was referred to as self-as-context (SX). They measured these codes in relation to measures of affect, well being, and depression, anxiety, and stress, in a sample of 29 legal and medical professionals. As with the previous study, participants took part in semi-structured interviews, wherein they reported on personal life events and emotional and epistemic responses these entailed. Findings from this study revealed that these self-discriminations were predictive of well-being at 6 months and 12 months follow-up. Specifically, higher SS-neg was related to more negative affect at times time one and three, and higher SS-pos was related to higher stress at time one.

Self-as-process and COR were not found to reliably relate to any of the outcomes variables under investigation. Higher VOR were related to better affect, overall mental health, psychological well-being, and higher overall life satisfaction, with these findings retained at 6 and 12 months follow-up for most variables. Higher
SX was not significantly related to any well-being measure at time one, but at follow-up it was found to be significantly predictive of lower depression. One particularly notable finding was that the combination of higher SX and higher VOR were related to improved affect, lower stress, anxiety, and depression and better overall psychological well-being and satisfaction with life. This finding was retained across all time-points, including 12 months follow-up for overall psychological well-being. While it was noted that higher SX was predictive of lower depression when controlling for VOR, and VOR were predictive of stress, anxiety and psychological well being when controlling for SX the combination of VOR and SX was the strongest predictor overall. Authors concluded that utterances of these two self-discriminations in speech were related to better well-being, and although they alone are not proxies for psychological flexibility, they are important contributors.

Styles (2015) examined and reported on the full range of self and other discriminations described in the two studies above, as well as augmentals and personal beliefs (control and values oriented) in relation to self-report measures of well-being and psychological flexibility, in an unpublished doctoral thesis. The sample consisted of 4 university academics ($M=40.8$), all four of whom had mindfulness training, and 6 professionals who worked at the university ($M=46.5$), three of whom had mindfulness training. As the study preceding this one had observed that the combination of SX and VOR was the strongest predictor of well being overall, this study further expanded upon this by examining the combination of SX, OX, and VOR. These two combinations of codes were referred to as self-flexibility and social flexibility respectively. Participants completed the same semi-structured interviews as those from the earlier studies, and despite the small sample and, therefore, low power, a number of significant findings emerged. Higher
psychological flexibility was related to significantly higher occurrences of SX, OX, VOR and self-flexibility and social flexibility. VOR was related to higher psychological well-being at 6 months post-interview. Regression analyses revealed a model of VOR, SX, and OX was predictive of psychological flexibility with VOR emerging as the strongest predictor. A number of non-significant relationships also emerged. While remaining codes were not significantly related to measures of flexibility and well-being, relationships generally trended in expected directions. In particular, AUG-val and AUG-con codes were related to higher and lower well-being and psychological flexibility, respectively and COR was related to lower psychological flexibility and well-being. A rather weak relationship between SS-Pos and well-being and flexibility emerged, and no meaningful relationships between OS-Pos and OS-Neg and self-report measures were found. Despite the low N in this investigation, results are promising and implicate the importance these type of self and other discriminations for psychological flexibility.

While these studies appear to give support to this coding frame as predictive of well-being and mental health, to date it has only tested in rather small samples of middle-aged professional adults. Therefore, further testing with larger, more varied samples is critical. Atkins and Styles (2016) observed that in their adult sample ($M=43$ years), that as age increased participants were less likely to utter SS-neg and more likely to utter VOR. Levels of these discriminations are likely to differ quite considerably in an adolescent sample. Likewise, Study 1 in the present thesis not only showed that SP was significantly predictive of lower mental health concerns in adolescents; it emerged as the largest predictor of adolescent mental health. Atkins and Styles (2016) suggested that a behavioural measure of SP is possibly overly
sensitive to contextual influences, leading to issues in detecting any relationships. In either case, it is important this is further investigated with a larger sample.
### Table 14 Descriptions of codes used in Study 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Story</td>
<td>SS</td>
<td>Self conceptualisation or characteristics and evaluations pertaining to them</td>
</tr>
<tr>
<td>Self-as-Process</td>
<td>SP</td>
<td>Description of moment to moment experience of self in both physical and psychological terms</td>
</tr>
<tr>
<td>Self-as-Context</td>
<td>SX</td>
<td>Experience of self where one transcends one’s own private events, and these are framed as either distinct from or contained within oneself.</td>
</tr>
<tr>
<td>Self Rule</td>
<td>COR /VOR</td>
<td>Class of rule-governed behaviour specifying behaviours for the self that must be engaged in to either achieve certain appetitive outcomes or avoid aversive outcomes.</td>
</tr>
<tr>
<td>Other-as-Story</td>
<td>OS</td>
<td>Conceptualisations or characteristics of another and evaluations pertaining to them</td>
</tr>
<tr>
<td>Other-as-Process</td>
<td>OP</td>
<td>Moment to moment psychological and physical experience of another</td>
</tr>
<tr>
<td>Other-as-Context</td>
<td>OX</td>
<td>Viewing another’s psychological perspective as distinct to one’s own, and awareness of the other’s psychological content as either distinct from themselves or contained within them</td>
</tr>
<tr>
<td>Personal Belief</td>
<td>COB/VOB</td>
<td>Class of rule-governed behaviour specifying behaviours for the world that must be engaged in to either achieve certain appetitive outcomes or avoid aversive outcomes.</td>
</tr>
</tbody>
</table>
Augmental AUG Emotions which establish motivation for rule-governed behaviour and may contain either appetitive or avoidance functions

No code NUL No self or other discrimination, or rule-governed behaviour

4.1.6 The present study

The aim of the present study is to examine the relationship between the three senses of self and mental health in adolescents at a behavioural level, building upon the findings of Study 1. The three corresponding senses of other and rule-governed behaviour will also be examined. These discriminations will be examined in relation to mental health, well-being, and psychological flexibility in adolescents. This study will address a limitation of the earlier investigations in the thesis through use of the behavioural measure of these self and other discriminations developed by Atkins and Styles (2015; 2016). While this has only been used with adult populations to date, it has been found to be reliably predictive of measures of well-being and psychological flexibility. These discriminations will be measured in relation to quantitative measures of depression, anxiety, stress, well-being, and experiential avoidance in a mixed methods design. A series of six open-ended questions will be used to elicit responses. Participants will be asked to discuss events (and thoughts and feelings pertaining to them) experienced either by themselves, or by someone who they know, wherein a number of specified emotions were experienced.

A number of specific predictions are made based on the findings of the earlier investigations with adult samples and the findings of the present thesis. Firstly, it is
predicted that a higher number of occurrences of rigid self-as-story (positive or negative) will be related to higher psychological inflexibility, decreased well-being and increased mental health concerns. While self-as-process was related to lower levels of mental health concerns in Study 1, findings of Atkins & Styles (2015; 2016) and Styles (2015) were not consistent with this, therefore no specific prediction is made for self-as-process. It is predicted that higher occurrences of self-as-context, will be related to lower mental health concerns, in particular depression, and psychological inflexibility, and higher well being. Likewise, it is also predicted that higher values-oriented self rules will be predictive of lower mental health concerns and psychological inflexibility and better well-being, and that the combination of higher values-oriented self rules and self-as-context will be related to higher well-being, lower mental health concerns, and higher psychological flexibility.

4.2 Method

4.2.1 Ethics

Ethical approval for this study was granted from the University College Dublin Human Research Ethics Committee – Humanities (HS-14-02-Moran-McHugh). All requirements were complied with in full as outlined by the research ethics committee. All participants were under the age of 18 years old, and were therefore required to provide written parental consent and participant assent to partake in the research. Parents and guardians were provided with information sheets and consent forms ahead of the study and only those who presented a signed form ahead of the study or on the day could participate.
As the study asked participants to report on sensitive topics, including mental health and well-being, participants were provided with contact details of support services. School guidance counselors were also informed that the study was taking place. Participants also had the option of calling a parent if they wished to do so. Participants were not asked for their name or any other identifying information and every effort was made to protect the identity of the participants involved in the study.

4.2.2 Design and Sample

This study uses a mixed methods design with open-ended questions and quantitative, self-report measures. Schools offering Transition Year in Counties Louth and Dublin were randomly selected from the online Department of Education database and invited to participate in the study. While 97 Transition Year students originally took part in the research, 19 participants did not engage with the tasks or provided ambiguous answers (e.g. did not explicitly discriminate whether referring to themselves or someone they knew) where the scorer could not assign a code. Therefore these participants were excluded from the analysis, leaving a sample of 76 (19 Male), ranging in age from 15 to 17 years old ($M=15.67; SD=.526$). This is considered a robust sample for a mixed methods investigation (González-Castro, Kellison, Boyd, & Kopak, 2010).

4.2.3 Measures

_The Depression Anxiety and Stress Scale-21_ (DASS-21; Lovibond, S.H. & Lovibond, P.F.,1995) is a self-report measure of mental health, or depression, anxiety, and stress when divided into its subscales. It is made up of 21 items (or 3 7-
item subscales). Items in the depression subscale include “I felt that I had nothing to look forward to.” Anxiety subscale items include “I was worried about situations in which I might panic and make a fool of myself.” Stress subscale items include “I found myself getting agitated.” Items are measured on a 4 point Likert, with responses ranging from “Did not apply to me at all” to “Applied to me very much.” Higher scores indicate higher levels of mental health concerns. This scale has been found to be reliable across varying clinical levels and age-groups (Szabo, 2010; Mellor et al., 2015). Reliabilities for the present study were: depression= .866; anxiety= .819; and stress= .752.

Avoidance and Fusion Questionnaire for Youth (AFQ-Y8; Greco, Lambert, & Baer, 2008) is an eight item self-report measure of psychological inflexibility and experiential avoidance in young people. Higher scores on the AFQ-Y8 indicate higher avoidance and psychological inflexibility. This scale uses a 5 point Likert scale with responses ranging from “Not at all True” to “Very True.” Items include “My thoughts and feelings mess up my life” and “I do worse in school when I have thoughts that make me feel sad.” The AFQ-Y8 has been previously shown to have good reliability (Greco et al., 2008) and Cronbach’s alpha for the present study was .775.

The Short Warwick Edinburgh Mental Well-being Scale (SWEMWBS; Tennant et al., 2007) is an eight item self-report measure of mental well-being. Scale items include statements such as “I’ve been feeling optimistic about the future” and “I’ve been thinking clearly” and are answered on a 5 point Likert scale with responses ranging from “None of the time” to “All of the time.” Higher scores on the
SWEMWBS indicate higher wellbeing. This scale has been found to have acceptable reliability (Haver et al., 2015) and Cronbach’s alpha for the present study was .796.

4.2.4 Emotional Deictic Tasks

Participants were asked to respond to a series of open-ended tasks regarding events involving a number of specified emotions (i.e., happy, sad, and angry) (See Appendix D). Tasks were adapted from deictic relational trials of I-You such as those used in McHugh et al. (2004) and Vilardaga et al. (2012), and emotional cues were added. Tasks included a series of video clips presenting scenarios where different characters experienced the above emotions. Two independent viewers (including an expert in Youth Mental Health research) examined each of the clips to ensure their suitability. Each consisted of 2 parts. The first part required the participant to tact the emotion presented to them in the scenario provided, and describe how they would feel if they were in that situation (E.g. “If you were Taylor in this situation, how would you be feeling?”). The second part required the participant to think of a time when either they themselves, or a person that they knew, experienced the emotion in question (Now, I want you to remember a time when you/someone you know was feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts might have showed up for you/this person. Bring that time to mind and write a little about the thoughts and feelings you/they were having at that time). They were provided with blank spaces in which to respond and were not given a word count or limit on how much detail to provide (See Figure 7). Tasks alternated between asking participants to report on their own experience and when someone they knew had the experience in question.
Figure 7 Sample Emotional Deictics task

4.2.5 Procedure

All participants completed the study online using www.Qualtrics.com (Qualtrics Labs Inc., 2009) an online research tool in the school computer room during class time. Participants were instructed to answer as honestly as possible, and to not look into any other student’s computer to protect confidentiality. If a participant wished to withdraw from the study at any point, or if they had any questions
regarding the study, they were asked to attract the attention of the researcher or class teacher.

4.2.6 Coding Frame and Analytic Strategy

Participant responses were coded for the three senses of self and other according to CBS, and rule-governed behaviour using the coding frame developed by Atkins & Styles (2015; 2016). A summary of the different codes and coding criteria are presented in Table 15 (See Styles & Atkins, 2016 for full summary). Although, the coding frames specify 2 types of self-as-context (distinction and hierarchy), consistent with Atkins & Styles (2016), no occurrences of hierarchy were observed, therefore the code for self-as-context (SX) refers exclusively to distinction in the present study. Likewise, three types of self-as-story and other-as-story are described in the coding frame, positive, negative, and neutral, however no neutral self or other-as-story codes emerged. Finally, the coding criteria for Nul codes in the present study was adjusted slightly from the original criteria in the coding frame. The original coding frame specified that these codes should be used where utterances do not meet criteria for a self, other, or rule governed behaviour code, however in the present study instances where participants reported not having had a certain experience or not having experience a certain emotion were coded as Nul. Each response was assigned a minimum of one code and responses could be coded with multiple overlapping codes, however, only one of each individual code could be assigned to a response. Each of the two parts of the Emotional Deictics tasks was treated as an individual unit of analysis, meaning 12 responses per participant were analysed in total.
<table>
<thead>
<tr>
<th>Code</th>
<th>Abbreviation</th>
<th>Coding Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Story</td>
<td>SS</td>
<td>Conceptualised quality or aspect of self/evaluations of those qualities and characteristics of the self. May be framed as positive (pos), or negative (neg)</td>
</tr>
<tr>
<td>Self-as-Process</td>
<td>SP</td>
<td>Description of experience of self in the moment. Statements reflect ongoing private experience within physical and mental worlds of speaker</td>
</tr>
<tr>
<td>Self-as-Context</td>
<td>SX</td>
<td>Statement describes experience of self in relation to distinction from private experience (Thoughts, experiences, emotions etc.)</td>
</tr>
<tr>
<td>Self Rule</td>
<td>COR/VOR</td>
<td>Statement articulated response that should or would be taken in given context or to achieve given outcome. Used to guide or evaluate effectiveness of one’s own behaviour by coordinating rules with behaviour. Self rules may guide behaviour to achieve valued ends or to avoid aversive consequences</td>
</tr>
<tr>
<td>Other-as-Story</td>
<td>OS</td>
<td>Any statement that implies particular qualities and characteristics cause of other’s behaviour. Abstracted story about the other is relatively inflexible, and may be positive (pos) or negative (neg)</td>
</tr>
<tr>
<td>Other-as-Process</td>
<td>OP</td>
<td>Descriptions of past and possible future behaviours and (inferred) inner experience of other.</td>
</tr>
<tr>
<td>Other-as-Context</td>
<td>OX</td>
<td>Instances where speaker discriminates another’s thoughts/feelings as distinct from their own and are apparently seeing others’ “perspectives”</td>
</tr>
<tr>
<td>Personal Belief</td>
<td>COB/VOB</td>
<td>Literal truths held by speaker describing way world works or asserting how other people should behave. May be control or values oriented</td>
</tr>
</tbody>
</table>
The relationship between occurrences of the three senses of self and other according to CBS, and rule-governed behaviour in adolescent textual responses, was measured in relation to quantitative measures of mental health, well being, and psychological flexibility. Correlational analyses were used to examine relationships between occurrences of the different codes and quantitative measures.

4.2.7 Reliability

Two independent scorers coded each of the responses across participants, which were subsequently matched to establish a reliability score. Cohen’s Kappa was used to establish a reliability score. The two scorers discussed any responses where codes did not match until agreement was reached.

4.3 Results

4.3.1 Descriptive Statistics

Data were entered into SPSS (Statistical Package for the Social Sciences) Version 20 file. Descriptive statistics and reliabilities for study quantitative variables
are presented in Table 16. All skewness and kurtosis values for these variables fall within the range for excellent reliability (George & Mallery, 2001). As less than 1% of quantitative data were identified as outlying based on z scores +/- 3.29 (Tabachnick & Fidell, 2007), these data are retained.

Table 16 Descriptive Statistics and Normality Scores for Quantitative Study 3 Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD)</th>
<th>M (SD)</th>
<th>M (SD)</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>5.46 (4.38)</td>
<td>4.79 (4.08)</td>
<td>5.68 (4.49)</td>
<td>0-17</td>
<td>.795</td>
<td>-.180</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>5.86 (4.28)</td>
<td>4.74 (3.45)</td>
<td>6.23 (4.49)</td>
<td>0-20</td>
<td>.887</td>
<td>.368</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>7.41 (3.75)</td>
<td>6.84 (3.80)</td>
<td>7.60 (3.75)</td>
<td>1-15</td>
<td>.410</td>
<td>-.592</td>
</tr>
<tr>
<td>Psychological Flexibility (AFQ-Y8)</td>
<td>10.95 (6.10)</td>
<td>8.95 (5.95)</td>
<td>11.61 (6.05)</td>
<td>1-25</td>
<td>.400</td>
<td>-.421</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>23.47 (4.71)</td>
<td>25.53 (4.60)</td>
<td>22.79 (4.58)</td>
<td>12-34</td>
<td>-.379</td>
<td>-.195</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation.

Descriptive statistics for the different types of code (qualitative measures) examined are presented in Table 17. While most variables fell within the acceptable range for reliability (Mindrila, 2010), 5 variables (SX, OX, VOB, COB, & NUL) violated the assumptions of normality. Due to the qualitative nature of the codes examined in this study it is expected that there will be a large degree of variance of in the amount of codes uttered across participants, therefore these are not analysed for outliers (Barlour, 2001).
Table 17 Descriptive Statistics for each type of code in Study 3

<table>
<thead>
<tr>
<th>Code</th>
<th>$M$ (SD) Total</th>
<th>$M$ (SD) Males</th>
<th>$M$ (SD) Females</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Story-Positive (SS-Pos)</td>
<td>1.237 (.108)</td>
<td>.895 (.115)</td>
<td>1.35 (1.04)</td>
<td>0-4</td>
<td>.418</td>
<td>-.574</td>
</tr>
<tr>
<td>Self-as-Story-Negative (SS-neg)</td>
<td>1.61 (1.48)</td>
<td>.895 (1.32)</td>
<td>1.84 (1.47)</td>
<td>0-6</td>
<td>.969</td>
<td>.634</td>
</tr>
<tr>
<td>Self-Process (SP)</td>
<td>9.55 (1.93)</td>
<td>9.37 (1.71)</td>
<td>9.61 (2.02)</td>
<td>3-12</td>
<td>-1.18</td>
<td>2.41</td>
</tr>
<tr>
<td>Self-Context (SX)</td>
<td>.145 (.423)</td>
<td>.053 (.229)</td>
<td>.175 (.468)</td>
<td>0-2</td>
<td>3.07</td>
<td>9.29</td>
</tr>
<tr>
<td>Values-Oriented Self Rule (VOR)</td>
<td>.184 (.509)</td>
<td>.105 (.459)</td>
<td>.211 (.526)</td>
<td>0-2</td>
<td>2.78</td>
<td>6.83</td>
</tr>
<tr>
<td>Control Oriented Self Rule (COR)</td>
<td>.263 (.551)</td>
<td>.263 (.562)</td>
<td>.263 (.552)</td>
<td>0-2</td>
<td>2.02</td>
<td>3.20</td>
</tr>
<tr>
<td>Other-as-Story-Positive (OS-Pos)</td>
<td>.250 (.466)</td>
<td>.263 (.562)</td>
<td>.246 (.434)</td>
<td>0-2</td>
<td>1.58</td>
<td>1.49</td>
</tr>
<tr>
<td>Other-as-Story-Negative (OS-Neg)</td>
<td>.303 (.566)</td>
<td>.105 (.315)</td>
<td>.368 (.616)</td>
<td>0-3</td>
<td>2.19</td>
<td>6.15</td>
</tr>
<tr>
<td>Other-as-process (OP)</td>
<td>1.49 (1.32)</td>
<td>1.47 (1.57)</td>
<td>1.49 (1.24)</td>
<td>0-5</td>
<td>.350</td>
<td>-.966</td>
</tr>
<tr>
<td>Other-as-Context (OX)</td>
<td>.132 (.472)</td>
<td>.211 (.713)</td>
<td>.105 (.363)</td>
<td>0-3</td>
<td>4.34</td>
<td>21.03</td>
</tr>
</tbody>
</table>
Preliminary analyses were conducted to test for any possible differences for participant gender. Independent samples t-tests were used on variables where properties of normality are met while the non-parametric equivalent test, Mann Whitney U, was used on variables where properties of normality are violated. The rough false discovery is used to control for type 1 error associated with making multiple comparisons by multiplying $p$ values by $(n+1)/2n$ where $n$ is the number of tests carried out (Benjamini & Hochberg, 1995). Using this procedure, the $p$ value was reduced to .0263.

Significant differences for participant gender were observed with higher negative self and other-as-story, and higher control augmentals for female participants. It was also noted that the difference on well-being between males and

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values-Oriented Personal Belief (VOB)</td>
<td>.040 (.196)</td>
<td>00 (00)</td>
<td>.053 (.225)</td>
<td>0-1</td>
<td>4.83</td>
</tr>
<tr>
<td>Control Oriented Personal Belief (COB)</td>
<td>.066 (.250)</td>
<td>.053 (.229)</td>
<td>.070 (.258)</td>
<td>0-1</td>
<td>3.57</td>
</tr>
<tr>
<td>Augmental-Values (AUG-val)</td>
<td>.684 (.819)</td>
<td>.366 (.597)</td>
<td>.790 (.861)</td>
<td>0-3</td>
<td>.948</td>
</tr>
<tr>
<td>Augmental-Control (AUG-con)</td>
<td>.421 (.853)</td>
<td>.158 (.375)</td>
<td>.509 (.947)</td>
<td>0-3</td>
<td>2.11</td>
</tr>
<tr>
<td>No code (NUL)</td>
<td>.842 (1.69)</td>
<td>.895 (1.20)</td>
<td>.825 (1.83)</td>
<td>0-9</td>
<td>2.96</td>
</tr>
</tbody>
</table>

Note: $M$=Mean; $SD$=Standard Deviation.
females was marginally significant, with higher well-being for males (See Tables 18 & 19). Therefore, in addition to analysing the sample as a whole, analysis will be repeated with female participants only to control for any possible gender effects. Analysis will not be repeated with male participants only, as low n for males participants meant tests would be insufficiently powered.

**Table 18** Differences across codes and quantitative measures for gender (Parametric)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (DASS-Dep)</td>
<td>74</td>
<td>-0.768</td>
<td>.445</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>74</td>
<td>-1.322</td>
<td>.190</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>74</td>
<td>-0.757</td>
<td>.451</td>
</tr>
<tr>
<td>Psychological Flexibility (AFQ-Y8)</td>
<td>74</td>
<td>-1.671</td>
<td>.099</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>74</td>
<td>2.253</td>
<td>.027</td>
</tr>
<tr>
<td>Self-as-Story Positive (SS-Pos)</td>
<td>74</td>
<td>-1.609</td>
<td>.112</td>
</tr>
<tr>
<td>Self-as-Story Negative (SS-Neg)</td>
<td>74</td>
<td>-2.500</td>
<td>.015</td>
</tr>
<tr>
<td>Self-as-Process (SP)</td>
<td>74</td>
<td>-0.477</td>
<td>.635</td>
</tr>
<tr>
<td>Values-Oriented Self Rule (VOR)</td>
<td>74</td>
<td>-0.779</td>
<td>.439</td>
</tr>
<tr>
<td>Control-Oriented Self Rule (COR)</td>
<td>74</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Other-as-Story Positive (OS-Pos)</td>
<td>74</td>
<td>0.141</td>
<td>.888</td>
</tr>
<tr>
<td>Other-as-Story Negative (OS-Neg)</td>
<td>61.149</td>
<td>-2.413</td>
<td>.019</td>
</tr>
<tr>
<td>Other-as-process (OP)</td>
<td>74</td>
<td>-0.050</td>
<td>.960</td>
</tr>
<tr>
<td>Augmental-Values (AUG-val)</td>
<td>74</td>
<td>-1.976</td>
<td>.052</td>
</tr>
<tr>
<td>Augmental-Control (AUG-con)</td>
<td>71.74</td>
<td>-2.307</td>
<td>.024</td>
</tr>
</tbody>
</table>

**Table 19** Differences across codes and quantitative measures for gender (Non-parametric)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N1, N2</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
</table>
4.3.3 Reliability

After two independent coders scored all codes, inter-reliability was calculated using Cohen’s Kappa statistic. Cohen’s Kappa is considered superior to percentage agreement and controls for common absences. Scores should be upwards of .4 to be considered reliable, while scores upwards of .75 are considered excellent (Fleiss, 1981). Reliabilities for each of the codes in the present study are summarized in Table 20. Reliabilities for Values and Control Augmentals, fell slightly outside the acceptable range. This was most likely due to the arguably more subjective nature of the coding criteria for these variables. Although, coders carefully discussed all responses until agreement was reached, findings pertaining to these two codes should be interpreted with caution.

Table 20 Inter-rater reliability for self and other discrimination, and rule-governed behaviour codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Cohen’s Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Context (SX)</td>
<td>19, 57</td>
</tr>
<tr>
<td></td>
<td>520.50</td>
</tr>
<tr>
<td></td>
<td>.668</td>
</tr>
<tr>
<td>Other-as-Context (OX)</td>
<td>19.57</td>
</tr>
<tr>
<td></td>
<td>516.00</td>
</tr>
<tr>
<td></td>
<td>.617</td>
</tr>
<tr>
<td>Values-Oriented Personal Belief (VOB)</td>
<td>19, 57</td>
</tr>
<tr>
<td></td>
<td>503.50</td>
</tr>
<tr>
<td></td>
<td>.239</td>
</tr>
<tr>
<td>Control-Oriented Personal Belief (COB)</td>
<td>19, 57</td>
</tr>
<tr>
<td></td>
<td>535.00</td>
</tr>
<tr>
<td></td>
<td>.898</td>
</tr>
<tr>
<td>No code (NUL)</td>
<td>19, 57</td>
</tr>
<tr>
<td></td>
<td>450.50</td>
</tr>
<tr>
<td></td>
<td>.215</td>
</tr>
<tr>
<td>Code</td>
<td>Proportion</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Self-as-Story-Positive (SS-Pos)</td>
<td>.665</td>
</tr>
<tr>
<td>Self-as-Story-Negative (SS-neg)</td>
<td>.770</td>
</tr>
<tr>
<td>Self-as-Process (SP)</td>
<td>.925</td>
</tr>
<tr>
<td>Self-as-Context (SX)</td>
<td>.462</td>
</tr>
<tr>
<td>Values-Oriented Self Rule (VOR)</td>
<td>.440</td>
</tr>
<tr>
<td>Control Oriented Self Rule (COR)</td>
<td>.765</td>
</tr>
<tr>
<td>Other-as-Story-Positive (OS-Pos)</td>
<td>.605</td>
</tr>
<tr>
<td>Other-as-Story-Negative (OS-Neg)</td>
<td>.436</td>
</tr>
<tr>
<td>Other-as-process (OP)</td>
<td>.971</td>
</tr>
<tr>
<td>Other-as-Context (OX)</td>
<td>.773</td>
</tr>
<tr>
<td>Values-Oriented Personal Belief (VOB)</td>
<td>.400</td>
</tr>
<tr>
<td>Control Oriented Personal Belief (COB)</td>
<td>.440</td>
</tr>
<tr>
<td>Augmental-Values (AUG-val)</td>
<td>.382</td>
</tr>
<tr>
<td>Augmental-Control (AUG-con)</td>
<td>.361</td>
</tr>
<tr>
<td>No code (NUL)</td>
<td>.949</td>
</tr>
</tbody>
</table>

4.3.4 Occurrences of codes

Occurrences of each type of code plus examples are presented in Table 21. There were two parts to each of the emotional tasks in the study, the first where participants had to imagine they were undergoing the experience of the character presented in the task (“Think a minute to imagine you were in this situation. If you were X, how would you feel?”), and the second wherein they had to report on a time when they or someone they knew experienced an event in which similar thoughts and emotions were experienced (“Pick a time when broadly similar thoughts and feelings...
showed up for you. Bring to mind that time and write a little about the thoughts and feelings you were having). No notable differences were observed in the frequency of codes for these two separate parts across responses, therefore they are not analysed separately. Self-as-process was the most frequently occurring code by a considerable margin making up 57.91% of codes, followed by self-as-story negative at 9.43%, and other-as-process at 8.11%. The least frequently occurring codes were self-as-context, other-as-context, control oriented beliefs and values-oriented beliefs all making up less than 1% of codes at .86%, .78%, .55%, and .16%, respectively.

### Table 21 Occurrences of Codes with examples

<table>
<thead>
<tr>
<th>Code</th>
<th>Example</th>
<th>Occurrences</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Story-Positive (SS-Pos)</td>
<td>“I felt really good and happy, I felt wanted and important and like I was loved”</td>
<td>95</td>
<td>7.4</td>
</tr>
<tr>
<td>Self-as-Story-Negative (SS-neg)</td>
<td>“I was feeling like I had no one to turn to. That I was unwanted and alone.”</td>
<td>121</td>
<td>9.43</td>
</tr>
<tr>
<td>Self-as-Process (SP)</td>
<td>“I remember being alone and scared, fearing that my parents would not return. I was younger at the time, so my feelings would've been more tense than if I was in the situation now. However, I would still be scared”</td>
<td>734</td>
<td>57.91</td>
</tr>
<tr>
<td>Self-as-Context (SX)</td>
<td>“I remember looking at girls in magazines or something and they were gorgeous and I felt lots of bad thoughts about myself show up. Because the standards of these girls were so high I felt like I was worthless.”</td>
<td>11</td>
<td>.86</td>
</tr>
<tr>
<td>Values-Oriented Self Rule (VOR)</td>
<td>“I feel feelings of happiness and that feeling of being loved when I help other people. I love to see people happy and when they're happy I'm happy”</td>
<td>14</td>
<td>1.09</td>
</tr>
<tr>
<td>Control Oriented Self Rule (COR)</td>
<td>“Totally humiliated, I'd never want to walk outside or leave my room. I'd be really angry at who ever made it I'd probably break something.”</td>
<td>20</td>
<td>1.56</td>
</tr>
<tr>
<td>Other-as-Story-Positive (OS-Pos)</td>
<td>“It was very hard getting a knock back at something you love doing but she took the problem she was told she had and went</td>
<td>18</td>
<td>1.40</td>
</tr>
<tr>
<td>Category</td>
<td>Quote</td>
<td>Frequency</td>
<td>Value</td>
</tr>
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</tr>
<tr>
<td>Other-as-Story-Negative (OS-Neg)</td>
<td>“away and worked harder at it and proved others wrong that yes she can do anything that she outs her mind to.” “they felt weak and alone, they were very scared and anxious”</td>
<td>18</td>
<td>1.40</td>
</tr>
<tr>
<td>Other-as-process (OP)</td>
<td>“they felt upset, and confused as to why it was happening to them. They were scared but realised that others were there for them and they stood up against the bully.”</td>
<td>104</td>
<td>8.11</td>
</tr>
<tr>
<td>Other-as-Context (OX)</td>
<td>“I would think of what people thought of me and i would feel embarrassed and fearful”</td>
<td>10</td>
<td>.78</td>
</tr>
<tr>
<td>Values-Oriented Personal Belief (VOB)</td>
<td>“I felt so happy for them and just so fulfilled because they deserved to prove the haters wrong and that just believing in yourself can make you reach the goal.”</td>
<td>2</td>
<td>.156</td>
</tr>
<tr>
<td>Control Oriented Personal Belief (COB)</td>
<td>“they were upset and heart broken as you would never see this person who means so much to you ever again. this can make you feel slightly isolated as you feel you have less people in the world who you can trust”</td>
<td>7</td>
<td>.546</td>
</tr>
<tr>
<td>Augmental-Values (AUG-val)</td>
<td>“i would feel very accomplished in my self and would be very proud”</td>
<td>49</td>
<td>3.82</td>
</tr>
<tr>
<td>Augmental-Control (AUG-con)</td>
<td>“I would be embarrassed and I wouldn’t want to go to school or anything. I’d also be angry at the people who did it”</td>
<td>29</td>
<td>2.26</td>
</tr>
<tr>
<td>No code (NUL)</td>
<td>“I didn't have a situation like that before”</td>
<td>51</td>
<td>3.98</td>
</tr>
</tbody>
</table>

### 4.3.5 Correlational Analysis

Due to the violation of assumptions of normality for a number of variables, the non-parametric Spearman’s Rho test was used. Analysis is carried out with the full sample first and then with female participants to control for the effects of gender differences. Although Atkins & Styles (2016) observed that combination of Values-Oriented Self Rules and Self-as-Context was predictive of well-being outcomes,
neither code in the present study was found to be related to measures of mental health, well-being or psychological flexibility, and therefore the combination of these variables is not examined.

### 4.3.5.1 Correlations-Full Sample

**Table 22: Spearman’s Rho Correlations between codes of self, other, and rule-governed behaviour, and quantitative measures of mental health, well-being, and psychological flexibility with full sample (N=76)**

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<thead>
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<tr>
<td>6.</td>
<td>-.054</td>
<td>.017</td>
<td>.031</td>
<td>.042</td>
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<td>7.</td>
<td>.014</td>
<td>.030</td>
<td>-.077</td>
<td>-.254*</td>
<td>.182</td>
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<tr>
<td>8.</td>
<td>-.284**</td>
<td>-.180</td>
<td>-.148</td>
<td>-.131</td>
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<tr>
<td>9.</td>
<td>-.127</td>
<td>.057</td>
<td>.063</td>
<td>.070</td>
<td>.118</td>
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<tr>
<td>10.</td>
<td>-.140</td>
<td>.032</td>
<td>.062</td>
<td>.088</td>
<td>-.072</td>
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<tr>
<td>11.</td>
<td>-.083</td>
<td>.099</td>
<td>-.030</td>
<td>-.079</td>
<td>.245*</td>
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<tr>
<td>12.</td>
<td>.087</td>
<td>.183</td>
<td>.069</td>
<td>-.046</td>
<td>.062</td>
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<tr>
<td>13.</td>
<td>-.130</td>
<td>-.108</td>
<td>-.270**</td>
<td>-.030</td>
<td>.021</td>
</tr>
<tr>
<td>14.</td>
<td>-.038</td>
<td>-.068</td>
<td>-.087</td>
<td>.292**</td>
<td>-.307**</td>
</tr>
<tr>
<td>15.</td>
<td>.140</td>
<td>.170</td>
<td>.271**</td>
<td>-.323**</td>
<td>.225*</td>
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<tr>
<td>16.</td>
<td>-.190</td>
<td>.130</td>
<td>.070</td>
<td>.002</td>
<td>.099</td>
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<tr>
<td>17.</td>
<td>.045</td>
<td>.190</td>
<td>.112</td>
<td>-.079</td>
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<tr>
<td>18.</td>
<td>-.073</td>
<td>-.030</td>
<td>-.061</td>
<td>.070</td>
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</tr>
<tr>
<td>19.</td>
<td>-.017</td>
<td>.115</td>
<td>.048</td>
<td>-.145</td>
<td>.119</td>
</tr>
<tr>
<td>20.</td>
<td>.421**</td>
<td>.195</td>
<td>.184</td>
<td>-.074</td>
<td>.146</td>
</tr>
</tbody>
</table>

Spearman’s Rho correlations with the full study sample are summarized in Table 22. Using the rough false discovery rate the p value was reduced to .0253. Higher occurrences of self-as-process codes were related to significantly lower depression (r=-.28; p=.007), higher negative self-as-story codes were related to significantly lower well-being (r=-.254; p=.013), higher control-oriented self-rules were related to significantly higher experiential avoidance (r=.254; p=.013), higher other-as-story negative codes were related to significantly lower stress (r=-.270; p=.009), higher other-as-process was related to significantly higher well-being (r=.292; p=.005) and lower experiential avoidance (r=-.307; p=.003), higher other-as-context was related to significantly higher stress (r=.271; p=.009), lower well-being (r=-.323; p=.002), and higher experiential avoidance (r=.225; p=.0250), and finally higher occurrences of Nul codes were related to higher depression (r=.421; p<.001).

4.3.5.2 Correlations- Female Participants Only

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<tr>
<td>6</td>
<td>-.067</td>
<td>-.103</td>
<td>.032</td>
<td>.121</td>
<td>.035</td>
</tr>
<tr>
<td>7</td>
<td>-.094</td>
<td>-.076</td>
<td>-.117</td>
<td>-.253</td>
<td>.087</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>Anxiety</td>
<td>Stress</td>
<td>Well-being</td>
<td>Experiential Avoidance</td>
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<tr>
<td>8</td>
<td>-.370**</td>
<td>-.266*</td>
<td>-.157</td>
<td>-.127</td>
<td>.062</td>
</tr>
<tr>
<td>9</td>
<td>-.175</td>
<td>.005</td>
<td>-.012</td>
<td>.251</td>
<td>.056</td>
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<tr>
<td>10</td>
<td>-.125</td>
<td>.022</td>
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<tr>
<td>11</td>
<td>-.114</td>
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<tr>
<td>12</td>
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<td>.187</td>
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<tr>
<td>13</td>
<td>-.156</td>
<td>-.172</td>
<td>-.315**</td>
<td>.087</td>
<td>-.026</td>
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<tr>
<td>14</td>
<td>.019</td>
<td>.002</td>
<td>.017</td>
<td>.312**</td>
<td>-.322**</td>
</tr>
<tr>
<td>15</td>
<td>.090</td>
<td>.102</td>
<td>.203</td>
<td>-.232</td>
<td>.116</td>
</tr>
<tr>
<td>16</td>
<td>-.240</td>
<td>.125</td>
<td>.070</td>
<td>.050</td>
<td>.074</td>
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<tr>
<td>17</td>
<td>-.055</td>
<td>.151</td>
<td>.048</td>
<td>.044</td>
<td>-.027</td>
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<tr>
<td>18</td>
<td>-.090</td>
<td>-.099</td>
<td>-.073</td>
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<tr>
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<td>.029</td>
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<td>-.021</td>
<td>-.015</td>
<td>.085</td>
</tr>
<tr>
<td>20</td>
<td>.517**</td>
<td>.211</td>
<td>.111</td>
<td>-.136</td>
<td>.314**</td>
</tr>
</tbody>
</table>


Spearman’s Rho correlations with female participants only are summarized in Table 23. As with the previous correlations the rough false discovery rate was used, reducing the p value to .0253. Higher occurrences of self-as-process were associated with significantly lower depression ($r=-.370; p=.002$) and anxiety ($r=-.266; p=.023$), higher negative other-as-story was associated with significantly lower stress ($r=-.315; p=.009$), higher other-as-process was associated with significantly higher well being ($r=.312; p=.009$) and lower experiential avoidance ($r=-.322; p=.007$), and finally
higher occurrences of Nul codes was associated with higher depression depression ($r = .517; p < .001$) and higher experiential avoidance ($r = .314; p = .009$).

### 4.3.6 Summary of findings

To summarize, non-parametric correlational analyses with the full study sample revealed that higher self-as-process was related to lower depression, higher negative self-as-story was related to lower well-being, higher control-oriented self-rules were related to higher experiential avoidance, higher negative other-as-story was related to lower stress, higher other-as-process was related to higher well-being and lower experiential avoidance, higher other-as-context was related to higher stress, lower well-being, and higher experiential avoidance, and finally higher occurrences of Nul codes were related to higher depression. When the analysis was repeated with female participants only, findings were mostly consistent with that using the full sample, however a smaller number of significant relationships were observed overall. It was noted that many of these would have been significant at $p < .05$ and this loss of significance was most likely due to the lower $n$. It was also observed for females only, that higher occurrences of Nul codes were associated with significantly higher avoidance, and that higher self-as-process was significantly related to lower anxiety.

### 4.4 Discussion

The present study aimed to measure occurrences of the different types of self and other discriminations as described by RFT at a behavioural level and investigate these in relation to quantitative measures of mental health, well being, and psychological flexibility in a sample of adolescents. This addressed a limitation of the earlier studies in the present thesis, which examined these discriminations using self-
report measures only. Based on previous research and findings from the present thesis, a number of predictions were made. It was predicted that a higher self-as-story, positive or negative, will be related to higher psychological inflexibility, decreased well being and decreased mental health. This prediction was supported in part with higher occurrences of negative self-as-story related to lower well-being.

It was predicted that higher occurrences of self-as-context will be related to lower mental health concerns, especially depression, and psychological inflexibility, as well as higher well being While self-as-context was not significantly related to any quantitative outcome variable, it is worth noting that for female participants a marginally significant relationship was observed between self-as-context and well-being, with higher self-as-context related to higher well-being ($p=.030$). No occurrences of self-as-hierarchy emerged, meaning only self-as-distinction was examined in this study. Finally, it was predicted that higher values-oriented self rules will be predictive of lower mental health concerns and psychological inflexibility and better well-being, and additionally the same pattern will be observed for the combination of higher values-oriented self rules and self-as-context. Again these predictions were not supported. However, higher control oriented self rules were related to significantly higher experiential avoidances. While no specific predictions were made for self-as-process, it was found that higher self-as-process was related to lower depression, and in the case of female participants lower anxiety also.

No specific predictions were made for Other codes, as only one investigation had previously examined these to date, and no significant findings emerged for other codes (apart from OX in combination with 2 other codes), however the low power for these analyses ($n=10$) meant these findings could not be judged reliably. The present study found that higher other-as-process was related to significantly lower
experiential avoidance and higher well-being, while higher occurrences of other-as-context was related to higher stress and avoidance, as well as lower well-being.

Higher negative other-as-story codes were related to lower stress. The coding criteria for Nul codes was adjusted slightly from that in the original investigation to account for participants reporting not having experienced the emotion in question, and higher occurrences of these were found to be related to higher depression, and for females, higher experiential avoidance.

Other-as-process was related to lower experiential avoidance and higher well-being, indicating that ongoing observation and awareness of another’s moment to moment experience is associated with lower avoidance and higher psychological flexibility, as well as better mental well being. It seems that unwillingness to contact and observe another’s moment to moment experience in order to avoid taking on the other person’s suffering or unwanted experience leads to reduced psychological flexibility and greater experiential avoidance. Interestingly, however higher other-as-context was related to higher stress, lower well-being, and higher experiential avoidance. Coding criteria for Other-as-Context in the present study, involves the participant demonstrating awareness or acknowledgement of the perspective of another as distinct to their own however, it does not account for the participant understanding or taking on the emotional experience of another (e.g. “I would think of what people thought of me and I would feel embarrassed and fearful.”)

CBS implicates the importance of experiential acceptance and psychological flexibility in social functioning and relating to others (Vilardaga et al., 2012; McHugh, 2015). Likewise, it has previously been suggested that emotional regulation plays an important role in the ability to respond with compassion to another’s emotions and recognize them as distinct from one’s own, particularly for adolescent
populations (Atkins, 2013; Van der Graaff et al., 2014). While the experience of other-as-process according to the coding criteria used in the present study requires the participant to contact the emotional experience of another with openness and willingness, this is not the case for other-as-context therefore these findings are unsurprising. RFT describes the experience of Other-as-Context as a purely conscious psychological connection to another that is rarely occurring (Barnes et al., 2001; Atkins, 2013), therefore, while this may be considered quite difficult to measure in speech, the coding criteria pertaining to this seem overly simplified.

Nul codes, or in other words, participants more frequently reporting not having experienced the emotion presented in the stimuli, were associated with higher depression, and, for females, experiential avoidance. These results seem to suggest that reporting not having had certain emotional experiences is related to inability to tact one’s emotional experience and deficits in emotional awareness, and/or attempting to suppress or avoid certain emotional experiences or unwanted feelings. Previous research suggests that low emotional awareness is associated with issues in describing one’s emotional experience (Lane, Quinlan, Schwarz, Walker, & Zeitlin, 1990). Ciarrochi and colleagues found difficulty in expressing emotions was linked to higher depression and hopelessness, and lower life satisfaction in a sample of university students (Ciarrochi, Scott, Deane, & Heaven, 2003). Similarly, Ciarrochi, Heaven, and Supavadeprasit (2008) observed that lower emotion identification skills in adolescents was associated with increased fear, as well as lower positive affect, and quality and quantity of social support. Authors suggested avoidance in young people may result in disconnection from how one is feeling and inability to produce labels for one’s emotions and moreover, inability to identify an emotion means issues may arise in managing one’s own emotions effectively (Ciarrochi et al., 2008). Consistent
with this, Ciarrochi, Kashdan, Leeson, Heaven, and Jordan (2011) found that emotional awareness in adolescents was related to higher experiential acceptance, and predictive of increased positive affect, as well as lower sadness and fear. Results from the present study further support this.

The finding that higher occurrences of negative other-as-story were related to lower stress was unexpected. Although, no specific predictions were made for codes pertaining to other, mainstream psychological research suggests that less rigid conceptualisations of self and other are related to lower stress in adolescents (Yeager et al., 2014). At a theoretical level when other-as-content is held flexibly, it is believed to appropriately facilitate empathic responding, whereas rigid conceptualisations of other are associated with lower psychological flexibility and empathic responding (Atkins, 2013; Barnes-Holmes et al., 2001). Inspection of these codes in the present study suggests that the former applies to the majority of other-as-story utterances in the present study. For example “I would say that they were feeling helpless because they were afraid to stand up to the bully and help.” In this case while the participant describes characteristics of another (“helpless” and “afraid to stand up the bully”), this is expressed in a flexible manner (“I would say they were feeling”), suggesting alternatives are possible and these characteristics are not necessarily enduring. There are a number of possibilities as to why this ability to flexibly hold conceptualisations of another is related to lower stress, such as improved social functioning and a more flexible behavioural repertoire around relating to others. Similar findings for self-as-story are observed in Study 1 which suggests that flexible self-conceptualisations are related to lower levels of mental health concerns.

However, present study findings revealed higher negative self-as-story was significantly related to lower well-being which is consistent with Atkins & Styles
suggesting negative self-as-story codes were indicative of rigid negative self-conceptualisations which influence behaviour in unhelpful ways resulting in lower well being. Although these findings around self and other as story codes seem to indicate there are varying levels of rigidity/flexibility with which these codes are held, with different implications for mental health and well being (consistent with the findings of Study 1), the coding frame does not differentiate this. However, in the earlier iteration of this coding frame described in Atkins & Styles (2015), two types of self-as-story are described - flexible and rigid. This type of code, with corresponding codes for flexible and rigid other-as-story, may be appropriate in future investigations to fully capture the variety of ways in which conceptualisations of self and other may be expressed and the degree of rigidity (or flexibility) associated with this.

Higher self-as-process was related to lower depression in addition to anxiety for females. This is consistent with Study 1 in the present thesis which found self-as-process to be a significant predictor of mental health in adolescents. This is inconsistent however with the findings of Atkins and Styles (2015; 2016) and Styles (2015) who found that Self-as-process did not relate reliably to any other variable in their investigations and suggested that the coding criteria for SP is too context sensitive, particularly when participants are being directly instructed to discuss and report on their ongoing experience. Self-as-process was also the most commonly occurring code by quite a considerable margin, which is unsurprising as the nature of the questions asked naturally elicit a large amount of self-as-process responses simply by asking participants to report on their thoughts and emotions. Therefore, it’s possible that findings pertaining to self-as-process in the present study were diluted as a result of this, and on this basis future investigations should develop more specific criteria for self-as-process.
An issue identified with the coding frame, which may contribute to this issue is that coding does not account for participants’ level of detail or verbal complexity in tasks. Both coders in the present study noted considerable variation in the level of detail and depth participants provided when describing their ongoing experience, or that of another, however this was often not captured in the coding frame with the codes for self or other-as-process assigned regardless of the level of detail. Evidence from populations with autistic features suggests a link between empathic responding and level of verbal ability (Ozonoff, Pennington, & Rogers, 1990), thereby implicating the role of verbal sophistication in tactual the emotional experience of others. While it was beyond the scope of the present study to further develop or refine this coding frame, future investigations should account for varying levels of verbal richness.

Although the coding frame differentiates between two types of self-as-context relating, self-as-distinction and self-as-hierarchy, consistent with previous investigations (Atkins & Styles, 2016; 2015; Styles, 2015) no occurrences of self-as-hierarchy were observed in the present study. The present study revealed a near significant relationship for self-as-distinction and well-being for female participants. While Atkins & Styles (2016) did not observe any relationship between self-as-distinction at the first time-point when participants were interviewed, it was found that higher self-as-distinction was predictive of lower depression at 6 month follow-up. Previous investigations into these two types of self-as-context have shown that while self-as-hierarchy is associated with better mental health outcomes, evidence for this relationship with self-as-distinction is much weaker with some findings even suggesting distinction is related to higher stress (Foody et al., 2013; Luciano et al., 2011; Foody et al., 2015; Gil-Luciano et al., 2017). Findings from study 2 in the
present thesis also showed marginal increases in stress following a self-as-context intervention. Although, there are a number possible explanations as to why these outcomes were observed, it’s probable that this is the result of self-as-distinction being trained.

Therefore, it is critical that the difference between self-as-distinction and self-as-hierarchy is further investigated with increased rigor to examine the relative contribution of each to mental health and well-being. Styles and Atkins (2016) suggested that occurrences of self-as-hierarchy are unlikely to be expressed in a sample where explicit mindfulness training has not been given. Overall, self-as-context is quite difficult to detect in speech or text. In fact, it is technically not possible to capture self-as-context in speech or text, as this experience is a perspective, devoid of content. Therefore, this coding frame provides just a proxy for self-as-context. Moreover, it’s possible that even if self-as-context is detected suggesting that the participant transcends and observes their psychological content, it may be too subtle to detect any differentiation as to whether a frame of distinction or hierarchy is operating. Therefore the codes for self-as-context (distinction and hierarchy) may require further refinement and cross validation with quantitative measures.

Although, no significant findings emerged for values oriented self rules as predicted, higher control oriented self rules were associated with higher levels of experiential avoidance, indicating that specifying rules for oneself to behave according to, in order to avoid or control unwanted or aversive outcomes, is associated with lower psychological flexibility and a decreased response repertoire. This finding is consistent with that of Styles (2015) who observed that higher control
oriented self rules were related to higher psychological inflexibility in a near significant correlation.

Although, neither type of augmental was found to relate to quantitative measures, inter rater agreement for these variables fell outside the acceptable range of reliability, calling the accuracy of findings pertaining to these codes into question. Coders reported finding the coding instructions for augmentals rather interpretative and vague in nature, therefore it is critical that clearer, more specific guidelines for these codes are used in future investigations.

Although this coding frame was not without its limitations and a number of codes appear to require further refinement, overall this study addressed a considerable limitation of the earlier studies in this thesis, by examining occurrences of the types of relating under investigation at a behavioural level.

4.4.1 Strengths & Limitations

While Atkins and Styles (2015; 2016) and Styles (2015) used a specially designed, semi-structured interview containing specific cues to elicit responses, the present study used open-ended questions requiring participants to report on specific emotions, thoughts and feelings surrounding an experience or event. These questions were less directive than those asked in Atkins and Styles interviews (E.g. “What is the hardest/most challenging part of this for you? How would you decide if you had been successful? What did that situation tell you about yourself?”) While there are advantages to this more directive style, the type of questions in the present study were more open and thereby arguably measured levels of these discriminations in a more naturally occurring way.
The use of a confidential online format, wherein no identifying details were provided, may have also prompted participants to respond more honestly than they would in the case of speaking directly to an experimenter in an interview (Oh et al., 2008). A written format may also have allowed participants to reflect on and consider their responses, whereas the faster pace of an interview typically involves giving more immediate responses. However, there are also disadvantages with the use of this format such as the lack of feedback or direction. In the case of an interview, the experimenter may direct the participant if they have failed to understand the questions or are not answering the questions asked. Likewise, they may ask the participant to provide further details, which the electronic open-ended questions did not allow for. However, the experimenter was present in the school computer room during testing and participants were instructed to attract the attention of the experimenter if they encountered any difficulty or were uncertain as to how to respond to any particular question.

While the previous studies required participants to generate events and report on experiences based purely on memory in the weeks surrounding testing, the present study provided participants with video clips of the emotional experience in question. In addition to increasing participant engagement, these stimuli provided participants with examples of other’s experiences involving certain emotions, making it easier to relate this to examples from their own experience (or that of someone they knew). Overall, use of these stimuli seemed to facilitate participant engagement and understanding ("I felt just like what Seymour looks like he felt").

As with the previous investigations in this thesis, this study had a gender imbalance with more female participants than males. This is problematic, as previous research has shown considerable gender differences in the ways in which adolescents
relate to self and other, in addition to mental health and well-being (Crocetti et al., 2016; Van der Graff et al., 2014; Dooley & Fitzgerald, 2012). Findings in the present study revealed higher negative self and other-as-story, control augmentals for females, and marginally higher well being for males. However correlational findings did not differ considerably when repeated with just female participants. It has been suggested that how adolescents behave and present themselves is related to social desirability, particularly with regard to gender role expectations (Pettitt, 2004). On this basis, girls are expected to display more caring and compassionate attributes and display more emotion, compared to males of the same age who are expected to inhibit these qualities. Therefore, the finding that females have higher negative other-as-story further supports the earlier suggestion that most occurrences of other-as-story in this investigation were flexible rather than rigid, as CBS postulates this is associated with more compassionate and empathic behaviour (Atkins, 2013; Barnes-Holmes et al., 2001). Take for example the following response from a female participant “they felt weak and alone, they were very scared and anxious”. While this includes a negative conceptualisation of other and is therefore coded as OS-Neg, it is shows an awareness of the other person’s ongoing experience and these characteristics are framed in a flexible manner, rather than enduring features of this person. The finding that females have higher negative self-as-story is unsurprising as previous research has found that adolescent females tend to give more consideration to and be more critical of their self-concept (Crocetti et al., 2016), in addition to having lower self-esteem than male counterparts (Dooley & Fitzgerald, 2012).

4.4.2 Implications
The present study only looks at codes in relation to quantitative measures at one time point and due to both the number of non-parametric variables and smaller sample size, regression analyses were not used in the present study, and therefore the ability of codes to predict outcome variables was not examined. However Atkins & Styles (2016) used a longitudinal design with 6 months and one year follow-up sessions to examine the ability of these codes to predict mental health and well being longterm. It would quite beneficial for future studies to investigate this with an adolescent sample due to the considerable ongoing development in terms of how one relates to self and other during this period (Rutt and Löckenhoff, 2016; Van der Graaff et al., 2014; Crone & Dahl, 2012).

Another worthwhile avenue for future investigations is to examine these codes as behavioural outcome measures in an experimental investigation wherein the discriminations under investigation are directly manipulated. In particular, self-as-distinction and hierarchy, and flexible and rigid self/other-as-story could be elicited using specific cues. Similarly, although there were insufficient occurrences of certain codes in the present study to provide an accurate test, future investigations could examine the assumptions of the DNA-V model which suggests that flexible selfing, relating to others and values-consistent behaviour leads to better mental health, well-being, and psychological flexibility in adolescents (Hayes & Ciarrochi, 2015). It would also be beneficial for future investigations to cross validate the codes by investigating them in relation to standardized self-report or other behavioural measures were they exist (e.g. self-report measures of the three selves used in Study 1, implicit measures of evaluations of others etc). With further development and refinement, this type of coding may have useful applications for clinical and therapeutic contexts in examining client speech or written text in a more systematic
way (Atkins & Styles, 2016), with regard to relating to self and others, identifying deficits in emotional awareness, and issues with experiential avoidance.
Chapter 5: Distinction vs. Hierarchical Deictic Relating: Implications for Young People’s Mental Health

5.1 Introduction

Based on the CBS understanding of self (Barnes-Holmes et al., 2001; Torneke, 2010; Atkins & Styles, 2016) and the well-documented relationship between self-relating and mental health in young people (Marshall et al., 2015; Molloy et al., 2011; Sun & Hui, 2007), the studies in the present thesis aimed to empirically demonstrate how one’s relationship to self in adolescence impacts mental health and well-being from a CBS point of view. According to CBS, the experience of self-as-context leads to transcendence of one’s psychological content and acceptance of one’s painful or unwanted private events (McHugh, 2015; Barnes-Holmes et al., 2001). On this basis, Study 1 tested this theory in a sample of 176 adolescents and found that higher self-as-context in adolescents was significantly predictive of lower levels of mental health concerns. The second study in this thesis therefore attempted to test the application of this theory through a brief, school-based training intervention for the development of self-as-context. This involved firstly training deictic fluency (i.e. training the relational processes underlying self-as-context to proficiency), followed by standardized adolescent self exercises from the ACT literature. Study outcomes did not reveal expected decreases in mental health concerns. In fact not only were no reductions in overall distress revealed, marginal increases in stress were observed following the intervention.

While there are a number of possible reasons as to why predicted outcomes were not observed (e.g. insufficient treatment dosage), recent empirical evidence suggests a probable explanation for this. Specifically, recent studies have examined 2
distinct types of self-as-context, one of which has been shown to lead to lower distress and better mental health outcomes, while the other has not lead to these improvements and moreover, has been linked to increased stress (Foody et al., 2013). While Study 3 aimed to examine these 2 different types of self-as-context, referred to as distinction and hierarchy respectively, only self-as-distinction emerged in samples of adolescent textual responses. While this was marginally related to well being in female participants, issues identified with the coding criteria mean that this finding should be held tentatively, warranting further investigation. On this basis, the present study attempts to explore this issue by examining each of these 2 types of self-as-context, and their relative implications for mental health in young people, thereby addressing this limitation of the earlier studies in this thesis.

5.1.1 Self-as-distinction and self-as-hierarchy

The pattern of relational framing known as “distinction” refers to the arbitrary responding to the relational cues such as “is separate to”. Examples include “Cats are not like dogs” or “X is different from Y.” Frames of distinction have been empirically demonstrated in a number of basic science RFT investigations (Roche & Barnes, 1996; Dunne, Foody, Barnes-Holmes, Barnes-Holmes, & Murphy, 2014). Hierarchical relating refers to relational responding in accordance with relational cues such as “is part of.” Hierarchical relations participate in relational networks and are considered to be one of the most sophisticated types of relating. An example of a hierarchical relation would be lions are a type of cat, or Jack is a member of the Smith family. When more details are provided about the above types of relation, other relations may be derived. For example, if we are told that Jack is Adam’s father and Sarah is Jack’s daughter, it can be derived that Sarah and Adam are siblings. As with
distinction, hierarchical relating has been empirically examined at the level if its basic relational units in a number of RFT studies (Gil, Luciano, Ruiz, & Valdivia-Salas, 2012; Griffe & Dougher, 2002; Slattery, Stewart, & O’Hara, 2011).

More recently, investigations have taken place examining the clinical utility of these relational frames (Foody et al., 2013; Luciano et al., 2011; Foody et al., 2015; Gil-Luciano et al., 2017). Protocols or interventions for training deictic relations with frames of distinction typically involve noticing that oneself is HERE-NOW while one’s thoughts and psychological content is separate to, or in a frame of distinction with oneself, THERE-THEN. Training for hierarchical deictic relations on the other hand, teach one to notice that the self is HERE-NOW while one’s psychological content is contained within the self, in a frame of hierarchy with the self, THERE-THEN. While there have been a variety of different terms to describe these types of relating across investigations, for clarity they will be referred to as self-as-distinction and self-as-hierarchy respectively, in the present study.

5.1.2 Empirical investigations into self-as-distinction and self-as-hierarchy

Luciano et al. (2011) carried out the first attempt to empirically investigate self-as-distinction and self-as-hierarchy (which they referred to as Defusion I and Defusion II) using a quasi-experimental design in a sample of 15 adolescents ($M=13.66$ yrs) with behavioural difficulties. Four participants (identified as low risk) were assigned to the distinction condition, while the remaining 11 (five were identified as low risk and six were high) were assigned to the hierarchy condition, which also included behavioural regulation components. All participants completed a brief values orientation exercise prior to the intervention component. Both interventions were delivered using Multiple Exemplar Training, first with natural thoughts and
subsequently, difficult or unwanted thoughts.

Study findings revealed little difference for the distinction condition with no changes on measures of psychological flexibility or acceptance, and a non-significant reduction in problematic behaviours. Those assigned to the hierarchy condition however showed significant improvements across all three outcome measures and these changes were retained at follow-up. These findings gave preliminary support to the superiority of self-as-hierarchy in producing desirable psychological and behavioural outcomes, however a number of factors must be considered. The hierarchy condition contained additional behavioural regulatory functions, meaning observed improvements may not be attributed to hierarchical deictic cues alone, and use of a clinical group may have lead to larger observed differences due to already elevated scores on target outcome measures. Study limitations also included a small sample size, reliance purely on self-report measures (including problematic behaviour measures), and no control condition.

Foody et al. (2013) carried out a near replication of Luciano et al.’s (2011) investigation wherein they addressed some of the limitations outlined above. They examined briefer versions of the protocols used in the previous study in a sample of 36 non-clinical (participants with existing mental health concerns at pre-exist were excluded), undergraduate university students. While the two protocols used in this study were similar to those employed by Luciano et al. (2011) authors described them as each being explicitly more distinction, and explicitly more hierarchy respectively. Unlike Luciano et al. (2011) this study did not include any values clarification exercise or behavioural regulation cues for the hierarchy condition. Participants received either the distinction or hierarchy protocol after they underwent a distress induction procedure. This required them to generate an unwanted self-criticism,
which they had to write down and state aloud in front of the experimenter.

Consistent with Luciano et al. (2011) better outcomes were observed for self-as-hierarchy relative to self-as-distinction. Results showed significant increases for both conditions across all outcome measures following distress induction. For the distinction condition, a non-significant increase in stress, a marginal increase in discomfort, and a reduction in anxiety were observed following the intervention. For the hierarchy condition, stress decreased significantly while non-significant decreases were observed for discomfort and anxiety. While this study addressed a number of the limitations identified by its predecessor, there were still a number of issues identified. The n for this study remained quite small and relied on self-report measures (which were unstandardized). Most importantly, the distinction protocol used in the study contained some cues that were more consistent with hierarchy than distinction (e.g. “Ask yourself who is having that memory?”), thereby contaminating this condition and meaning findings must be considered tentatively.

Foody et al. (2015) expanded upon this investigation in a later study examining hierarchical deictic relating and distinction deictic relating in relation to both self-referential psychological content, and psychological content focused on a neutral object (a rose). In addition to the extra condition, this study also included a practice phase wherein participants applied what they learned in these interventions in their daily life. The sample consisted of 48 university students (12 per condition) ranging in age from 17 to 41. As in the previous investigation, those with elevated distress at pre-test were excluded from participation. Study findings showed reductions in anxiety, discomfort, stress, and avoidance across all conditions, however reductions were larger for stress for both self and object hierarchy conditions relative to distinction. While reductions in avoidance only reached significance for the
hierarchy conditions, this change was no longer significant when length of practice period was controlled for. However, length was not manipulated in a controlled manner with participants deciding themselves how frequently they practiced what they had learned in the exercise.

While these findings appear to suggest that this type of relating to thoughts in general is beneficial, regardless of whether content is self-related or not, issues around the choice of comparison condition must be considered. According to Northoff and Bermphol (2004) one’s “psychological baseline” (i.e. automatic mode of mind) involves relating otherwise neutral or objective stimuli to oneself in what is known as self-referential processing. Therefore, even focusing on a neutral (and arguably non-stimulating) object such as a rose may likely result in self-focused rumination. As no measures of adherence or engagement were used, and therefore potential self-directed mind wandering was not controlled for, these findings should be considered with caution.

One considerable limitation of these investigations is that while all compared self-as-distinction to self-as-hierarchy, none examined these in relation to a control group which did not target either of these types of relating. Gil-Luciano et al. (2017) addressed this in their study comparing distinction and hierarchical deictic relating to a non-active control condition in a sample of 30 adults. This allowed each type of relating to be compared to no intervention. Participants with high distress were not excluded from participation for this study meaning the sample had a full range of distress levels and greater variability. Similar to Luciano et al. (2011), this study used emotional regulatory functions in the hierarchy protocol. This study used behavioural outcome measures in the form of distress tolerance thereby addressing the issue of reliance on self-report measures in the earlier studies.
Study results once again gave support to the hierarchy condition in producing more favourable outcomes, with increased distress tolerance for participants in this condition relative to the other conditions. Those in the distinction condition however had significantly higher tolerance than study controls. As no reductions in reported pain or discomfort were observed, authors concluded that this increase in tolerance was due to increased psychological flexibility, particularly as it was also noted that findings were most effective with those who had higher psychological inflexibility at pre-test. Cognitive fusion was also found to significantly moderate outcomes suggesting that the intervention lead to reductions in thought believability and fusion with discomfort.

When considering these results, it must be remembered that the hierarchy condition also included emotional regulation cues, specifically instructions facilitating acceptance (e.g. Now, imagine that you are the one in charge of what you do and not that discomfort: imagine yourself remaining in the posture, making room for the discomfort”). It’s possible that acceptance cues may account for these outcomes over hierarchical deictic relating alone, as acceptance exercises or cues such as this specifically aim to increase willingness to have unwanted or painful psychological content. Although when self-as-context is operating, allowing one to transcend one’s psychological content this is theorized to facilitate acceptance (Luciano et al., 2011; McHugh, 2015; Barnes-Holmes et al., 2001), due to this addition of explicit acceptance cues, it cannot be determined how much of the increase in tolerance was accounted for by self-as-hierarchy. While this investigation by Gil-Luciano et al. (2017) was more experimentally controlled relative to the investigations preceding it, further investigation is necessary in order to understand the relative isolated effects of both self-as-hierarchy and self-as-distinction.
To conclude, while all of the above studies gave support to self-as-hierarchy in producing better psychological and behavioural outcomes compared to self-as-distinction, issues pertaining to these investigations warrant further more controlled examinations of these types of relating. Both types of self-as-context relating were examined only through experimental interventions, with none of the studies looking at naturally occurring levels of these types of relating at a baseline level. In keeping with the assumptions of functional contextualism to predict and influence behaviour, it’s important to identify and measure variables that influence behaviour, in addition to experimental manipulation, in order to produce change in meaningful ways. Despite these studies implicating deictic relational responding in both types of self-as-context relating, none of these investigations measured or controlled for deictic ability. Therefore, it is important that the relationship between deictics and these two types of self-as-context relating is further examined, in particular whether or not deficits in deictic relational responding lead to issues around these types of relating.

5.1.3 The present study

Although, these findings from previous investigations are promising and give support to frames of hierarchy in producing desired psychological and behavioural outcomes, to date self-as-hierarchy and self-as-distinction have only been trained at an applied level and tested in the form of interventions. However, it is critical that theories underlying clinical applications are examined using multiple levels of analysis, including investigation at a natural, baseline level wherein manipulation has not occurred. On this basis, the present study will conduct a more fine-grained examination of the relational processes underlying self-as-distinction and self-as-hierarchy. This will test the theoretical assumptions underlying these types of
investigation at a more basic level and attempt to separate out which specific components are responsible for outcomes.

Use of middle level, non-technical concepts has been widely criticized in CBS research (Barnes-Holmes, Hussey, McEnteggart, Barnes-Holmes, & Foody, 2015; Hayes, Barnes-Holmes, and Wilson, 2012). Studies 1 and 3 in the present thesis examined the three selves (including self-as-context) in relation to mental health and well-being in adolescents. However it is important to remember that the three selves are middle-level terms and therefore non-technical representations of the specific relational processes underlying selfing behaviours. Despite the practicality and utility of middle level terms, use of a simplified, less technical account of a process can result in decreased rigor and accuracy. In keeping with the functional contextualist aims of precision and depth, this study will attempt to address this limitation by measuring the relational units involved in self-as-context. This study will address a limitation of both the earlier investigations in the present thesis and previous investigations into self-as-hierarchy and self-as-distinction, by examining each of the specific relational processes involved and thereby parsing out the specific impact at each level.

Deictic relating is the functional unit underlying both self-as-distinction and self-as-hierarchy, and findings from Study 2 in the present thesis imply that higher distress is linked to deficits in deictic ability and consequently both of the aforementioned types of selfing behaviour. Although deictic ability is generally fully developed by eighteen years old (McHugh et al., 2004), it is important to control for any potential impact of deficits in deictic relational responding therefore the role of deictic relating will be examined.
Although, the earlier studies in this thesis used younger adolescents (aged 15-19 years), for practicality reasons a sample of older adolescents will participate in the present study. Although most investigations only examine adolescent samples up to the age of legal adulthood, adolescent development is believed to continue up to the age of 25 years (Dooley & Fitzgerald, 2012; Arnott, 2000), therefore participants between the ages of 18 to 25 years old will participate in this research. While sense of self appears to be more stable in older adolescents, relative to their younger counterparts, this is a period marked by considerable focus around one’s self-related psychological content, with the ways in which one relates to it having important implications for mental-health and well being (Rosenberg et al., 2016; Chung et al., 2014; Crocetti et al., 2016; Arnott, 2000).

Studies have also found gender differences in self-relating during this period (Gestsdottir et al., 2015; Crocetti et al., 2016), and while McHugh et al. (2004) found that deictic relational ability was generally developed by 18 years old, studies have found evidence of gender differences up to this age with females slightly outperforming males (Eisenberg et al., 2005; Van der Graaf et al., 2014). Additionally, studies with this age group show gender differences in levels of distress (Gestsdottir et al., 2015; Aslund, Starrin, & Nilsson, 2010), therefore gender will be controlled for in the present study.

At the time of the earlier investigations mentioned above, no direct quantitative measure of the two types of self-as-context existed, however Yu et al. (2016) recently developed such a measure of self-as-hierarchy and self-as-distinction, and found this to have good reliability and validity in samples of adults with chronic pain. As findings by Gil-Luciano et al. (2017) implied that positive outcomes associated with a self-as-hierarchy intervention were the result of increased
psychological flexibility a mediation analysis will be carried out examining the relationship between any significant predictor variables and outcome variables. Outcomes will be examined in terms of depression, anxiety, and stress. Despite the positive outcomes for depression in investigations examining overall self-as-context (Atkins & Styles, 2016; Yu et al., 2017), previous investigations into self-as-hierarchy and self-as-distinction have only examined outcomes in terms of stress and anxiety. A number of specific predictions are made based on previous investigations.

It is predicted that self-as-hierarchy will be related to lower depression, anxiety, stress and experiential avoidance, as well as higher deictic ability. It is also predicted that while the same trend will emerge for self-as-distinction, this will be considerably weaker than for self-as-hierarchy. It is predicted that self-as-hierarchy will be the strongest predictor of depression, anxiety, and stress, and that psychological flexibility will significantly mediate the relationship between self-as-hierarchy and distress.

5.2 Method

5.2.1 Ethics

Ethical approval for this study was granted by the University College Dublin Human Research Ethics Committee- Humanities (HS-E-17-12-Moran-McHugh). Participants between the ages of 18 and 25 years were recruited anonymously using the online recruitment tool Mechanical Turk. Participants were compensated a small fee for their time. Due to the sensitive nature of measures (i.e. questions relating to mental health), participants were provided with contact details of support services, and were reminded of the voluntary nature of the research and their right to withdraw at any time.
5.2.2 Participants

The study sample consisted of 102 older adolescents ranging in age from 18-25 years old ($M=21.04; SD=2.33$). As one participant did not provide their age, mean substitution was used for this participant. The sample consisted of 51 males, 50 females and one participant who did not report their gender. Mechanical Turk randomly recruits participants from around the world therefore participants were asked if they spoke English as a first language. 86 reported being native English speakers, and 16 did not speak English as their first language.

5.2.3 Measures

Predictor Variables

The Self Experiences Questionnaire (SEQ; Yu, Norton, & McCracken, 2016) is a 15-item measure of a “contextual self” as defined by CBS, or self-as-context. The scale is made up of 2 subscales, one measuring Self-as-Distinction (SEQ-Dist; “I can experience a distinction between my experiences and the “I” who notices these experiences” and “I am able to separate myself from my thoughts and feelings”), and the other measuring Self-as-Hierarchy (SEQ-Hier; “Above all my experiences, there is a sense of self who is noticing them” and “I can observe experiences in my body and mind as events that come and go”). Items are answered on a 7-point Likert ranging from “Never True” to “Always True” with higher scores indicating higher levels of each. The SEQ has only been used in populations with chronic pain to date, however it has been found to have good reliability and internal consistency (Yu et al., 2016; Yu et al., 2017). The two subscales contained in this SEQ will be used
separately to measure self-as-distinction and self-as-hierarchy, reliabilities for these scales were $\alpha=835$ and $\alpha=829$, respectively,

*RFT Perspective-Taking Protocol* (RFT PT; McHugh et al., 2004) is a 25-item behavioural measure of deictic relating. It assesses deictic ability by measuring transformation of stimulus functions across varying types of deictic relational frame. This study uses a briefer version of the original 62-item, with simple trials removed due to the ceiling effects observed in older populations (Vilardaga et al., 2012). The protocols contains 3 types of reversal: interpersonal (I-You; “*I have a red brick and you have a green brick. If I was you and you were me, Which brick would I have? Which brick would YOU have?*”), spatial (Here-There; “*I am sitting here in the black chair and you are sitting there on the blue chair. If here was there and there was here, Where would YOU be sitting? Where would I be sitting?*”), and temporal (Now-then; *Yesterday I was watching television, today I am reading. If now was then and then was now, What would I be doing then? What would I be doing now?*); as well as 2 types of double-reversal: Interpersonal Spatial (I-You-Here-There; “*I am sitting here on the black chair and you are sitting there on the blue chair. If I was you and you were me and if here was there and there was here, Where would I be sitting? Where would YOU be sitting?*”), and Spatial Temporal (Here-There-Now-Then; “*Yesterday you were sitting there on the blue chair, today you are sitting here on the black chair. If here was there and there was here and if now was then and then was now, Where would you be sitting now? Where would you be sitting then?*”). Five of each these type of trial were used, including one foil for each to gage participant attention levels. Higher accuracy on trials (as measured by a lower number of errors)
indicates higher deictic ability. This task has been used reliably across a range of populations and age-groups (Montoya-Rodríguez et al., 2016).

**Mediator Variable**

*Avoidance and Fusion Questionnaire for Youth* (AFQ-Y8; Greco et al., 2008) is an eight item self-report measure of experiential avoidance or psychological inflexibility, for use with young people. Higher scores indicate higher experiential avoidance and lower flexibility. The AFQ-Y8 has been found to have good reliability with both adolescent and adult samples (Greco et al., 2008; Fergus, et al., 2012). Responses are measured on an 5-point Likert scale with responses ranging from “Not at all True” to “Very True.” with items such as “I stop doing things that are important to me whenever I feel bad” and “I can't be a good friend when I feel upset.” Cronbach’s alpha for the overall scale for the present study was .886.

**Outcome Variable**

*The Depression Anxiety and Stress Scale-21* (DASS-21; Lovibond, S.H. & Lovibond, P.F., 1995) is a 21 item self-report measure of depression, anxiety, and stress. It is made up of three 7-item subscales measuring depression, anxiety, and stress, which can be summed for an overall measure of distress. Items for depression include “I found it difficult to work up the initiative to do things” and “I felt I wasn’t worth much as a person.” Items for anxiety include “I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)” and “I felt scared without any good reason.” Items for stress include “I felt that I was using a lot of nervous energy” and “I was intolerant of anything that kept me from getting on with what I was doing.” Responses are answered on an 4
point Likert scale with responses ranging from “Did not apply to me at all” to “Applied to me very much” and higher scores are indicative of higher levels of each of the above. The DASS-21 has acceptable to excellent reliability levels with clinical and non-clinical samples (Antony et al., 1998; Sinclair et al., 2012). Cronbach’s alpha for depression, anxiety, and stress subscales for the present study were .884, .839, and .829.

**Correlation Variable**

*Self-as-Context Scale* (SACS; Gird et al., 2012) is 11 item self-report measure of overall self-as-context. Items include “As I look back upon my life so far, I have a sense that part of me has been there for all of it” and “There is a basic sense I have of myself that doesn’t change even though my thoughts and feelings do.” Responses are answered on an 7 point Likert scale with responses ranging from “Strongly Agree” to “Strongly Disagree” and higher scores are indicative of higher levels of self-as-context. It has been shown to have good validity and reliability (Gird, 2013) and Cronbach’s alpha for the present study was .906.

**5.2.4 Design and Procedure**

This study used a quantitative, cross-sectional design. Participants completed this study in their own time online using [www.Qualtrics.com](http://www.Qualtrics.com) (Qualtrics Labs Inc., 2009). Contact details for the researcher and research supervisor were provided in the study information sheet and participants were advised to contact the researchers in the event they encountered any difficulty or did not understand any aspect of the research.
5.2.5 Data Analysis

Pearson’s Product Moment correlations were used to investigate the relationship between study variables and hierarchical multiple regressions were used to examine the ability of each type of self relating in predicting stress, depression, and anxiety, while controlling for gender and deictic ability.

Hierarchical multiple regressions examined the differential effect of each predictor after controlling for each other, thereby, evaluating the relative impact of each. The ability of each of these models to predict stress, depression, and anxiety was examined, meaning six models were tested in total. As recent research implicates the importance of psychological flexibility in positive outcomes associated with hierarchical self-as-context training (Gil-Luciano et al., 2017), a mediation analysis was carried out investigating the indirect impact of psychological flexibility on the relationship between self-as-hierarchy and mental health.

5.3 Results

5.3.1 Descriptive statistics

Data were entered into SPSS (Statistical Package for the Social Sciences) Version 20 file. Descriptive statistics including means, standard deviations, ranges, skewness and kurtosis values are reported in Table 24. All skewness and kurtosis values fell in the normal range (George & Mallery, 2001). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. All predictor variables found to have acceptable inter-item correlation levels, ensuring no violation of multicollinearity (r=.9 or above; Pallant, 2010; tolerance= .01 or less; Brace, Kemp, & Snelgar, 2006) and no significant
outliers were identified in the data based on z scores +/- 3.29 (Tabachnick & Fidell, 2007). For multiple regression, Tabachnick and Fidell (2007) suggest that the number of predictors included in a sample be the number of predictors times 8, plus 50, which the current sample exceeds (n=102).

Table 24 Descriptive Statistics and Normality Scores for Study 4 Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD) Total</th>
<th>M (SD) Males</th>
<th>M (SD) Females</th>
<th>Min- Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinction (SEQ-Dist); Hierarchy (SEQ-Hier)</td>
<td>24.94 (6.83)</td>
<td>24.57 (6.55)</td>
<td>25.38 (7.20)</td>
<td>7-42</td>
<td>.185</td>
<td>.174</td>
</tr>
<tr>
<td>7.00 (5.10)</td>
<td>8.04 (4.85)</td>
<td>7.38 (5.24)</td>
<td>0-20</td>
<td>.155</td>
<td>-.849</td>
<td>.610</td>
</tr>
<tr>
<td>7.85 (4.70)</td>
<td>8.59 (4.58)</td>
<td>7.08 (4.79)</td>
<td>0-21</td>
<td>.145</td>
<td>-.610</td>
<td>-.580</td>
</tr>
<tr>
<td>8.75 (4.33)</td>
<td>9.10 (4.20)</td>
<td>8.36 (4.51)</td>
<td>0-20</td>
<td>-.044</td>
<td>-.580</td>
<td>-.455</td>
</tr>
<tr>
<td>14.56 (7.25)</td>
<td>16.24 (7.21)</td>
<td>12.82 (7.02)</td>
<td>0-32</td>
<td>.081</td>
<td>-.455</td>
<td>-</td>
</tr>
<tr>
<td>52.75 (10.68)</td>
<td>52.06 (10.24)</td>
<td>53.58 (11.23)</td>
<td>26-77</td>
<td>.217</td>
<td>-.496</td>
<td>-</td>
</tr>
<tr>
<td>14.12 (3.70)</td>
<td>14.37 (3.60)</td>
<td>14.02 (3.67)</td>
<td>6-24</td>
<td>.478</td>
<td>.051</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation.

5.3.2 Correlations across study variables

Correlations across study variables in full are reported in Table 25. Due to the large number of tests, the rough false discovery rate was used to control for type 1 error associated with making multiple comparisons (Benjamini & Hochberg, 1995). The p value is reduced by multiplying it by (n+1)/2n, where n is the number of tests.
being run. The rough false discovery is less conservative and has greater power than
the Bonferroni correction. Using this method, the $p$ value was reduced to .0259.

Higher levels of self-as-hierarchy were related to significantly lower
depression ($r = - .249, p = .012$), stress ($r = - .262, p = .008$), and experiential avoidance
($r = - .222, p = .025$). Higher levels of self-as-hierarchy was also related to significantly
higher self-as-distinction, ($r = .730, p < .001$), and higher self-as-hierarchy ($r = .582,
p < .001$) and self-as-distinction ($r = .476, p < .001$) were both related to higher overall
self-as-context as measured by the Self-as-Context scale, while higher stress ($r = - .290,
p = .003$), depression ($r = - .298, p = .002$), and experiential avoidance ($r = - .275, p =
.005$), were related to lower overall self-as-context. Higher experiential avoidance
was related to higher depression ($r = .663, p < .001$), anxiety ($r = .611, p < .001$) and stress
($r = .629, p < .001$). Experiential avoidance was also lower in females ($r = - .231, p = .019$). Finally, higher stress was related to higher anxiety ($r = .821, p < .001$) and
depression ($r = .803, p < .001$), and higher anxiety to higher depression ($r = .742,
p < .001$).

Table 25 Correlations on measures of, Self-as-Hierarchy, Self-as-Distinction,
Depression, Anxiety, Stress, Experiential Avoidance, Deictic Ability, Self-as-Context
and Gender

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
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<tbody>
<tr>
<td>2.</td>
<td>- .730**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>- .249*</td>
<td>- .202</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>- .107</td>
<td>- .089</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.742**</td>
</tr>
<tr>
<td>5.</td>
<td>- .262*</td>
<td>- .213</td>
<td></td>
<td></td>
<td></td>
<td>.803**</td>
<td>.821**</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>- .222*</td>
<td>- .104</td>
<td></td>
<td>.633**</td>
<td>.611**</td>
<td>.629**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.3.3 Hierarchical Multiple Regressions

A series of hierarchical multiple regressions were carried out to examine the ability of self-as-hierarchy and self-as-distinction to predict depression, anxiety, and stress, while controlling for gender and deictic ability in sample of older adolescents. Using the Rough False Discovery rate to control for type 1 error associated with making multiple comparisons, the \( p \) value was reduced to .0264.

5.3.3.1 Self-as-Hierarchy

A full summary of hierarchical multiple regression models examining the ability of self-as-hierarchy to predict depression, anxiety and stress is presented in Table 26. Gender was entered into the model as the first step to control for any possible gender effects. The first step of the model was not significant for depression, \( F(1, 101)=.276; p=.600; \) adjusted \( R^2=.007 \), anxiety, \( F(1, 101)=2.656; p=.106; \) adjusted \( R^2=.016 \), or stress, \( F(1, 101)=.815; p=.369; \) adjusted \( R^2=.006 \), indicating gender was not a significant predictor. Deictic ability was entered next and again the second step of the model was not significant for depression, \( F(2, 101)=.426; p=.655; \) adjusted \( R^2=.012 \), anxiety, \( F(2, 101)=1.330; p=.269; \) adjusted \( R^2=.006 \), or stress, \( F(2,
101= .522; p=.595, adjusted $R^2$=.010, with neither gender or deictic ability emerging as significant predictors for any of the target variables. Finally, in the third step of the model self-as-hierarchy was entered. Although, overall models were not significant for stress, $F(3, 101)= 2.640; p=.054$, adjusted $R^2$=.046, or depression, $F(3, 101)= 2.315; p=.081$, adjusted $R^2$=.038, self-as-hierarchy emerged as a significant predictor for both accounting for 6.4% and 5.8% of variance respectively. A significant model did not emerge for anxiety, $F(3, 101)= 1.202; p=.313$, adjusted $R^2$=.006, with no significant predictors.

Table 26 Hierarchical regression analyses examining the ability of self-as-hierarchy to predict depression, anxiety, and stress while controlling for gender and deictic ability (N=102)

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>Predictor Variables</th>
<th>Adjusted $R^2$</th>
<th>$\Delta R^2$</th>
<th>$\beta$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1</td>
<td>Gender</td>
<td>-.007</td>
<td>.003</td>
<td>-.052</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Gender</td>
<td>-.012</td>
<td>.006</td>
<td>-.051</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Deictic Ability</td>
<td>-.006</td>
<td>-.076</td>
<td>[-.379, .169]</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Gender</td>
<td>.038</td>
<td>.058*</td>
<td>-.038</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Deictic Ability</td>
<td>-.006</td>
<td>-.053</td>
<td>[-.342, .195]</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Self-as-Hierarchy</td>
<td>-.006</td>
<td>-.242*</td>
<td>[-.325, -.035]</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>Gender</td>
<td>.016</td>
<td>.026</td>
<td>-.161</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Gender</td>
<td>.006</td>
<td>.000</td>
<td>-.161</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Deictic Ability</td>
<td>-.006</td>
<td>-.017</td>
<td>[-.272, .229]</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Gender</td>
<td>.006</td>
<td>.009</td>
<td>-.155</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Deictic Ability</td>
<td>-.006</td>
<td>-.008</td>
<td>[-.261, .242]</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Self-as-Hierarchy</td>
<td>-.006</td>
<td>-.097</td>
<td>[-.203, .069]</td>
</tr>
<tr>
<td>Stress</td>
<td>1</td>
<td>Gender</td>
<td>-.002</td>
<td>.008</td>
<td>-.090</td>
</tr>
</tbody>
</table>
Gender Deictic Ability -0.010 0.002 -0.089 [-2.388, 0.908] -0.049 [-0.290, 0.176] -0.089 [-0.228, 0.981] -0.025 [-0.256, 0.198] -0.049 [-0.284, -0.039] 

Note: ** sig at .01, * sig at .0264

5.3.3.2 Self-as-Distinction

A full summary of hierarchical multiple regression models examining the ability of self-as-distinction to predict depression, anxiety and stress, is presented in Table 27. Gender was first added in step one of the model to control for any possible gender effects. The first step of the model was not significant for depression, $F(1, 101)=.276; p=.600$, adjusted $R^2 =-.007$, anxiety, $F(1, 101)= 2.656; p=.106$, adjusted $R^2 =.016$, or stress, $F(1, 101)=.815; p=.369$, adjusted $R^2 =-.002$, indicating gender was not a significant predictor. Deictic ability was entered in the second step of the model and again, models were not significant for depression, $F(2, 101)= .426; p=.655$, adjusted $R^2 =-.012$, anxiety, $F(2, 101)= 1.330; p=.269$, adjusted $R^2 =.006$, or stress, $F(2, 101)= .522; p=.595$, adjusted $R^2 =-.010$, with neither deictic ability or gender emerging as significant predictors. Finally, self-as-distinction was entered into the final step of the model. No significant models emerged for depression, $F(3, 101)= 1.597; p=.195$, adjusted $R^2 =.017$, anxiety, $F(3, 101)= 1.087; p=.358$, adjusted $R^2 =.003$, or stress, $F(3, 101)=1.809; p=.151$, adjusted $R^2 =.023$, with no significant predictors emerging.
Table 27: Hierarchical regression analyses examining the ability of self-as-distinction to predict depression, anxiety, and stress while controlling for gender and deictic ability (N=102)

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>Predictor Variables</th>
<th>Adjusted R²</th>
<th>Δ R²</th>
<th>β</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Gender</td>
<td>-.007</td>
<td>.003</td>
<td>-.052</td>
<td>[-2.453, 1.426]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
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<td>.006</td>
<td>-.051</td>
<td>[-2.445, 1.443]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.076</td>
<td>[-.379, .169]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.017</td>
<td>.038</td>
<td>-.038</td>
<td>[-2.291, 1.550]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.065</td>
<td>[-.361, .181]</td>
</tr>
<tr>
<td></td>
<td>Self-as-Distinction</td>
<td></td>
<td></td>
<td>-.196</td>
<td>[-.293, .000]</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Gender</td>
<td>.016</td>
<td>.026</td>
<td>-.161</td>
<td>[-3.213, .315]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.006</td>
<td>.000</td>
<td>-.161</td>
<td>[-3.220, .327]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.017</td>
<td>[-.272, .229]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.003</td>
<td>.006</td>
<td>-.155</td>
<td>[-3.180, .382]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.013</td>
<td>[-.267, .235]</td>
</tr>
<tr>
<td></td>
<td>Self-as-Distinction</td>
<td></td>
<td></td>
<td>-.078</td>
<td>[-.190, .083]</td>
</tr>
<tr>
<td>Stress</td>
<td>Gender</td>
<td>-.002</td>
<td>.008</td>
<td>-.090</td>
<td>[-2.388, .895]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-.010</td>
<td>.002</td>
<td>-.089</td>
<td>[-2.388, .908]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.049</td>
<td>[-.290, .176]</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>.023</td>
<td>.042</td>
<td>-.075</td>
<td>[-2.249, 1.002]</td>
</tr>
<tr>
<td></td>
<td>Deictic Ability</td>
<td></td>
<td></td>
<td>-.037</td>
<td>[-.273, .186]</td>
</tr>
<tr>
<td></td>
<td>Self-as-Distinction</td>
<td></td>
<td></td>
<td>-.206</td>
<td>[-.255, -.006]</td>
</tr>
</tbody>
</table>

Note: ** sig at .01, *sig at .0264

5.3.4 Mediation Analyses

Mediation analyses were conducted with the non-parametric bootstrapping procedure using the PROCESS package (Hayes, 2013). Indirect effects were deemed significant if the 95% bias-corrected bootstrap confidence intervals (CI) based on
1000 bootstrapped samples did not include zero. Results indicated that experiential avoidance did not mediate the relationship between self-as-hierarchy and stress ($\beta = -0.0842, SE = 0.052, 95\% CI [-0.2017, 0.0068], p > 0.05$), or self-as-hierarchy and depression ($\beta = -0.1004, SE = 0.0619, 95\% CI [-0.2309, 0.0101], p > 0.05$).

### 5.3.5 Summary of Results

Unstandardized and standardized regression coefficients for significant predictor variables are summarized in Table 28. Self-as-hierarchy emerged as a significant predictor of stress and depression but not anxiety. Gender, deictic ability and self-as-distinction did not emerge as significant predictors of depression, anxiety or stress, and psychological flexibility did not emerge as a significant mediator of the relationship between self-as-hierarchy and depression or stress.

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Outcome Variable</th>
<th>B</th>
<th>SE B</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-as-Hierarchy</td>
<td>Depression</td>
<td>-.180</td>
<td>.073</td>
<td>-.242</td>
<td>.016</td>
</tr>
<tr>
<td>Self-as-Hierarchy</td>
<td>Stress</td>
<td>-.161</td>
<td>.062</td>
<td>-.255</td>
<td>.010</td>
</tr>
</tbody>
</table>

*Note: B= standardized beta; SE= Standard Error.*

### 5.4 Discussion

The primary aim of this investigation was to conduct a more fine-grained analysis into the two distinct types of self-as-context relating, self-as-distinction and
self-as-hierarchy, and to examine the relative relationship between each of these selfing behaviours and levels of distress at a naturally occurring baseline level. The relationship among these two selfing behaviours and measures of distress, experiential avoidance, deictic ability, and gender was examined. It was predicted that self-as-hierarchy would be related to lower distress, and experiential avoidance, and higher deictic ability. It was also predicted that while these relationships would also emerge for self-as-distinction, that it would be considerably weaker than those with self-as-hierarchy.

Regression models with predictors of self-as-hierarchy, or self-as-distinction, controlling for gender and deictic ability, were then examined for their ability to predict depression, anxiety, and stress. It was predicted based on previous research, that self-as-hierarchy would be the strongest predictor. Finally, it was predicted that psychological flexibility would significantly mediate the relationship between self-as-hierarchy and lower distress.

These predictions were supported in part. Firstly, correlational analysis revealed that self-as-hierarchy was significantly related to lower stress, depression, and experiential avoidance, but not anxiety. Likewise, no relationship for gender or deictic ability emerged. While relationships trended in the same direction for self-as-distinction, as predicted they were considerably weaker than for those of self-as-hierarchy with none reaching significance. Next regression analyses revealed self-as-hierarchy to be a significant predictor of stress, accounting for 6.4% of variance, and depression, accounting for 5.8% of variance. Self-as-hierarchy was not predictive of anxiety however, and gender, deictic ability and self-as-distinction did not emerge as significant predictors of depression, anxiety, or stress. Finally, mediation analysis
revealed that psychological flexibility did not mediate the relationship between self-as-hierarchy and stress, or self-as-hierarchy and depression.

For the most part, these findings cohere with previous research. Higher self-as-context has been found to be related to lower depression (Atkins & Styles, 2016; Yu et al., 2017). Foody et al. (2013) observed reductions in stress for participants in their self-as-hierarchy condition, and small increases for self-as-distinction, which is consistent with the results of the present study, although self-as-distinction was not related to increases in stress. Findings differed for anxiety however, with Foody et al. (2013) observing reductions in anxiety for their self-as-hierarchy and self-as-distinction conditions (larger for the former), while no relationship with anxiety was observed for either in the present study. Results for Foody et al.’s (2015) more recent investigation were also consistent with those from the present study insofar as they found that a self-as-hierarchy intervention was most effective in reducing stress, while smaller non-significant decreases emerged for self-as-distinction. They differed from the present study however in that, consistent with Foody et al. (2013), they also observed reductions in anxiety for both self-as-distinction and self-as-hierarchy.

Interestingly, while both of these studies observed reductions in anxiety following self-as-distinction and self-as-hierarchy interventions, there were marginal to no differences between conditions. These findings may arguably be the result of regression to the mean (Barnett, van der Pols & Dobson, 2004), after anxiety scores had been previously elevated due to experimentally induced distress, however, lack of a control condition in these studies makes it difficult to draw conclusions.

While correlational findings showed that higher self-as-hierarchy was related to lower experiential avoidance, findings from mediation analysis show that self-as-hierarchy does not lead to lower stress and depression as a result of psychological
 flexibility. This seems to suggest self-as-hierarchy alone does not lead to increased psychology flexibility. Although previously, Luciano et al. (2011) and Gil-Luciano et al. (2017) observed increased psychological flexibility following self-as-hierarchy training, their protocols contained additional emotional and behavioural regulation cues. While Foody et al. (2015) did observe reductions in experiential avoidance following their self-as-hierarchy training condition, this was non-significant when length of practice session was controlled for. According to RFT, psychological flexibility involves the hierarchical framing of one’s ongoing behaviour with the deictic “I”, thereby reducing discriminative functions of ongoing behaviour and allowing derivation of rules that specify appetitive augmental functions and thereby allowing behaviour consistent with these functions (Gil-Luciano et al., 2017; Luciano et al., 2011; Luciano, Valdivia-Salas, Cabello, & Hernández, 2009). Therefore, while self-as-hierarchy involves viewing oneself as the container of one’s experiences, allowing for the ongoing observation of one’s behaviour in a defused, flexible manner and thereby facilitating other behaviours such as acceptance and contacting values, which together lead to increased psychological flexibility, it alone does not lead to psychological flexibility as suggested by these findings. It appears self-as-hierarchy in conjunction with other related processes is necessary for optimal outcomes.

5.4.1 Strengths and Limitations

The sample for the present study were recruited using online research recruitment tool, Mechanical Turk. A large amount of evidence has shown Mechanical Turk to provide high quality, reliable, representative data (e.g. Peer, Samat, Brandimarte & Acquisti, 2017; Chandler, Mueller, & Paolacci, 2014; Peer,
Vosgerau, & Acquisti, 2013). However, there were also some issues associated with use of an anonymous recruitment tool that should be considered. Beyond age, gender and language, no further demographic information was gathered to help maintain participant anonymity. This meant cultural and socio-economic factors were not accounted for. Also, participants were recruited from all around the world meaning those recruited were not necessary fluent English speakers. The present study attempted to control for this by asking participants at pre-test if they spoke English as a first language. Only 16 reported not being native English speakers and no differences emerged when analysis were repeated with these participants removed, suggesting participant language did not impact performance. Gender balance was also a study strength as previous research findings suggest that gender differences are present in this age-group for perspective-taking (Eisenberg et al., 2005; Van der Graaff et al., 2014), self-relating (Crocetti et al., 2016; Gestsdottir et al., 2015), and mental health (Gestsdottir et al., 2015; Aslund et al., 2010). However gender did not emerge as a significant predictor in any of the models tested for the present study.

Another strength of this study was measurement of specific relational processes rather than non-technical middle-level concepts. Use of the Self Experiences Questionnaire provided a quantitative measure of self-as-hierarchy and self-as-distinction thereby addressing a key limitation of previous self-as-context investigations. The SEQ is a recently developed measure and has only been used in two empirical investigations in populations with chronic pain, however these studies found the measure to have good reliability, as was the case in the present study. The SEQ also correlated highly with the SAC which was used in earlier studies in the present thesis, suggesting we can have confidence that both are measuring self-as-context.
In addition to being the first study to test the assumptions of interventions tested in previous studies, this study measured and controlled for deictic ability in relation to self-as-distinction and self-as-hierarchy. However, deictic relating was not found to be related to any of the measures used in the study, including distress or self-as-context. This finding is perhaps not particularly surprising with regard to distress, as Luciano et al. (2011) suggested when describing their own findings, that basic deictic relations were necessary for the discrimination of one’s own experience and were sufficient for facilitating self-as-distinction. However for more complex levels of relating, a sophisticated level (i.e. hierarchal cues and regulation functions) is necessary for optimal outcomes.

Although, deictic relations must always participate in relational networks along with other relations (Foody et al., 2015), (frames of distinction and hierarchy in this case) and are therefore not the only relations involved in selfing behaviour, the lack of a relationship between these variables is surprising given the role of deictic relational responding in self-as-context according to RFT (Barnes et al., 2001; Foody et al., 2012; McHugh, 2015). Although issues around fatigue and engagement have been said to affect performance on deictic tasks (Weil et al., 2011) foils were used in the present study to assess participant attention levels and analysis of performance on foils did not suggest any issues around participant attention or engagement levels. Similarly, analysis was repeated with participants removed who had a large number of errors on less complex single reversals and high accuracy on more complex double-reversals, to control possible responding at random. Again, study findings did not differ suggesting that outcomes were not affected by any possible random responding. As all participants were over eighteen years old deictic repertoires should be fully developed for this sample (McHugh et al., 2004), therefore it’s possible that there was
not enough variability in scores within the sample for a relationship to be detected. A recent review of investigations examining deictic relational responding (Montoya-Rodríguez et al., 2016) showed that this measure has been used across a variety of different types of investigations and across a range of populations, however it’s possible that this protocol may require further validation for use with a typically developing adult population and testing in relation to other measures of behaviours related to deictic relating (e.g. self-report measures of perspective-taking, implicit measures). Based on these findings it seems critical that further investigations using a variety of different measures and different types of analyses are carried out to better explore and understand this relationship.

5.4.2 Implications

By measuring naturally occurring levels of self-as-distinction and self-as-hierarchy in relation to measures of mental health, and also examining the role of the relational units underlying them, the present study makes an important and unique contribution to this body of investigations. While the SEQ provided a convenient means of measuring self-as-hierarchy and self-as-distinction, it must be remembered that this is a self-report measure, therefore it would be beneficial for future studies to investigate these across multiple levels of analysis. Atkins and Styles (2016) measured occurrences of these 2 types of self-as-context in their behavioural measure of self-discriminations in naturally occurring speech. Perhaps a variation of this analysis could be used wherein participants are prompted to discuss experiences of a sense of self wherein one observed their ongoing psychological experience, thereby examining whether they discuss experience as separate from themselves or as a part
of themselves. A number of basic science investigations into the relational frames of hierarchy and distinction have also been carried out (e.g. Steele & Hayes, 1991; Gil et al., 2012) therefore some type of analogue study to measure frames of distinction and hierarchy along with deictic frames, may be developed. Future studies could also expand upon this by examining these type of behaviours longitudinally and investigating self-as-context relating across the lifespan as self-relating develops (Erikson, 1964; Rutt & Löckenhoff, 2016; Arnott, 2000).
Chapter 6: Discussion

6.1 Chapter Overview

This thesis aimed to examine the CBS conceptualisation of self, and the implications of this “selfing” behaviour for mental health and well-being in an adolescent population. As mainstream psychological theories of self have been found to be poorly defined and theoretically inconsistent, by investigating the account of self offered by CBS, the research aimed to answer the call for the development of more evidence based, theoretically grounded approaches to the self for the improvement of adolescent mental health.

This body of research provided the first attempt to: empirically demonstrate the relationship between the three self discriminations according to CBS (self-as-content; self-as-process; and self-as-context) and mental health in adolescents using multiple levels of analysis; develop and pilot an application of this theory using a universal school based intervention programme which directly targeted the relational units underlying flexible selfing behaviours in adolescents; and address a key limitation of earlier investigations into the two distinct types of self-as-context relating- self-as-distinction and self-as-hierarchy, by examining the relative contribution of each at a naturally occurring level in a more fine-grained, and controlled investigation. In doing so, these investigations provide a unique and important contribution to the psychological literature by providing a more indepth and thorough investigation into the CBS account of the self than previous investigations carried out to date; and examining this theory in an adolescent population where self issues are particularly pertinent and implicate mental health, well-being, psychological flexibility, and social functioning.
This chapter will comprise of an overview and summary of these empirical investigations, their key findings and contribution to the literature, theoretical and practical implications, limitations of this research, and finally a general conclusion with suggestions for future investigations going forward.

6.2 Investigation Summaries and Main Findings

6.2.1 Study 1: An investigation into the relationship between the three selves (Self as Content, Self as Process and Self as Context) and mental health in adolescents

CBS pragmatically identifies three distinct self discriminations, Self-as-Content, Self-as-Process, and Self-as-Context, each of which has important implications for mental health and well-being. The first study in the present thesis used hierarchical multiple regressions to examine the predictive power of a Self model, using measures of these three self discriminations to predict mental health in adolescents. A significant model emerged from the overall analysis of the third step, with all self variables emerging as significant, indicating that the three selves model is predictive of mental health in adolescents. Results indicating that a more flexible relationship to self-as-content, higher self-as-process, and higher self-as-context were related to lower levels of mental health issues in adolescents. To the best of the author's knowledge, this is the first empirical demonstration of the three self discriminations using quantitative self-report measures, thereby addressing a limitation of previous CBS self investigations, and giving support the theory that a more flexible sense of self according to CBS is associated with better overall mental health. These findings give support to the development of self-based interventions grounded in evidence from CBS.
6.2.2 Study 2: Training a Flexible Self and Perspective Taking in Adolescents

Based on the findings of thesis Study 1, this investigation aimed to test the application of this theory in the form of a brief universal school based intervention. An intervention was developed to train self-flexibility, by firstly training the basic relational units underlying selfing behaviour according to CBS (deictic relations), followed by a variety of exercises from the CBS literature, which specifically target flexible selfing repertoires in adolescents. This intervention was compared to an active control training condition, as well as a pure control group. This study used 2x3 mixed experimental design with time (k= 2; pre vs. post) as the within subject variable, and group (k=3; intervention group, control or active control) as the between subjects factor, and scores on study measures as the dependent variables. Outcomes were investigated in terms of self-as-context, mindfulness, self-compassion, empathy, psychological flexibility, mental health and well-being. Results revealed no significant improvements from pre to post across study outcome variables following the intervention. Moreover, it was noted that stress marginally increased for the intervention condition from pre to post, compared to both control conditions. These findings are broadly consistent with recent findings from a large scale randomized control trial wherein authors investigated the efficacy of a universal type CBS programme in a sample of 586 adolescents which also showed no significant improvements from pre to post (Van der Gucht et al., 2016). While these findings imply that this type of intervention is unsuitable for use in a brief school based interventions, there are a number of probable explanations as to why the expected improvements were not observed, including methodological limitations (discussed in more detail below).
6.2.3 Study 3: Measuring occurrences of Self and Other discriminations in relation to mental health in adolescent textual responses

While the first study in this thesis gave support to a self model as predictive of adolescent mental health, an intervention for the development of a flexible self using evidence from CBS was developed, and did not reveal expected improvements in mental health and related outcome variables. As previously stated there are a number of reasons for why this might be the case, such as methodological issues, however the inconsistency of these findings warrants further research. While these studies relied on quantitative measures, CBS emphasizes the importance of testing at multiple levels of analysis, particularly with use of behavioural measures. On this basis, Study 3 aimed to examine the three self-discriminations identified by CBS, and other relevant behaviours (i.e. Other discriminations and rule-governed behaviour) using a behavioural measure in samples of adolescent text, thereby examining these discriminations at a more objective, naturally occurring level. Responses from 76 adolescents were analysed in a mixed methods design with quantitative measures of mental health, well-being, and experiential avoidance, and six opened-ended questions involving Emotional Deictics of I and You. Participants reported on events involving a number of specified emotions (i.e., happy, sad, and angry) and times when both themselves, and people they knew, experienced these emotions. Responses were coded for occurrences of the three senses of self and other, and rule governed behaviour as conceptualized by CBS using the coding frame developed by Atkins and Styles (2016). It was predicted that lower occurrences of rigid self-as-content, higher self-as-context and higher values oriented self-rules, would be related to higher well-being, and lower distress and experiential avoidance. Due to mixed findings
pertaining to self-as-process, no specific prediction was made for this code. Likewise, no specific predictions regarding Other discriminations were made due to the lack of previous empirical evidence. These predictions were partially supported with higher negative self-as-content related to lower well-being, and while no occurrences of self-as-hierarchy emerged, higher self-as-distinction marginally correlated with higher well-being for female participants. Higher self-as-process was related to lower depression, and for female participants lower anxiety. While values-oriented self rules did not significantly relate to any quantitative outcome measure, higher control-oriented self-rules was related to higher experiential avoidance. Higher occurrences of Nul codes were related to higher depression, as well as higher avoidance for females. Findings for discriminations of other were as follows: higher other-as-story was associated with lower stress, higher other-as-process was related to higher well-being and lower experiential avoidance, and finally higher other-as-context was associated with higher stress, lower well being, and higher experiential avoidance.

Overall these findings from these more objective, behavioural self discrimination measures were consistent for the most part with those from the more subjective, self-report measures used in Study 1, providing triangulation of results. Additionally, a number of interesting and novel findings around relating to others and issues in reporting on one’s own experience also emerged. However, issues identified with the coding frame mean some of these findings should be considered cautiously.

6.2.4 Study 4: Distinction vs. Hierarchical Deictic Relating: Implications for Adolescent Mental Health

In Study 1, self-as-context emerged as a significant predictor of adolescent mental health, however findings from Studies 2 and 3 were not consistent with this
outcome. While issues were identified with Studies 2 and 3 which may have contributed to these findings, recent empirical evidence suggests that there are 2 distinct types of self-as-context, self-as-distinction—which involves viewing oneself as separate from one’s self-content, and self-as-hierarchy- which is viewing oneself as the container of one’s self-content. Hierarchical self relating has been shown to be associated with better mental health outcomes relative to distinction, in samples of college students and clinically at-risk adolescents (Luciano et al., 2011; Foody et al., 2013; Foody et al., 2015; Gil-Luciano et al., 2017). Yu et al. (2016) recently developed a quantitative measure of self-as-context, known as the Self Experiences Questionnaire. This measure contains two separate subscales of hierarchy and distinction, which previously quantitative measures have not accounted for. On this basis, the final study in the present thesis compared the relative contribution of each of these two types of self-as-context on depression, stress, and anxiety, while controlling for deictic ability and gender, using regression analyses in a sample of 102 older adolescents. As recent evidence also implicates the role of psychological flexibility in producing these outcomes (Gil-Luciano et al., 2017), mediation analysis was also used to examine the role of psychological flexibility. It was predicted that self-as-hierarchy would be the strongest predictor of depression, stress, and anxiety and that psychological flexibility would significantly mediate the relationship between self-as-hierarchy and distress. This was supported in part with self-as-hierarchy emerging as a significant predictor of stress and depression, however psychological flexibility was not found to mediate this relationship. Self-as-distinction did not emerge as a significant predictor of any outcome variable.

This investigation addressed a number of gaps identified in previous investigations into self-as-distinction and self-as-hierarchy, by examining each of
these types of relating without manipulation, and examining each component in a more fine-grained, controlled manner than previous investigations.

6.2.5 Overall Summary & Interpretation of Findings

Overall, thesis findings gave support to the relationship between the self discriminations according to CBS and adolescent mental health. While the findings from Study 1 suggested that a model of the three selves was predictive of lower distress in adolescents, and Study 3 giving support to this for the most part, results from Study 2 did not correspond with this. There are a number of explanations as to why this was the case.

It’s possible that the intervention was too brief with more extensive training necessary to develop the skills and types of relating targeted in this investigation. Brief interventions do not always provide sufficient training for skill development or to undermine existing relational networks (Levin & Villatte, 2015). Although, self exercises that were used in the intervention tested in Study 2 were based on those from the ACT self literature, it’s possible that these are only suitable for use in conjunction with other ACT exercises, so that all processes are targeted, in order to be fully effective as results from isolated components often do not generalize to entire treatment packages (Levin & Villatte, 2015). Moreover, upon closer observation of the exercises used in the Flexible Self intervention, a flexible relationship towards one’s self-conceptualisations and transcendence of self-content are targeted in a very direct way. However, only very brief cues for ongoing present moment awareness are used at the beginning of each exercise. It’s likely that this is insufficient to adequately target self-as-process.
Self-as-process was found to account for a large amount of variance in the self model in Study 1, which is not surprising considering the fact that self-as-process is necessary for both self-as-content and self-as-context. Specifically, self-as-process is the continuous verbal discrimination of the ongoing psychological events which one experiences as they occur moment to moment, which feeds the conceptualized self, which is the abstracted, linguistic result of self-as-process. All this is observed from the transcendent viewpoint of self-as-context, for which Self-as-process is also necessary to contact (Foody et al., 2012; Hayes, 1984; Hayes; 1995). Therefore, in order to fully develop flexible self-relating, it is critical that all three self discriminations are adequately trained.

As discussed earlier recent investigations have identified two distinct types of self-as-context, one of which, known as self-as-hierarchy, has been linked to better outcomes in terms of mental health and psychological flexibility. The other, self-as-distinction, has not lead to these improvements and consistent with the findings of Study 2 has been linked to increased stress (Foody et al., 2013), suggesting that only self-as-distinction was successfully trained in this intervention. As these two distinct types of self-as-context were not trained or examined separately in Study 2, it is not possible to draw definite conclusions. Finally, as this intervention was piloted under real world settings certain extraneous variables were not controlled for (e.g. noise and distractions in the environment, technical issues etc.) which may have affected participant performance and engagement. Environmental distractions have been found to considerably impact attention and engagement in young people (Beaman, 2005), therefore if distractions were present during testing this may have impacted participants ability to engage with and follow the intervention.
Next, Study 3 findings cohered with the results of Study 1 for the most part and a number of interesting and novel findings emerged for other discriminations, control oriented self-rules, and nul codes, implicating the important of acceptance, awareness and flexibility in each type of relating for mental health, well being, and psychological flexibility. However, issues identified around coding criteria for certain variables may have attenuated certain relationships and contributed to some unexpected findings, particularly around other-as-story and other-as-context.

Finally Study 4 involved a more-fine grained examination of the relational processes involved in the two types of self-as-context, self-as-distinction and self-as-hierarchy. Results supported the implications of past research with self-as-hierarchy significantly predictive of stress and depression, while no significant relationships were observed for self-as-distinction and mental health outcome variables, however only a small percent of variance was accounted for in each case. Interestingly, however, while psychological flexibility was found to be strongly correlated with self-as-hierarchy, it was not found to mediate the relationship between self-as-hierarchy, and stress or depression. This seems to imply that while self-as-hierarchy is related to better mental health outcomes relative to self-as-distinction, it alone does not lead to psychological flexibility, rather this seems to occur when operating in coordination with other processes (e.g. acceptance) (e.g. Gil-Luciano et al., 2017).

Overall, this body of investigations provided a reticulated approach wherein theoretical assumptions were tested at both a practical, more clinically useful level using middle level concepts and at a more technical, basic level in terms of relational units. Consistent with the CBS goal of scope, outcomes were also examined in relation to other relevant behaviours, and a number of novel findings emerged.
6.3 Contribution to Literature and Implications

These findings make a novel contribution to the psychological literature on the self and adolescent mental health. Overall this body of research has identified a number of theoretical issues and practical concerns, which set the groundwork for future investigations. Further exploration of these ideas and revision and consolidation of theory where necessary will allow for progress that is of therapeutic value and can inform the development of self based interventions for adolescent use. Due to the importance of self-development for adolescent mental health and the issues identified around a coherent, unified theory of self (Stewart et al., 2012; Yu et al., 2016; Blyth & Monroe Traeger, 1983), continuation of this line of research is critical.

Study 1 was the first empirical investigation of the three selves using standardized quantitative measures in an adolescent sample. Although, there is still a need to develop a specific measure of the three selves (Yu et al., 2016), this study identified three suitable measures for self-as-content, self-as-process, and self-as-context, respectively, allowing for a model of three selves to be empirically tested. Study 1 findings gave support to theoretical assumptions (which Study 3 subsequently gave further support to). The school based intervention that was developed and piloted on the basis of this theory was also the first of it’s kind. While expected findings were not observed, a number of important issues were identified which require further investigation.

In addition to self relating, according to RFT, the same functional units (i.e. flexible perspective taking repertoires) have important implications for how we relate to others. To the best of the author’s knowledge, there have been no investigations to date on the three senses of other in an adolescent population and only one
unpublished study in an adult sample (Styles, 2015). A number of novel findings were observed for these other discriminations, with results suggesting that how adolescents relate to others, or moreover with how much flexibility they relate to others has implications for mental health and psychological flexibility. The finding that higher occurrences of Nul codes is associated with higher depression, and for females participants, experiential avoidance gives further support at a more objective, behavioural level to previous research which suggests that deficits in emotional awareness and expression is associated with more detrimental mental health outcomes (Ciarrochi, Heaven, & Supavadeeprasit, 2008; Ciarrochi et al., 2003; Ciarrochi et al., 2011).

Finally, thesis Study 4 was the first investigation to quantitatively examine self-as-hierarchy and self-as-distinction at baseline level wherein manipulation had not occurred, and parse the role of individual components that previous investigations identified as contributing to mental health outcomes. By examining the role of the individual components at baseline and their individual contribution to mental health outcomes this study addressed a limitation of previous investigations. While results were consistent with past research for the most part, the finding that psychological flexibility does not mediate the relationship between self-as-hierarchy, and depression or stress, is an unexpected but important one. Previous investigations that suggested that self-as-hierarchy training leads to increased psychological flexibility used interventions, which additionally targeted behavioural regulation and acceptance (Luciano et al., 2011; Gil-Luciano et al., 2017) therefore, Study 4 findings suggest that the observed increases in psychological flexibility in these earlier investigations was not attributable to self-as-hierarchy alone.
One critical issue that has presented across investigations into self-as-context is inconsistent theoretical accounts and definitions. Self-as-context is arguably one of the most abstract concepts in CBS. Despite its solid theoretical foundations, the abstract nature of this concept seems to create discrepancies and lack of coherence across investigations. Issue of differing accounts of self-as-distinction have been observed across the literature, with some authors describing it as a less sophisticated version of self-as-hierarchy (e.g. Luciano et al., 2011), and others state that 2 separate types of relating give rise to self-as-hierarchy and self-as-distinction (Foody et al., 2015). Foody et al. (2015) even referred to self-as-distinction as being self-as-process rather than self-as-context, contrary to their previous investigation (Foody et al., 2013). This lack of consistency over definitions and descriptions of middle level terms to describe the same functional and relational processes is arguably not surprisingly, however clear, definitive, and most importantly, consistent definitions of middle levels concepts must be employed across investigations moving forward. These should be bottom-up, empirically tested accounts that cohere readily with theoretical underpinnings in keeping with the goals of CBS. This is critical to advance scientific progress at both a basic science level and a more applied clinical level. Therefore, fine-grained and specific investigations, where individual processes are parsed out such as that in Study 4, are necessary for development, refinement and consolidation of theory. In particular, the basic (and more technical) relational frames underlying self-as-context should be examined more extensively.

Although at a theoretical level self-as-context is important for facilitating acceptance of one’s unwanted or painful thoughts and feelings (McHugh, 2015; Foody et al., 2012), these thesis findings appear to suggest that self-as-context alone is less impactful than previously thought. To date there is only a small amount of
empirical support for self-as-context in relation to mental health and well being outcomes (Atkins & Styles, 2016; Yu et al., 2017), however based on the findings of this thesis the issue of publication bias should also be considered as more previous investigations examining self-as-context may have been carried out but due to insignificant or weak findings, these were not published (Stern & Simes, 1997). Overall, findings from this thesis seem to imply that although self-as-context contributes to mental health outcomes involvement of other processes are necessary to produce optimal outcomes.

To the best of the author’s knowledge, these investigations into CBS account of self were the first to directly examine and account for the role of the relational units underlying selfing behaviours, specifically, deictic relations. According to RFT, more fluent deictic relational responding leads to a more flexible relationship to verbal content, facilitating noticing of process from moment to moment, and developing an enduring sense of self that is beyond threat, facilitating a more flexible relationship towards the self (and others) (Barnes-Holmes et al., 2001; Hayes et al., 2011; Atkins, 2013). Deictic relating is particularly important for self-as-context as ability to flexibly take perspective is necessary for transcendence of one’s psychological content (McHugh, 2015; Foody et al., 2012). Despite this, no CBS self-investigations to date have directly examined the role of deictic relational responding. Findings from the present thesis did not reveal expected relationships around deictics and selfing behaviours. While this may be attributed to issues around measurement (discussed in further detail below), it is pertinent that is investigated more extensively.

The overall goal of ACT, the therapeutic application of CBS, is to foster psychological flexibility, through six interrelated processes, including self-as-context. A more healthy, flexible self is related to higher levels of psychological flexibility
according to CBS (Aktins & Styles, 2016; Foody et al., 2012). Numerous studies have demonstrated the relationship between adolescent mental health and psychological flexibility. Greco et al. (2008) found that higher experiential avoidance in adolescents was linked to increased somatic complaints, internalizing symptoms, and behavioural issues, as well as, lower quality of life and academic competence, while Ciarrochi et al., (2011) observed that experiential acceptance and emotional awareness were correlated with well-being and pro-social behaviour in a sample of healthy 15-16 year olds.

Following completion of the design and testing of the intervention in Study 2, a revised model of psychology flexibility specifically, known as the DNA-V, for use with adolescents was made available (Hayes & Ciarrochi, 2015). Interestingly, the behavioural aims outlined in the DNA-V model are consistent for the most part with the aims of the present thesis. At the time of writing there are no published empirical investigations into this model. Hayes and Ciarrochi (2015, p.8) gave the following modified definition of Psychological Flexibility for use with young people

“Psychological Flexibility in young people is the ability to utilize DNA skills in a way that promotes growth and builds vitality and valued action”.

The DNA-V model characterizes three functional classes of behaviour- the “Discoverer”, the “Noticer”, and the “Advisor.” Values lie at the core of each of the model, with the following three behaviours facilitating the development and growth of values and valued behaviour. The Advisor refers to one’s ongoing verbal content, or in non-technical terms, one’s “inner voice.” The term “advisor” allows one to discuss and consider verbal content in a manner facilitating a detached perspective on that content. In other words, deictic relating facilitates transcendence of psychological content, as with self-as-context. The Noticer refers to the process allowing of one’s
feelings, body, and physical information coming from one’s environment (i.e. contact with the present moment or Self-as-process). This allows for self-regulation, awareness in social contexts, and connection with events occurring in the present moment. Finally, the Discoverer involves exploring and testing out new behaviours, and thereby increasing one’s behavioural repertoire. The Advisor and Noticer facilitate discoverer behaviour, by allowing defusion from unhelpful beliefs and promoting workability.

The DNA-V model postulates that two higher order skills emerge through engaging in the behaviours outlined above. These are Self and Social View, flexible perspectives on the self and others, respectively. Self-view involves being able to see oneself across various contexts, with the observer (you) here, seeing the actor (yourself), there. For example, self-compassion requires ability for oneself in the present to see oneself suffering in the past. Flexible advisor skills, allows for seeing oneself in the past, changing or growing, or imagining oneself changing in the future (Hayes & Ciarrochi, 2015). Self view is akin to the transcendent self that can be contacted through engaging in self-as-context, as it understands that there is more to the self than self-concepts and views the self as containing these (hierarchical self-as-context relating). In this way, self-view undermines unhelpful self-concepts and allows for development of self-awareness, self-knowledge and compassion towards oneself (Hayes & Ciarrochi, 2015).

Social View involves flexible perspective-taking outside the self (e.g. from me to you), and is considered critical to connecting with others, building friendships, and having compassion and empathy for others. Social View facilitates cooperation and the development of friendships and relationships. Noticer skills are critical in Social View, particularly understanding the role of self-agency (“I can choose” rather than
“They made me like this”). Findings from this thesis give support to the assumptions of the DNA-V model in part, with the results of Studies 1 and 3 demonstrating the implications of more flexible relating to self and other for both mental health outcomes and psychological flexibility. Although, further, more directed investigations, involving prediction and influence of variables of interest are needed, this evidence marks an early contribution. In particular with some refinement, the measures used in this thesis, particularly Atkins & Styles’ (2016) coding frame would be suitable for use in this type of investigation.

6.5 Strengths & Limitations

While Study 3 involved measuring self and other discriminations and different types of rule governed behaviour at a behavioural level, and behavioural measures of deictic relating were used in Studies 2 and 4, for the most part the studies in this thesis relied on self-report measures. Self-report measures are a commonly used form of data collection in psychological research due to their convenience and practicality, however they are also a number of issues associated with them that must be kept in mind. Self-report measures are considered to be problematic in that they influence responses through instrument features affecting reliability of reports, with issues including subjectivity, self-presentation, and social desirability impacting accuracy (Schwarz, 1999; Schwarz & Strack, 1999). They are also commonly affected by acquiescence bias wherein participants tend to agree indiscriminately with certain statements (Ray, 1990), and similarly Central Tendency Bias, wherein participants respond to most items in the middle of a ratings scale (Kulas, Stachowski & Haynes, 2008). Self-report measures of one’s self-perceptions have also been shown to be
sometimes inconsistent with actual behaviours (e.g. Mischel, 2004), which should be kept in mind when considering findings from any self-related variables. While findings pertaining to the quantitative and behavioural measures of self in this thesis were consistent for the most part, some specific issues, especially around the nature of what certain scales are supposed to be measuring, must be taken into consideration.

Although findings pertaining to a self-report measure of self-as-process in Study 1 cohered with those of a behavioural measure of self-as-process in Study 3, it should be kept in mind that previous investigations have identified issues with the nature and measurement of self-as-process (Atkins & Styles, 2015; Atkins & Styles, 2016; Styles, 2015). According to Kahneman & Riis (2005), self-as-process, or the “experiencing self” is rarely studied in psychology due to the retrospective nature of the majority of psychological measures. Most measures including those used in the studies in this thesis involve remembered abstractions of one’s ongoing experience of self rather than direct measures of one’s ongoing experience in the moment. As “true” self-as-process is difficult to observe in a systematic or rigorous way, proxies are employed for pragmatic purposes, wherein remembered self-as-process is measured. However, evidence from the present thesis appears to cohere with theoretical assumptions, suggesting these measures offer a suitable means of examining self-as-process for future research.

A similar issue presents for self-as-context. While mixed results observed for self-as-context in this thesis seem attributable to the two different types of self-as-context, issues pertaining to its nature need to be considered. As self-as-context is a viewpoint or perspective from which experience and content is observed it is technically not possible to observe or capture in a measure, meaning any measure of this experience is a proxy rather than a direct measure of self-as-context itself.
The Self-as-Context Scale (SACS) had not previously been used in a peer-reviewed empirical investigation, although it was found to have good reliabilities in the present thesis. However, it was noted that mean scores on this measure appeared to be quite high (\(M = \sim 52\) out of a possible 77 for studies 1, 2, & 4), considering self-as-context is considered a rare experience, which is difficult to contact (Foody et al., 2012). This suggests the measure is possibly over sensitive. The measure also requires further validation, particularly across various different populations to ascertain its suitability. Another issue associated with this measure is that it does not differentiate between self-as-hierarchy and self-as-distinction. The Self Experiences Questionnaire (SEQ) addresses this limitation by measuring both using 2 separate scales, and mean scores for this scale are more conservative as would be expected (\(M = 55.36\) out of a possible 105 for study 4). Although the SEQ has only been validated in samples with chronic pain, reliabilities have been shown to be strong and this was also the case for study 4 in this thesis. Correlational analysis in study 4 suggests that the SACS is strongly correlated with the overall SEQ scale, as well as self-as-distinction and self-as-hierarchy subscales, but the relationship to self-as-hierarchy is strongest by a small margin. While the SACS seems to be a sound measure of self-as-context, the SEQ is stronger overall.

Two separate measures of deictic relational responding were used in Studies 2 and 4. A number of issues emerged with these measures. Due to the brief timeframe given for testing in study 2, there were only a small battery of 10 deictic relational trials at each timepoint, compared to previous studies where a much larger array of tasks was used (e.g. 42; McHugh et al., 2004; 62; Weil et al., 2011). A number of other issues emerged which reduced the quality of these findings, including high levels of missingness on this variable, technical glitches on some responses meaning
means had to be adjusted, and participant fatigue/boredom affecting performance, as this task was completed towards the end of testing. Additionally, although participants in the intervention group received deictics training via a corrective feedback protocol, it seems practice effects lead to all conditions improving on deictics tasks (however improvement was greatest in the intervention). This is consistent with the findings of Hooper et al. (2015), who observed that deictic relating could be improved in an adult sample following exposure to McHugh et al.’s (2004) 42 item deictics protocol. Study 4 used a longer 25 item measure of deictics that had been used extensively across previous investigations (e.g. McHugh et al., 2004; Almada, 2015). This measure was selected for this reason, and due to the larger number of trials it was deemed a more thorough and extensive measure of deictic ability. Although this measure of deictics used in study four was considered stronger than that used in Study 2, findings were unexpected with no relationship observed between deictic ability and self-as-context measures.

One issue that may have contributed to these results is the lack of validation across measurements and possible issues pertaining to this. Although, a large body of previous studies have used these measures in populations where perspective-taking ability is impaired, it seems they have been used considerably less in populations without these deficits in deictic ability (Montoya-Rodríguez et al., 2016). Previous research has also suggested that participant fatigue and boredom are considerable issues relating to deictics measurement (Weil et al., 2011) and despite the brief measure of deictics utilized in Study 2, many participants still ran out of time on this task and failed to complete it. This was completed after self-report outcome measures, which the author acknowledges as a weakness that may have contributed to these issues. Whatever the case, it appears this measure requires further validation
with typically developing adult and adolescent populations. Additionally, future research should find ways to measure deictic ability in a more engaging, and less cognitively taxing manner. For example, with further development and validation, the deictics training protocol used in Study 2 may be adapted as a measure of deictics.

Missingness was a considerable issue in Study 2. The main source of missingness was participant attrition, common in naturalistic school-based research (student is absent or unavailable for subsequent waves of the research following initial recruitment) and research using experimental designs employing multiple measures (Clarke et al., 2015). It is also often the case that participants fail to complete a full session, or set of questionnaires as a result of fatigue or boredom (Schlomer, Bauman, & Card, 2010). Missingness was exceptionally high in Study 2 with 29% overall, and 58% at the final timepoint. For practicality reasons and due to the appropriateness of the age-group, only transition year students were recruited to participate in Studies 1 to 3. Transition Year bridges the gap between exam cycles in Irish post primary schools and comprises mostly of various work experience and personal development activities (See Jeffers, 2011). The hectic schedule resulting from the transition year curriculum meant that a large number of participants were unavailable for testing at multiple timepoints.

Necessity of using the school computer room was an additional obstacle that created issues around time and availability for testing, and contributed to the high missingness/attrition rate, with some participants needing to take turns using computers and sometimes running out of time. Expectation Maximisation (EM) was used to treat missing data in Study 2. While this is best suited to samples with a lower percentage of missingness, it was deemed more appropriate to treat missing with EM and compare with findings from the final sample with complete data, than examining
findings from the final sample with complete data alone as this can lead to bias with large amounts of missingness (Tabachnick & Fidell, 2007). As imputed findings were similar to those from the final sample with complete data, study findings were deemed reliable overall.

For the first three studies, the sample was not balanced for gender, which is a considerable issue for adolescent research. Research has demonstrated gender differences exist in levels of self esteem (males higher), distress (males lower), satisfaction with life (males higher), and peer connectedness (females slightly higher) (Dooley & Fitzgerald, 2012). Females adolescents are typically two years ahead of males in terms of social-cognitive development (Silberman & Snarey, 1993) with perspective taking developing faster in females (Mestre et al., 2009; Van der Graaff et al., 2014).

Gender intensification (brought about with puberty) also has implications for behaviour in relation to the self and others during adolescence, specifically gender-specific socialization pressure increases (Hill & Lynch, 1983; Galambos, Almeida & Petersen, 1990). Social norms encourage females to be compassionate and open with their emotions, while males on the other hand are discouraged from these type of behaviours (Van der Graaff et al., 2014). Controlling for gender was therefore particularly important in Study 3, were males and females are likely to differ in how they outwardly describe themselves and others.

Gender was controlled for where possible by examining its role as a predictor variable in Study 1, and repeating analyses with female participants only in Studies 2 and 3. While gender was found to significantly predict distress in Study 1, and gender differences were observed across a number of codes in Study 3, gender did not predict distress over a model of the three selves and when main analyses for Studies 2 and 3
were repeated with female participants only, results did not show any notable differences. However, it is critical that future investigations involved gender balanced samples, or perhaps examine male participants only, to address this limitation.

Participant demographics were not recorded in full in the studies of this thesis, only age at the time of testing, gender and English language status in Study 4 due to use of an international sample. Therefore socio-economic status, parental education, and literacy levels were not accounted for. As a deictics repertoire, and subsequently a selfing repertoire, develop as a result of interacting with one’s environment, poverty of input may have lead to deficits in the development of these repertoires. While a wide range of schools with varying levels of socio-economic status, participated in this research thereby, increasing generalizability of these findings, future investigations should directly investigate the impact of contextual factors and how this impacts the development of deictic and selfing repertoires.

As universal type school-based interventions are designed for use across a full range of mental health statuses (clinical to no mental health concern), participants who participated in Study 2 were included regardless of mental health status. Participants mean scores on measures of mental health as measured by the DASS-21 fell within a similar range of previous adolescent samples (Mellor et al., 2015; Szabo, 2010) suggesting that psychopathology levels were not abnormal for the present study and the sample was a relatively representative of the mental health status of adolescents in a typical post primary school group of this age.

In addition to basing intervention study materials on standardized adolescent exercises (edited for online use and time constraints), the primary researcher and research supervisor consulted with a clinician and leading expert in youth mental health, who advised on the development of the intervention and provided feedback.
around the suitability of age-appropriate measures and stimuli. However, the format in which these exercises were delivered may have created issues. As discussed earlier, a key weakness of Study 2 was the lack of differentiation between distinction and hierarchical self-as-context relating and a likely explanation for the observed outcomes in Study 2 is that only self-as-distinction was accurately trained. Self-as-context is considered a rather complex and abstract concept to understand (Foody et al., 2012; Stewart & McHugh, 2013), and additionally hierarchical relational frames are one of the most complex types of relational frame (Foody et al., 2015), therefore it is arguably unsurprising that an adolescent sample, whose deictic repertoires are not fully developed, encountered difficulty with this type of intervention. While it’s possible that with more extensive training this type of relating may be trained (as suggested by Luciano et al. (2011)) it’s clear that the brief online format in the present intervention did not provide sufficient exemplars to develop this complex relational network. Future studies should directly examine these different types of intervention in varied, more extensive delivery formats to determine what is effective.

6.6 Future Research

As the intervention tested in Study 2 was developed and tested for used in real-world conditions with a relatively low level of control as a result, a lab based analogue study may also have been informative. In this case the intervention could be tested in a highly-controlled environment with a high level of precision, where specific variables could be manipulated. Lab based studies also allow for specific comparisons or contextual conditions, precise manipulations of specific phenomena, that may not be workable under less controlled conditions (Levin & Villatte, 2015).
For pragmatic reasons, the present thesis used a basic mixed within-between design to examine the impact of the flexible self intervention. However, it would be beneficial for future investigations to use more sophisticated research designs. For example, a Cluster RCT design would control for risk of contamination, as participants would be randomised to a condition at a group or school level, and therefore the risk of participants from different conditions discussing the content of what they completed with one another when the researcher is not present is eliminated. However, this was unlikely to have affected outcomes in Study 2 as the nature of the deictics protocol would be difficult to explain and outcome measures at post were completed immediately following the flexible self exercises, not allowing participants a chance to discuss the content of what they had just completed.

While the present thesis was primarily interested in self-relating and its implications for adolescent mental health, the same deictic relational responding that gives rise to selfing behaviour is also critical for the development of empathic responding according to RFT (Vilardaga, 2009; Valdivia-Salas et al. 2009), therefore empathy was examined as an outcome measure in Study 2 and the three senses of other were examined in Study 3. No improvements were observed using a self-report measure of empathy in Study 2, however a recent meta-analysis of empathy training interventions revealed stronger effects for objective, behavioural measures of empathy rather than self-report (Teding van Berkhout & Malouff, 2016; Reed, 1996; as cited in Teding van Berkhout & Malouff, 2016).

Study 3 examined occurrences of the three senses of other, which each have important implications for empathic responding (Atkins, 2013; Barnes-Holmes et al., 2001), at a behavioural level, and revealed a number of interesting and novel findings, particularly with regard to relating to others and implications for mental health, well-
being, and psychological flexibility. Pending more extensive investigation and validation, the emotional deictics task used in this study, combined with Atkins & Styles’ (2016) coding frame may provide a behavioural measure of empathy according to the CBS conceptualisation.

According to RFT, empathy occurs as a result of transformation of emotional functions (ToEF) from your perspective to mine, meaning deictic repertoires must be in place in order for an individual to have empathy skills (Valdivia-Salas et al., 2009; Vilardaga, 2009). While Montoya-Rodriguez et al.’s (2016) review of deictics research observed a lack of empirical support for certain theoretical assumptions around deictics including ToEF across deictic relations (Vilardaga, 2009), Lovett and Rehfeldt (2014) postulated that deictic repertoires held strong potential for development of empathy by targeting ToEF in their study wherein deictic relations were trained via multiple exemplar training in a sample of autistic adolescents. Therefore, future studies should examine the impact of targeting these repertoires and other types of relating necessary for empathy according to CBS (Valdivia-Salas et al., 2009) and investigate outcomes using this coding frame and emotional deictics task.

While Atkins and Styles (2016) examined how self-discriminations predicted mental health and well-being at multiple time-points, due to time constraints only one time-point was examined in the present thesis. In a recent investigation, Rutt and Löckenhoff (2016) examined a sense of self-continuity across the lifespan in a sample of 91 adults ($M=50.15$) using both explicit (self-report) and implicit (me/not me trait rating task) measures. Upon controlling for a wide range of covariates including cognition, personality and health, both implicit and explicit self-continuity were found to significantly increase with chronological age. Therefore, future investigations should expand upon Study 3 and examine these discriminations longitudinally. This
would also make for a fruitful avenue of investigation for Studies 1 and 4 to investigate how changes in age affect self relating and any possible implications for mental health and well-being.

6.7 Conclusions

Overall, the present research provided a multi-level investigation into self-as-content, self-as-process, and self-as-context (including specific examination of self-as-hierarchy and self-as-distinction) and provided a more indepth and precise understanding of the CBS account of self, and the relative contribution of the different types of self-discrimination than previous investigations carried out to date. Overall findings gave support to the relationship between the CBS conceptualisation of self and adolescent mental health. This body of research has addressed a number of gaps in the literature, such as accounting for the role of deictics and examination of specific processes, however there were still a number of limitations present which were beyond the scope of the present thesis (e.g. optimal intervention delivery) that should be addressed in future studies. Overall a number of important and novel findings emerged, making a considerable contribution to the CBS self literature, supporting this theory of self and laying the groundwork for future research.

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Appendices

Appendix A Deictic Training Trials

Participants who answered incorrectly were presented with the answer, and then presented with the question again. If they still answered incorrectly at this point, they were asked to attempt the next question.

(i) I-You Reversal

Please watch each of the following clips and answer the questions that follow. You will be given feedback on questions answered incorrectly.

Incorrect! If you were Homer and Homer was you, you would be there at the gym and Homer would be there at home.

Please try this question again.

Homer is there at the Gym and you are here at home. If you were Homer, and Homer was you, where would you be? Where would Homer be?

- Homer would be there at the gym, and I would be here at home
- Homer would be here at home, and I would be there at the gym
- Homer would be here at home and I would be here at home.
(ii) I-You Reversal

Luke is in the hospital, and you are here at home. If you were Luke, and Luke were you, where would Luke be? Where would you be?
- Luke would be in the hospital, and I would be here at home.
- Luke would be here at home, and I would be there at the hospital.
- Luke would be here at home, and I would be here at home.

Incorrect! If you were Luke and Luke were you, you would be there at the hospital, and Luke would be here at home.

Please try this question again.

Luke is in the hospital, and you are here at home. If you were Luke and Luke were you, where would Luke be? Where would you be?
- Luke would be in the hospital, and I would be here at home.
- Luke would be here at home, and I would be there at the hospital.
- Luke would be here at home, and I would be here at home.
(iii) Here-There Reversal

Ted is here in the bar, speaking on the phone. Barney is there playing Lasertag at the arcade. If here was there, and there was here, where would Ted be? Where would Barney be?

- Ted would be there playing Lasertag at the arcade and Barney would be here in the bar.
- Ted would be here playing Lasertag at the arcade and Barney would be there playing Lasertag at the arcade.
- Ted would be here in the bar and Barney would be there playing Lasertag at the arcade.
- Ted would be here in the bar and Barney would be here in the bar.

Incorrect! If here was there and there was here, Ted would be there playing Lasertag at the arcade and Barney would be here in the bar.

Please try this question again.

Ted is here in the bar, speaking on the phone. Barney is there playing Lasertag at the arcade. If here was there, and there was here, where would Ted be? Where would Barney be?

- Ted would be there playing Lasertag at the arcade and Barney would be here in the bar.
- Ted would be here playing Lasertag at the arcade and Barney would be there playing Lasertag at the arcade.
- Ted would be here in the bar and Barney would be there playing Lasertag at the arcade.
- Ted would be here in the bar and Barney would be here in the bar.
(iv) Here-There Reversal

Incorrect! Please try the next question.

Penny is there at the comic book store and you are here at school. If here was there, and there was here, where would you be? Where would Penny be?

- Penny would be here at school and I would be there at the comic book store.
- Penny would be there at the comic book store and I would be here at school.
- Penny would be here at school and I would be here at school.

Incorrect! If here were there, and there were here, you would be there at the comic book store and Penny would be here in school.

Please try this question again.

Penny is there at the comic book store and you are here at school. If here was there, and there was here, where would you be? Where would Penny be?

- Penny would be here at school and I would be there at the comic book store.
- Penny would be there at the comic book store and I would be here at school.
- Penny would be there at the comic book store and I would be there at the comic book store.
(v) Now-Then Reversal

Penny was there at the physics lab yesterday and she is here in the classroom today. If now was then, and then was now, where would Penny be yesterday? Where would she be now?

- She would be there at the physics lab yesterday and she would be here in the classroom today.
- She would be here in the classroom today and she would be there in the classroom yesterday.
- She would be there at the physics lab today and she would be there in the classroom yesterday.

Incorrect! If now was then, then was now, Penny would be here in the physics lab today and she would be there in the classroom yesterday.

Please try this question again.

Penny was there at the physics lab yesterday and she is here in the classroom today. If now was then, and then was now, where would Penny be yesterday? Where would Penny be today?

- She would be there at the physics lab yesterday and she would be here in the classroom today.
- She would be here in the classroom today and she would be there in the classroom yesterday.
- She would be in the physics lab today and she would be there in the classroom yesterday.

Incorrect! Please try the next question.
(vi) Now-Then Reversal

Tom was there at the park yesterday, and he is here in school today. If now was then and then was now, where would Tom be yesterday? Where would he be today?

- Tom would be here at school today and he would be there at the park yesterday.
- Tom would be here at the park today and he would be there at school yesterday.
- Tom would be here at school today and he would be there at the park yesterday.

Incorrect! If now was then, and then was now, Tom would be here at the park today and he would be there at school yesterday.

(vii) I-You-Here-There Double Reversal

Please try this question again.

Tom was there at the park yesterday, and he is here in school today. If now was then and then was now, where would Tom be yesterday? Where would he be today?

- Tom would be here at school today and he would be there at the park yesterday.
- Tom would be here at the park today and he would be there at school yesterday.
- Tom would be here at the park today and he would be there at the park yesterday.
- Tom would be here at school today and he would be there at school yesterday.

Incorrect! Please try the next question.
Ross is there in the cafe with Rachel then. You are here in school now. If Ross was you, and you were Ross, and here was there and there was here, where would you be? Where would Ross be?

- Ross would be here in school now and I would be there in the cafe with Rachel.
- Ross would be there in the cafe with Rachel then and I would be there in the cafe with Rachel then.
- Ross would be there in the cafe with Rachel then and I would be here in school now.

Incorrect! If you were Ross and Ross were you, and here were there and there were here, Ross would be there in the cafe then and you would be here in school now.

Please try this question again.

Ross is in the cafe with Rachel then. You are here in school now. If Ross was you, and you were Ross, and here was there and there was here, where would you be? Where would Ross be?

- Ross would be here in school now and I would be there in the cafe with Rachel.
- Ross would be here in school now and I would be here in school now.
- Ross would be there in the cafe with Rachel then and I would be there in the cafe with Rachel then.
- Ross would be there in the cafe with Rachel then and I would be here in school now.

Incorrect! Please try the next question.

(viii) I-You-Here-There Double Reversal
Chandler is there, with Monica, on the beach then. You are here in school now. If Chandler was you, and you were Chandler, and here was there and there was here, where would you be? Where would Chandler be?

- I would be here in school now and Chandler would be here in school now.
- I would be there on the beach with Monica then and Chandler would be here in school now.
- Chandler would be there on the beach with Monica then and I would be here in school now.

Incorrect! If you were Chandler and Chandler were you, and here was there and there was here, Chandler would be there on the beach with Monica then and you would be here in school now.

Incorrect! Please try the next question.

(ix) Here-There-Now-Then Double Reversal
Homer was there at Moe's yesterday and he is here in the classroom today. If he was there and there was here, and now was then, and then was new, where would Homer be yesterday? Where would he be today?

- Homer would be here in the classroom today and he would be there in the classroom yesterday.
- Homer would be here at Moe's today and he would be there at Moe's yesterday.
- Homer would be here in the classroom today and he would be there at Moe's yesterday.
- Homer would be here in Moe's today and he would be there in the classroom yesterday.

Incorrect! If he was there and there was here, and now was then and then was now, Homer would be here in the classroom today and he would be there at Moe's yesterday.

Please try this question again.

Homer was there at Moe's yesterday and he is here in the classroom today. If he was there and there was here, and now was then, and then was new, where would Homer be yesterday? Where would he be today?

- Homer would be here in the classroom today and he would be there in the classroom yesterday.
- Homer would be here at Moe's today and he would be there at Moe's yesterday.
- Homer would be here in the classroom today and he would be there at Moe's yesterday.
- Homer would be here in Moe's today and he would be there in the classroom yesterday.

Incorrect! Please try the next question.
Here-There-Now-Then Double Reversal

Charlie and Jake were there at home yesterday and they are here in the classroom today. If there was there and there was here, and now was then, and then was now, where would Charlie and Jake be yesterday? Where would they be today?

- Charlie and Jake would be at home yesterday and they would be at home today.
- Charlie and Jake would be at home yesterday and they would be in the classroom today.
- Charlie and Jake would be in the classroom yesterday and they would be in the classroom today.
- Charlie and Jake would be in the classroom yesterday and they would be at home today.

Incorrect! If here was there and there was here, and now was then and then was now, Charlie and Jack would be at home yesterday and they would be in the classroom today.

Please try this question again.

Charlie and Jake were there at home yesterday and they are here in the classroom today. If here was there and there was here, and now was then, and then was now, where would Charlie and Jake be yesterday? Where would they be today?

- Charlie and Jake would be at home yesterday and they would be at home today.
- Charlie and Jake would be at home yesterday and they would be in the classroom today.
- Charlie and Jake would be in the classroom yesterday and they would be in the classroom today.
- Charlie and Jake would be in the classroom yesterday and they would be at home today.

Incorrect! If you were Homer and Homer were you, you would be there at the gym and Homer would be here at home.
Appendix B Flexible Self Intervention

(a) The Observer Exercise

(i) “Observer You” Script

Find a comfortable position for yourself and do whatever you need to do to get centered. Taking a slow deep breath, noticing how your chest expands on the in-breath and contracts on the out-breath. We are now going to do an exercise in imagination. I invite you to turn your attention to yourself in this room. Picture yourself in this room and exactly where you are. Notice how you are sitting in the chair. Notice any bodily sensations that are there, where your clothes make contact with your skin, and where you feel the air on your exposed skin [pause]. Now notice any emotions you are having and if you have any, just acknowledge them [pause]. Now get in touch with your thoughts and just quietly watch them for a few moments. [pause]. Now I want you to notice that as you noticed these things, a part of you noticed them. You noticed those sensations . . . those emotions . . . those thoughts, and that part of you we will call the “observer you”. There is a person in here, behind those eyes, that is aware of what I am saying right now. And it is the same person you’ve been your whole life.

Now I want you to think back to an event that happened a few years ago. You might notice that your mind is struggling to settle on an event, if this is the case. Think of something that particularly stands out for you. Now, remember what that event felt like, and the sights and sounds that went along with it. Remember what you looked like. Bring to mind any thoughts that you were having. Now think about the emotions that you were experiencing.

Now I want you to take a moment to consider yourself now and then. Now I want you to think about the following question. As you go through life, what part of you remains the same? This question may seem straightforward, however it can be tricky to answer.

Is it your body? Your body last summer was not the same as your body when you were younger or the body you have now. Notice how your body is constantly changing. Sometimes it is sick, sometimes well, rested, tired, strong or weak. Every cell in your body was not there a few years ago.

Now I want you to consider your emotions. Notice how your emotions are constantly changing. Sometimes you feel love, and sometimes hatred, calm and then tense, joyful-sorrowful, happy-sad. Even since we’ve begun this exercise, your emotions have probably changed.

What about your thoughts? Look at your thoughts even since you came in today, and how many different thoughts you have had. It can be said with certainty, your thoughts when you were 12 will not be the same as your thoughts as your thoughts now. Our thoughts are constantly changing.

So if the thing that stays the same, is not your body, and not your emotions and not your thoughts, then what is it?
It’s you.

Many things may change, but you are always here. As you look across the years, you can see that things are constantly changing, your body, thoughts and feelings. Yet you are still there, able to observe everything that changes. Even as the stories our minds tell us about ourselves change, our core self stays the same.

Now, to finish take one more deep breath and gently bring your attention back to the room.

(ii) Critical Minds

To understand the human mind, it helps to think about it like a machine that has a basic operating system and many tasks to perform. Some of these tasks are obvious, such as, keeping you alive. Others are not so much so, such as

- Processing a vast amount of information coming at you
- Making sense of all that information
- Identifying & fixing any problems that it finds
- Evaluating how well it's doing

Your mind is a problem-finding and problem-solving machine, and it takes these jobs very seriously. It has evolved to locate and fix problems both inside and outside your body. However, research into thoughts and emotions shows that trying to get rid of them makes them worse.

While solving problems in the outside world is extremely useful, trying to solve an inside problem like painful thoughts isn't the same. When the mind tries to solve them, it typically fails because these thoughts are a natural part of us and are connected to the things that we care about. The mind may sometimes try to figure out what's wrong with you and tell you that you are not good enough.

With this in mind we are going to try The Sticky Thoughts Exercise. It's called this, as unhelpful thoughts that we sometimes believe, are referred to as "sticky thoughts". Here are a list of thoughts that people typically have. Tick off the ones that sometimes catch you.

- I’m worthless
- I'm not good enough
- I have nothing to be proud of
- No one likes me
- There's something wrong with me
- I'm boring
- I'm useless
- I'm ugly
- I don't belong
- I'm stupid
- I'm a disappointment
- I'm damaged
- I'm invisible

If you checked a number of these statements. You are in good company. Everyone criticises themselves with statements like these. Everyone has a problem-solving mind and it seems the thing our minds like to do most is evaluate ourselves.

With this in mind, we're now going to try an exercise that can help you notice your minds criticisms. To do this exercise, bring a self-criticism to mind that you find bothers you quite often. Choose one that’s a bit sticky, by which I mean one that you sometimes believe. Then use that self-criticism in the following process:

Breathe deeply and slow down. Breathe in (saying, *In, two, three*, to yourself) and out (saying, *Out, two, three*) for a few breaths.

Observe the thought that you are having.

“I’m having the thought that I am……..(insert self-criticism). There is me observing, and me having the thought that I am…..(self-criticism)

or if you prefer

"Thank you mind for telling me that..."

For example you might say "I'm noticing that I'm having the thought that I'm a loser.

(b) Being Kind to Me

(i) Guided Self-Compassion Script

To begin, gently close over your eyes or if you prefer fix your gaze at a spot in front of you, doing whatever you need to do to get centered. Now start taking some slow, deep breaths. Gently noticing the expansion and contraction of your chest with each breath. Notice each in breath as a new beginning, and each outbreath, as a complete letting go of the moment just gone.

Now I invite you to rub your hands together until you generate some warmth. Now when your hands are warm enough, place one hand on your stomach and one hand on your heart. Notice the feeling of warmth. Notice how your hands gently rise and fall with your breathing.

Now, notice whatever thoughts you are having right now. There may be judgments about the day gone by or about whether or not you like this exercise. Just gently notice whatever thoughts you are having.
Now, radiate warmth and compassion towards yourself. Show yourself love and support, just as you are in this very moment. Welcome whatever emotion is showing up for you with openness, curiosity and acceptance. It may help to bring to mind someone you care deeply about, such as a sibling, a parent, a boyfriend or girlfriend or a dear friend. Think about how you would radiate warmth and kindness towards them. What kind things would you say to them to offer comfort? Now, I invite you to try and radiate these same feelings, and speak some of these kind words towards yourself. It may seem difficult or artificial to speak like this to yourself, and that is ok. Just notice those feelings, and hold intentions of loving kindness.

Now repeat the following words in your mind:

May I be safe,
May I be happy,
May I be healthy,
May I live with ease.

Now, still radiating feelings of warmth and self-compassion towards yourself, gently allow yourself to connect with your breath once more. Noticing the gentle expansion & contraction of your chest.

Now when you feel ready bring your attention back to the room, and bring that sense of self-compassion and kindness with you into the rest of your day.

(ii) Self-Compassion Exercise and Text

The Observer You allows you to choose how to act even when the mind is at its most negative. Being an Observer allows us to be a viewer of our thoughts and internal experiences.

It’s also gives you the opportunity to do something decidedly positive: practice kindness toward yourself. You can see yourself in a compassionate light, as someone who struggles and suffers and as someone who has the right to hope for love and success.

Many people are afraid of being kind to themselves. They fear that if they act nice towards themselves, they’ll lose control or let all of their flaws show.

*With this in mind, we’re going to now try an exercise.*

*Read through the following thoughts and check off any that you believe:*

- □ If I’m kind to myself, I’ll be weak and lose self-control.
- □ If I accept my flaws, I’ll become more flawed.
- □ Being hard on myself helps me keep my flaws hidden.
- □ I don’t deserve to be kind to myself.
If I don’t criticise myself, I’ll lose my motivation.
If I don’t criticise myself, people won’t like me
In order to succeed in life, I’ve got to be tough on myself.

If you checked a few of these options, you are not alone. At some time or another, we all experience this. We like to call this the "Don't dare let myself off the hook" story. Many of us fear that being kind to ourselves and letting our guards down will cause problems.

However, research tells that this is not actually the case. The fact is that people who act with kindness towards themselves are actually better at adjusting to stressful situations. They can also be more self-disciplined. Self-compassion is associated with more strength not less.

Think of your inner critic as being like a mean teacher. Imagine that teacher calling you all sorts of names and totally disrespecting you. Are you going to work very hard for that teacher? Doubtful. Similarly, when your mind is being unkind to you, it doesn’t tend to motivate you to do your best. So, if you can’t motivate yourself with meanness and criticism toward yourself, maybe self-compassion is worth a try.

The exercise can help you to radiate some feelings of kindness and support towards yourself.

Now, here comes the hard part. Are you willing to treat yourself as you would your friend? Are you willing to direct this kindness towards yourself? Now we invite you to bring to mind some of the ways in which you can treat yourself with more kindness in day-to-day life. What are some kind words you can say to yourself when you’re being hard on yourself?

Also consider some kind things you can do for yourself when you’re being critical of yourself. For example, maybe it would help to chat with a supportive friend, listen to music, take a bubble bath, or do something fun. These activities can help you get out of your mind and into your life.

Finally, consider what you’d say to a close friend who was really struggling and being self-critical. How would you express kindness to your friend? Then write a letter to yourself and say those things to yourself- the same things you’d say to that friend. Be kind and gentle. Write whatever feels natural and right to you, but one thing you might tell yourself is that everyone has self-criticism and it’s a normal part of being human. After all, you don’t want to start criticizing yourself for being self-critical.

Write your letter in the space below. Don't worry about length or writing style, the letter is for you. Think about how best you can express love and support towards yourself.
Appendix C Hinting Tasks

The answer stated below the questions, or an acceptable variation wherein the participant demonstrates understanding of the characters’ intentions were scored as correct.

(a) Time One

(i) John’s roommate Alan has invited him for drinks to which John replies “I’d really love to, but house needs to be tidied and it will take a long time to do on my own”.

Question: What does John mean when he says this?

Extra info: It would only take a few minutes if someone helped out.

Question: What is John trying to tell Alan?

Answer: He wants Alan to help him tidy the house

(ii) Paul has to go to an interview and he’s running late. While he’s cleaning his shoes, he says to his wife Jane “I want to wear that blue shirt but its very creased.”

Question: What does Paul really mean when he says this?

Extra info: Paul goes on to say: “It’s in the ironing basket.”

Question: What does Paul want Jane to do?

Answer: Paul wants Jane to iron his shirt.

(iii) Lana’s car has broken down and she asks her friend Jen for a lend of the money to fix it. Jen says “I actually have to pay to fix my car too.”

Question: What does Jen mean when she says this?

Extra info: Jen goes on to say: It’s going to cost me a lot.

Question: What is Jen trying to tell Lana?

Answer: Jen does not want to give Lana the money to fix her car.

(iv) Amy has two big exams in the next week and is feeling stressed. Her English teacher suggests “I think we should a long essay this week for Homework.” Amy says, “Well, this week will be very busy”

Question: What does Amy really mean when she says this?

Extra info: Amy goes onto say “I would have much more time for a big essay next week.”
Question: What does Amy want her teacher to do?

Answer: Amy does not want her teacher to give her the long essay

(v) Laura’s Mum is shopping with her and is starting to feel tired. She says “I really want to start preparing dinner soon.”

Question: What does Laura’s Mum mean when she says this?

Extra info: She goes on to say: “You would probably find stuff faster on your own.”

Question: What is Laura’s Mum trying to tell Laura?

Answer: Laura's Mum wants to go home.

(vi) Adam has been at work for 12 hours and is looking forward to his day off tomorrow. His manager comes to him and says “We need more people for tomorrow, so I would like you to come in for a few hours.” Adam responds “Well I have made plans for my day off”

Question: What does Adam mean when he says this?

Extra info” He goes on to say: “It’ll will be quite difficult to rearrange my plans with such little notice.”

Question: what is Adam trying to tell his boss?

Answer: Adam does not want to work tomorrow

(vii) Rachel’s friend has told her she’s booking reservations at a Sushi restaurant for them both. She says “I think sushi is very expensive.”

Question: What does Rachel mean when she says this?

Extra info: She goes on to say “I don’t get paid until next week.”

Question: What is Rachel trying to tell her friend?

Answer: Rachel wants to go to a less expensive restaurant

(viii) Jennifer’s friend Sarah says she has received three tickets to see One Direction for her birthday for her birthday. Jennifer says, “You know One Direction are my favourite band.”

Question: What does Jennifer mean when she says this?
Extra info: She goes on to say: “I couldn’t actually get tickets myself as they were all sold out.

Question: What is Jen trying to tell Sarah?

Answer: Jennifer wants Sarah to invite her to the One Direction concert.

(b) Time Two

(i) Siobhan’s sister overhears her sister mentioning that is planning on getting a new phone.

She says “The phone that you have at the minute is very nice, I’m sure someone would be happy to take it off you.” What does she really mean?

She goes on to say “I’ve been looking for a new phone for a while now.” What does Siobhan want her sister to do?

Answer: Siobhan wants her sister to give her phone to her

(ii) Tom sees his friend opening a packet of chewing gum.

He says to him “Are those Spearmint? They’re my favourite flavor.” What does he really mean?

He goes on to say “I feel like I have very bad breath after that Tuna roll I had for lunch.” What does Tom want his friend to do?

Answer: Tom wants his friend to give him some chewing gum

(iii) Adam is going to the cinema with his girlfriend. She says that she wants to see a chick flick that her friend Sarah told her about.

He says “That movie got some bad reviews and I didn’t like the last movie Sarah told us about.” What does he really mean?

He goes on to say “My brother told me that the new action movie that just came out is great.” What does Adam want to do?

Answer: Adam doesn't want to watch a chickflick

(iv) Laura’s sister has just bought a new dress from topshop.

Laura says “Wow, that’s a lovely dress, but you’ll probably be too busy to get a chance to wear it for the next while.” What does Laura really mean?
She goes on to “I wear that size too and it would go very nicely with the shoes I bought last week.” What does Laura want to do?

Answer: Laura wants her sister to lend her the dress.

(v) Leanne’s sister says she is about to drive to work.

Leanne says “Where you work is actually pretty close to where my friends live.” What does Leanne really mean?

She goes on to say: “I was thinking of calling over to them today but it would take me a very long time to walk.” What does Leanne want to do?

Answer: Leanne wants her sister to give her a lift to her friends.

(vi) Darren is in the school library studying for his exam the next day. His friend Davy arrives and begins talking to him about their plans for the weekend.

Darren says “I have quite a bit of work to get through before tomorrow.” What does he really mean?

He goes on to say “After my exam is over tomorrow I’ll have had a chance to think about what we’re doing at the weekend.” What does Adam want Davy to do?

Answer: Darren wants Davy to leave him in peace to study for his exam.

(vi) Katie meets her neighbor with her young daughter. She mentions that will be heading that evening and is about to call a babysitter.

Katie says “You know I have a few cousins that are your little girl’s age so I’m pretty good with kids.” What does Katie really mean?

She goes on to say “I’m free all evening.” What does Katie want her neighbor to do?

Answer: Katie wants to babysit for her neighbour.

(vii) Richard’s girlfriend says that she is planning to dye her hair pink.

He says “They would probably get cross with you at work if you did that.” What does he really mean?

He goes on to say: “Your hair is a very nice colour already. If you want to change the style it would be easier just to cut it.” What does Richard want his girlfriend to do?

Answer: Richard doesn't want his girlfriend to dye her hair pink.
Appendix D Emotional Deictics Tasks

(a) Fry just left his dog, Seymour, outside alone and never returned to collect him.

Take a minute to imagine you are Seymour. If you were in this situation what thoughts and feelings would you be having?

Now, I want you to remember a time when you were feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts might have showed up for you. Bring that time to mind and write a little about the thoughts and feelings you were having at that time.

(b) Grace is speaking to her father who has just realised that he will not make it back from a dangerous mission.
Take a minute to imagine that you are Grace. If you were in this situation what thoughts and feelings would you be having?

Now, I want you to remember a time when someone you know was feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts might have showed up for this person. Bring that time to mind and write a little about the thoughts and feelings they were having at that time.

(c) Some mean girls in school have just informed Taylor that there has been an embarrassing video of her posted online.

Take a minute to imagine that you are Taylor. If you were in this situation, what thoughts and feelings would you be having?
Now, I want you to remember a time when you were feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts showed up for you. Bring that time to mind and write a little about the thoughts and feelings you were having at this time.

(d) Adam is being attacked by a group of bullies.

Take a minute to imagine that you are Adam. If you were in this situation what thoughts and feelings would you be having?

Now, I want you to remember a time when someone you know was feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts showed might have showed up for this person. Bring that time to mind and write a little about the thoughts and feelings they were having at that time.

(e) Kat has just expressed her feelings for Patrick.
Take a minute to imagine that you are Kat. If you were in this situation what thoughts and feelings would you be having?

Now, I want you to remember a time when you were feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts showed up for you. Bring that time to mind and write a little about the thoughts and feelings you were having at this time.

(f) Rudy finally fulfills his dream of winning a game of football, despite being told he couldn’t.
Take a minute to imagine that you are Rudy. If you were in this situation what thoughts and feelings would you be having?

Now, I want you to remember a time when someone you know was feeling like this. Although the situation may not be the same, pick a time when broadly similar feelings and thoughts might have showed up for this person. Bring that time to mind and write a little about the thoughts and feelings they were having at that time.
Appendix E Deictics Trials

(a) Deictic Relational Tasks

Responses were marked as either correct or incorrect. If participants answered only partially correct or did not provide a full response (e.g. Q. If you were Homer and Homer and were you, where would you be? Where would Homer be? A. Homer would be at home) the response was marked as incorrect. Answers are provided below. A small number of participants adopted the perspective of “you” upon reading the questions. For these, participants an alternative marking scheme was used (See section c).

(i) Time One:

1. I am drinking coke. You are drinking Fanta. If I were you and you were me, what would I be drinking? What you be drinking?

2. I have an ipad and you have a laptop. If I were you and you were me, what would you have? What would I have?

3. I am here at school, you are there at home. If here was there, and there was here, where would you be? Where would I be?

4. You are there at work, I am here at my friend’s house. If there was here, and there was where, where would I be? Where would you be?

5. I was at school yesterday and today I am at home. If now was then and then was now, Where would I be yesterday? Where would I be today?

6. I am hanging out with friends today, yesterday I was at work. If now was then, and then was now, where would I be today? Where would I be yesterday?

7. I am there at the café, and you are here at school. If here was there and there was here, and I was you and you were me, where would I be? Where would you be?

8. I am here at the gym, and you are there at work. If here was there and there was here, and I was you and you were me, where would I be? Where would you be?

9. I was there at the bowling alley yesterday. I am here at my friend’s house today. If now was then, and then was now, and here was there and there was here, where would I be now? Where would I be then?

10. You were there in the shopping centre yesterday and you are here at school today. If now was then and then was now, and here were there and there were here, where would you be now? Where would you be then?

(ii) Time Two:

1. I am wearing a red hoodie and you are wearing a green hoodie. If I were you and you were me, what would I be wearing? What would you be wearing?
2. I have a car and you have a bike. If I were you and you were me, what would I have? What would you have?

3. You are there at the cinema and I am here at the bowling alley. If here was there, and there was here, where would I be? Where would you be?

4. You are there at the library and I am here at home. If here was there, and there was here, where would I be? Where would you be?

5. I was at a gig yesterday and today I am watching YouTube videos. If now was then, and then was now, where would I be today? Where would I be yesterday?

6. Yesterday I was playing the piano. Today I am doing my homework. If now was then, and then was now, where would I be today? Where would I be yesterday?

7. I am here playing guitar and you are there at your friend’s house. If here was there, and there was here, and I was you and you were me, where would I be? Where would you be?

8. You are here at home, and I am there at the cinema. If here was there and there was here and I were you, and you were me, where would I be? Where would you be?

9. I was there at the hospital yesterday and I am here at my friend’s house today. If here was there and there was here, and now was then and then was now, where would I be now? Where would I be then?

10. You were there at the bookshop yesterday and you are here at home today. If here was there and there was here, and now was then and then was now, Where would you be now? Where would you be then?

(iii) Time Three:

1. I have an Ipad and you have an iphone. If I were you, and you were me, what would you have? What would I have?

2. I have a pet dog and you have a pet cat. If I were you, and you were me, what would you have? What would I have?

3. I am here in the canteen with my friends and you are there at the park. If here were there, and there were here, where would I be? Where would you be?

4. You are there at home watching a movie, I am here at the library studying. If here were there, and there were here, where would I be? Where would you be?

5. Yesterday I was out with friends, today I am watching TV. If now was then and then was now, What would I be doing now? What would I be doing then?

6. Yesterday I was at the cinema, today I am in the library. If now was then, and then was now, Where would I be now? Where would I be then?
7. I am here at McDonalds and you are there in the gym. If I was you and you were me and if here was there and there was here, Where would I be? Where would you be?

8. I am here at the One Direction concert and you are there at home playing guitar. If I was you and you were me and if here was there and there was here, Where would I be? Where would you be?

9. Yesterday, you were there walking your dog, today you are here watching a movie on your laptop. If here was there and there was here and if now was then and then was now. Where would you be now? Where would you be then?

10. Yesterday I was there at the swimming pool, today I am here in the shopping centre. If here was there and there was here and if now was then and then was now, Where would I be now? Where would I be then?

(iv) Time Four:

1. I am walking to school, and you are taking the bus to school. If I were you, and you were me, how would I be getting to school? How would you be getting to school?

2. I am at the dentist and you are at the cinema. If I were you and you were me, where would I be? Where would you be?

3. I am here at a yoga class in the gym, you are there at home reading. If here were there, and there were here, where would I be? Where would you be?

4. I am here at the shopping centre and you are there in the Bookshop. If here were there, and there were here, where would I be? Where would you be?

5. Yesterday, I was watching television, today I am out with friends. If now was then, and then was now, What would I be doing now? What would I be doing then?

6. Yesterday you were at the cinema, today you are in the library. If now was then, and then was now, Where would you be now? Where would you be then?

7. I am here at school and you are there at work. If I was you, and you were me, if here was there and there was here, Where would I be? Where would you be?

8. I am here at the library and you are there at your friend's house. If I was you, and you were me, and here was here and there was there, Where would I be? Where would you be?

9. Yesterday I was there at my piano lesson and today I am here in school. If here was there, and there was here, and if now was then and then was now, Where would I be now? Where would I be then?
10. Yesterday you were there at the ice-skating rink, today you are here at home. If here was there and there was here, and if now was then and then was now, Where would you be now? Where would you be then?

(b) Deictic Relational Tasks- Answers

(i) Time One
1. You would be drinking coke and I would be drinking fanta.
2. You would have an ipad and I would have a laptop.
3. You would be at school and I would be at home.
4. You would be at my friend's house and I would be at work.
5. I would be at school today and I would be at home yesterday.
6. I would be at work today and I would be hanging out with friends yesterday.
7. You would be here at school and I would be at the café yesterday.
8. You would be there at work and I would be here at the gym.
9. I would be at the bowling alley yesterday and I would be at your friend's house today.
10. You would be at the shopping centre yesterday and you would be at school now.

(ii) Time Two
1. You would be wearing a red hoodie and I would be wearing a green hoodie.
2. You would have a car and I would have a bike.
3. You would be at the bowling alley and I would be at the cinema.
4. You would be at the home and I would be at the library.
5. I would be watching YouTube videos yesterday and at a gig today.
6. Yesterday I would be doing my homework and today I would be playing piano.
7. You would be at a friend's house and I would be playing guitar.
8. You would be at home and I would be at the cinema.
9. I would be at the hospital yesterday and I would be at your friend's house today.
10. You would be at the bookshop yesterday and you would be at home today.

(iii) Time Three
1. You would have an ipad and I would have an iphone.
2. You would have a dog and I would have a cat.
3. You would be in the canteen with friends and I would be there in the park.
4. I would be in the library studying and you would be at home watching a movie.
5. I would be out with friends now and I would be watching TV yesterday.
6. I would be at the cinema today and I would be at the library yesterday.
7. You would be at the gym and I would be at McDonalds.
8. You would be at home playing guitar and I would be the One Direction Concert.
9. You would be walking your dog yesterday and you would be watching a movie on my laptop today.
10. I would be there at the swimming pool yesterday and here in the shopping centre today.

(iv) Time Four
1. You would be walking to school and I would be taking the bus to school.
2. You would be at the dentist and I would be at the cinema.
3. You would be at yoga class in the gym and I would be at home reading.
4. You would be in the shopping centre and I would be at the bookshop.
5. Yesterday I would be out with friends and today I would be watching TV.
6. Yesterday you would be at the library and today you would be at the cinema.
7. I would be at school and you would be at work.
8. I would be at the library and you would be at a friend's house.
9. I would be at your piano lesson yesterday and I would be in school today.
10. You would be at the ice-skating rink yesterday and you would be at home today.

c) Deictic Relational Tasks- Alternative Answers

(i) Time One
1. I would be drinking coke and you would be drinking fanta.
2. I would have an ipad and you would have a laptop.
3. I would be at school and you would be at home.
4. I would be at my friend's house and you would be at work.
5. You would be at school today and you would be at home yesterday.
6. You would be at work today and you would be hanging out with friends yesterday.
7. I would be here at school and you would be at the café yesterday.
8. I would be here at the work and you would be there at the gym.
9. You would be at the bowling alley yesterday and you would be at your friend's house today.
10. I would be at the shopping centre yesterday and I would be at school now.

(ii) Time Two
1. I would be wearing a red hoodie and you would be wearing a green hoodie.
2. I would have a car and you would have a bike.
3. I would be at the bowling alley and you would be at the cinema.
4. I would be at the home and you would be at the library.
5. You would be watching YouTube videos yesterday and at a gig today.
6. Yesterday you would be doing your homework and today you would be playing piano.
7. I would be at a friend's house and you would be playing guitar.
8. I would be at home and you would be at the cinema.
9. You would be at the hospital yesterday and you would be at your friend's house today.
10. I would be at the bookshop yesterday and I would be at home today.

(iii) Time Three
1. I would have an ipad and you would have an iphone.
2. I would have a dog and you would have a cat.
3. I would be in the canteen with friends and you would be there in the park.
4. I would be in the library studying and you would be at home watching a movie.
5. You would be out with friends now and you would be watching TV yesterday.
You would be at the cinema today and you would be at the library yesterday.
I would be at the gym and you would be at McDonalds.
I would be at home playing guitar and you would be the One Direction Concert.
I would be walking my dog yesterday and I would be watching a movie on my laptop today.
You would be there at the swimming pool yesterday and here in the shopping centre today.

(iv) Time Four
1. I would be walking to school and you would be taking the bus to school.
2. I would be at the dentist and you would be at the cinema.
3. I would be at yoga class in the gym and you would be at home reading.
4. I would be in the shopping centre and you would be at the bookshop.
5. Yesterday you would be out with friends and today you would be watching TV.
6. Yesterday I would be at the library and today I would be at the cinema.
7. You would be at school and I would be at work.
8. You would be at the library and I would be at a friend's house.
9. You would be at your piano lesson yesterday and you would be in school today.
10. I would be at the ice-skating rink yesterday and I would be at home today.

(c) Relational Frame Theory Perspective Taking Task (RFT-PT)-25 items
This task consists of answering 25 questions that will require that you pay close attention to subtle changes in perspectives. You will want to imagine the scenario and visualise the perspective change. Please try to pay close attention and try to answer as accurately as possible. Note: Some participants who complete these questions wonder who "I" is referring to. "I" in these questions refers to you the person who is completing this survey and questions should be answered as such: E.g. Q: Yesterday I was reading, today I am watching television. If now was then and then was now, What would I be doing now? A: I would be....

1. I have a green brick and you have a red brick. If I was you and you were me, Which brick would I have? RED
   Which brick would YOU have? GREEN

2. I am sitting here on the black chair and you are sitting there on the blue chair. If here was there and there was here, Where would YOU be sitting? BLACK
   Where would I be sitting? BLUE

3. Yesterday I was watching television, today I am reading. If now was then and then was now, What would I be doing then? READING
   What would I be doing now? WATCHING TELEVISION

4. I am sitting here on the blue chair and you are sitting there on the black chair. If I was you and you were me and if here was there and there was here.
Where would YOU be sitting? BLUE
Where would I be sitting? BLACK

5. Yesterday you were sitting there on the blue chair, today you are sitting here on the black chair. If here was there and there was here and if now was then and then was now,
Where would you be sitting now? BLACK
Where would you be sitting then? BLUE

6. Yesterday I was sitting there on the blue chair, today I am sitting here on the black chair. If here was there and there was here,
Where would I be sitting then? BLACK
Where would I be sitting now? BLUE

7. I have a red brick and you have a green brick. If I was you and you were me,
Which brick would I have? GREEN
Which brick would YOU have? RED

8. Yesterday I was reading, today I am watching television. If now was then and then was now,
What would I be doing now? READING
What would I be doing then? WATCHING TELEVISION

9. Yesterday I was sitting there on the black chair, today I am sitting here on the blue chair. If here was there and there was here and if now was then and then was now,
Where would I be sitting then? BLACK
Where would I be sitting now? BLUE

10. Yesterday you were sitting there on the blue chair, today you are sitting here on the black chair. If here was there and there was here.
Where would you be sitting now? BLUE
Where would you be sitting then? BLACK

11. I am sitting here on the black chair and you are sitting there on the blue chair. If I was you and you were me, and if here was here and there was there,
Where would I be sitting? BLUE
Where would YOU be sitting? BLACK

12. I am sitting here on the black chair and you are sitting there on the blue chair. If I was you and you were me,
Where would YOU be sitting? BLACK
Where would I be sitting? BLUE

13. You are sitting there on the blue chair and I am sitting here on the black chair. If here was here and there was there,
Where would YOU be sitting? BLUE
Where would I be sitting? BLACK

14. Yesterday you were watching television, today you are reading. If now was then and then was now,
What would you be doing then? READING
What would you be doing now? WATCHING TV

15. I am sitting here on the black chair and you are sitting there on the blue chair. If I was you and you were me and if here was there and there was here,
Where would YOU be sitting? BLUE
Where would I be sitting? BLACK

16. I am sitting here on the blue chair and you are sitting there on the black chair. If I was you and you were me,
Where would I be sitting? BLACK
Where would YOU be sitting? BLUE

17. Yesterday you were sitting there on the black chair, today you are sitting here on the blue chair. If here was there and there was here and if now was then and then was now.
Where would you be sitting now? BLUE
Where would you be sitting then? BLACK

18. You have a red brick and I have a green brick. If I was me, and you were you,
Which brick would I have? GREEN
Which brick would YOU have? RED

19. I am sitting here on the black chair and you are sitting there on the blue chair. If I was you and you were me and if here was there and there was here,
Where would I be sitting? BLACK
Where would YOU be sitting? BLUE

20. Yesterday you were sitting there on the black chair, today you are sitting here on the blue chair. If here was there and there was here,
Where would YOU be sitting then? BLUE
Where would YOU be sitting now? BLACK

21. Yesterday you were sitting there on the black chair, today you are sitting here on the blue chair. If here was there and there was here and if now was then and then was now,
Where would you be sitting then? BLACK
Where would you be sitting now? BLUE

22. Yesterday I was reading, today I am watching television. If now was now and then was then,
What would I be doing now? WATCHING TV
What would I be doing then? READING

23. I am sitting here on the blue chair and you are sitting there on the black chair. If I was you and you were me and if here was there and there was here,
Where would I be sitting? BLUE
Where would YOU be sitting? BLACK

24. Yesterday I was sitting there on the black chair, today I am sitting here on the
blue chair. If now was then and then was now,
Where would I be sitting now? BLACK
Where would I be sitting then? BLUE

25. Yesterday you were sitting there on the blue chair, today you are sitting
here on the black chair. If here was there and there was here and if now was now
and then was then,
Where would you be sitting then? BLACK
Appendix F Self-report measures and scoring instructions

(a) The Self Compassion Scale-Short Form

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

<table>
<thead>
<tr>
<th>Almost never</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Almost always</th>
<th>5</th>
</tr>
</thead>
</table>

1. When I fail at something important to me I become consumed by feelings of inadequacy. X
2. I try to be understanding and patient towards those aspects of my personality I don’t like.
3. When something painful happens I try to take a balanced view of the situation.
4. When I’m feeling down, I tend to feel like most other people are probably happier than I am. X
5. I try to see my failings as part of the human condition.
6. When I’m going through a very hard time, I give myself the caring and tenderness I need.
7. When something upsets me I try to keep my emotions in balance.
8. When I fail at something that’s important to me, I tend to feel alone in my failure X
9. When I’m feeling down I tend to obsess and fixate on everything that’s wrong. X
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
11. I’m disapproving and judgmental about my own flaws and inadequacies. X
12. I’m intolerant and impatient towards those aspects of my personality I don’t like. X

(b) The Depression Anxiety and Stress Scale-21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all - NEVER
1 Applied to me to some degree, or some of the time - SOMETIMES
2 Applied to me to a considerable degree, or a good part of time - OFTEN
3 Applied to me very much, or most of the time - ALMOST ALWAYS
(c) The Short Warwick Edinburgh Mental Well Being Scale

Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks.

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>N</th>
<th>S</th>
<th>O</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I found it hard to wind down</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I was aware of dryness of my mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I couldn’t seem to experience any positive feeling at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I experienced breathing difficulty (e.g., excessively rapid breathing,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>breathlessness in the absence of physical exertion)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I found it difficult to work up the initiative to do things</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I tended to over-react to situations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I experienced trembling (e.g., in the hands)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I felt that I was using a lot of nervous energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I was worried about situations in which I might panic and make a fool of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I felt that I had nothing to look forward to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I found myself getting agitated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I found it difficult to relax</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I felt down-hearted and blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I was intolerant of anything that kept me from getting on with what I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>was doing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I felt I was close to panic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I was unable to become enthusiastic about anything</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I felt I wasn’t worth much as a person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I felt that I was rather touchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I was aware of the action of my heart in the absence of physical exertion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(e.g., sense of heart rate increase, heart missing a beat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I felt scared without any good reason</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I felt that life was meaningless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle a number between 0-4 that tells how true each sentence is for you.

<table>
<thead>
<tr>
<th>STATMENTS</th>
<th>None of the time</th>
<th>Rarely the time</th>
<th>Some of the time</th>
<th>Often</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I've been feeling optimistic about the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling useful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been dealing with problems well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been thinking clearly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling close to other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been able to make up my own mind about things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. My life won’t be good until I feel happy. 1 2 3 4 5
2. My thoughts and feelings mess up my life. 1 2 3 4 5
3. The bad things I think about myself must be true. 1 2 3 4 5
4. If my heart beats fast, there must be something wrong with me. 1 2 3 4 5
5. I stop doing things that are important to me whenever I feel bad. 1 2 3 4 5
6. I do worse in school when I have thoughts that make me feel sad. 1 2 3 4 5
7. I am afraid of my feelings. 1 2 3 4 5
8. I can’t be a good friend when I feel upset. 1 2 3 4 5

(e) Child and Adolescent Mindfulness Measure
We want to know more about what you think, how you feel, and what you do. Read each sentence. Then, circle the number that tells how often each sentence is true for you.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I get upset with myself for having feelings that don't make sense.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>At school, I walk from class to class without noticing what I'm doing.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>I keep myself busy so I don't notice my thoughts or feelings.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>I tell myself that I shouldn't feel the way I'm feeling.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>I push away thoughts that I don't like.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>It's hard for me to pay attention to only one thing at a time.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>I get upset with myself for having certain thoughts.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>I think about things that have happened in the past instead of thinking about things that are happening right now.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9.</td>
<td>I think that some of my feelings are bad and that I shouldn't have them.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10.</td>
<td>I stop myself from having feelings that I don't like.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

(f) Toronto Empathy Questionnaire

Below is a list of statements. Please read each statement carefully and rate how frequently you feel or act in the manner described. Circle your answer on the response form. There are no right or wrong answers or trick questions. Please answer each question as honestly as you can.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>When someone else is feeling excited, I tend to get excited too</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>Other people's misfortunes do not disturb me a great deal</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>It upsets me to see someone being treated disrespectfully</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
4. I remain unaffected when someone close to me is happy  |  0 1 2 3 4 |
5. I enjoy making other people feel better  |  0 1 2 3 4 |
6. I have tender, concerned feelings for people less fortunate than me  |  0 1 2 3 4 |
7. When a friend starts to talk about his/her problems, I try to steer the conversation towards something else |  0 1 2 3 4 |
8. I can tell when others are sad even when they do not say anything  |  0 1 2 3 4 |
9. I find that I am "in tune" with other people's moods  |  0 1 2 3 4 |
10. I do not feel sympathy for people who cause their own serious illnesses  |  0 1 2 3 4 |
11. I become irritated when someone cries  |  0 1 2 3 4 |
12. I am not really interested in how other people feel  |  0 1 2 3 4 |
13. I get a strong urge to help when I see someone who is upset  |  0 1 2 3 4 |
14. When I see someone being treated unfairly, I do not feel very much pity for them  |  0 1 2 3 4 |
15. I find it silly for people to cry out of happiness  |  0 1 2 3 4 |
16. When I see someone being taken advantage of, I feel kind of protective towards him/her  |  0 1 2 3 4 |

(g) Self-as-Context Scale

Below are several statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding. The 7-point scale is:

1 = Strongly Disagree   2 = Disagree   3 = Slightly Disagree   4 = Neither Agree Nor Disagree   5 = Slightly Agree   6 = Agree   7 = Strongly Agree
1. When I am upset, I am able to find a place of calm within myself.
2. I have a perspective on life that allows me to deal with life’s disappointments without getting overwhelmed by them.
3. Despite the many changes in my life, there is a basic part of who I am that remains unchanged.
4. As I look back upon my life so far, I have a sense that part of me has been there for all of it.
5. I allow my emotions to come and go without struggling with them.
6. I am able to notice my thoughts without getting caught up in them.
7. There is a basic sense I have of myself that doesn’t change even though my thoughts and feelings do.
8. Though I have had many roles in my life, I have always had a sense of self that is stable and enduring.
9. Even though there have been many changes in my life, I’m aware of a part of me that has witnessed it all.
10. I am able to access a perspective from which I can notice my thoughts, feelings, and emotions.
11. When I think back to when I was younger, I recognize that a part of me that was there then is still here now.

(h) Self Experiences Questionnaire

Directions:

Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following rating scale to make your choices. For instance, if you believe a statement is ‘Always True,’ you would circle 6 next to that statement.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>never true</td>
<td>very rarely true</td>
<td>seldom true</td>
<td>sometimes true</td>
<td>Often true</td>
<td>almost always true</td>
<td>always true</td>
</tr>
</tbody>
</table>

1. Although I can get caught up with my own thoughts, emotions and sensations, I can also separate myself from them

0 | 1 | 2 | 3 | 4 | 5 | 6
<table>
<thead>
<tr>
<th></th>
<th>2. I am able to step back from my emotions and observe them from a separate point of view</th>
<th>0 1 2 3 4 5 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>3. I am able to separate myself from my thoughts and feelings</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>4. I have thoughts and feelings but am not defined as just my thoughts and feelings</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>5. I can experience a distinction between my experiences and the “I” who notices these experiences</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>6. I can actually see that I am not my thoughts</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>7. I experience my self as more than my thoughts and feelings</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>8. The health, appearance, and feelings of my body change, but the sense of my self who is aware of these changes is the same</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>9. When I feel distressed I can notice what is happening without being overwhelmed</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>10. I can notice what I am thinking and feeling without getting too caught up in these experiences</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>11. Above all my experiences, there is a sense of my self who is noticing them</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>12. I can notice that my mind is thinking from moment to moment</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>13. I can observe experiences in my body and mind as events that come and go</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>14. I am able to remain aware of my experiences from moment to moment</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>15. My roles change depending on time, place and setting, but the sense of my self who has the roles stays the same</td>
<td>0 1 2 3 4 5 6</td>
</tr>
</tbody>
</table>
Appendix G: Ethics Approval Letters

(i) Ethical Approval for Studies 1 and 2

March 28th, 2014
Ms Orla Moran
c/o Dr Louise McHugh
UCD School of Psychology
Newman Building
Beifield, Dublin 4

RE: HS-14-02-Moran-McHugh: Training Self Flexibility in Adolescents

Dear Ms Moran

Thank you for your response to the Human Research Ethics Committee – Humanities
[27/03/14]. The Decision of the Committee is to grant approval for this application which
is subject to the conditions set out below.

Please note that approval is for the work and the time period specified in the above
protocol and is subject to the following:

- Any amendments or requests to extend the original approved study will need to be
  approved by the Committee. Therefore you will need to submit by email the Request to
  Amend/Extend Form (HREC Doc 10);
- Any unexpected adverse events that occur during the conduct of your research should
  be notified to the Committee. Therefore you will need to submit, by email, an
  Unexpected Adverse Events Report (HREC Doc 11);
- You or your supervisor (if applicable) are required to submit a signed End of Study
  Report Form (HREC Doc 12) to the Committee upon the completion of your study;
- This approval is granted on condition that you ensure that, in compliance with the Data
  Protection Acts 1988 and 2003. If applicable, all data will be destroyed in accordance
  with your application and that you will confirm this in your End of Study Report (HREC
  Doc 12), or indicate when this will occur and how this will be communicated to the
  Human Research Ethics Committee;
- You may require copies of submitted documentation relating to this approved
  application and therefore we advise that you retain copies for your own records;
- Please note that the granting of this ethical approval is premised on the assumption that
  the research will be carried out within the limits of the law;
- Please also note that approved applications and any subsequent amendments are
  subject to a Research Ethics Compliance Review.

...
The Committee wishes you well with your research and look forward to receiving your End of Study Report. All forms are available on the website www.wcu.ie/researchethics please ensure that you submit the latest version of the relevant form. If you have any queries regarding the above please contact the Office of Research Ethics and please quote your reference in all correspondence.

Yours sincerely,

[Signature]

Dr Joan Tiernan
Chair Human Research Ethics Committee - Humanities
November 24th, 2015

Ms Orla Moran
C/o Dr Louise McHugh
UCD School of Psychology
Newman Building
Belfield, Dublin 4

RE: M3-14-02-Moran-McHugh: Training Self Flexibility in Adolescents

Dear Ms Moran

Thank you for your recent Amendment Request Form to the Human Research Ethics Committee – Humanities (20/11/15) and subsequent clarifications. The Decision of the Committee is to grant approval for your request to amend this application which is subject to the following.

Please note that approval is for the work and the time period specified in the above protocol and is subject to the following:

- This approval is for the work specified in the above application and granted until February 28th, 2016;
- If applicable, all permissions to access participants, whether internal (heads of Schools/Registrar) or external are obtained before the recruitment of the participants is commenced;
- Any amendments or requests to extend the original approved study or subsequent approved amended revisions of that study will need to be approved by the Committee. Please submit by email the Request to Amend/Extend Form (HREC Doc 10);
- Any unexpected adverse events that occur during the conduct of your research should be notified to the Committee. Therefore you will need to Submit, by email, an Unexpected Adverse Events Report (HREC Doc 11);
- You or your supervisor (if applicable) are required to submit a signed End of Study Report Form (HREC Doc 12) to the Committee upon the completion of your study;
- This approval is granted on condition that you ensure that, in compliance with the Data Protection Acts 1988 and 2003. If applicable, all data will be destroyed in accordance with your application and that you will confirm this in your End of Study Report (HREC Doc 12), or indicate when this will occur and how this will be communicated to the Human Research Ethics Committee;

...
• You may require copies of submitted documentation relating to this approved application and therefore we advise that you retain copies for your own records;
• Please note that the granting of this ethical approval is premised on the assumption that the research will be carried out within the limits of the law;
• Please also note that approved applications and any subsequent amendments are subject to a Research Ethics Compliance Review.

All forms are available on the website www.ucd.ie/researchethics please ensure that you submit the latest version of the relevant form. If you have any queries regarding the above please contact the Office of Research Ethics and please quote your reference in all correspondence.

Yours sincerely,

[Signature]

Dr Joan Tiernan
Chair, Human Research Ethics Committee - Humanities
(iii) Ethical Approval for Study 4

Dear Orla

Thank you for notifying the Human Research Ethics Committee - Humanities (HREC-HS) of your declaration that you are exempt from a full ethical review. Should the nature of your research change and thereby alter your exempt status you will need to submit an application form for full ethical review. Please note for future correspondence regarding this study and its exemption that your Research Ethics Exemption Reference Number (REERN) is: HS-E-17-12-Moran-McHugh. This exemption from full ethical review is being accepted by the Office of Research Ethics on the condition that you observe the following:

- **UCD Insurance Requirement**: I confirm that the public liability insurance cover is already in place for this project – no further action is required.

- **Researcher Duty of Care to Participants**: please ensure that ethical best practice is considered and applied to your research projects. You should ensure that participants are aware of what is happening to them and to their data whether a study is de-identified or not. All researchers have a duty of care to their participants who have the right to be informed, the right to consent to participate and the right to withdraw from the study.

Any additional documentation should be emailed to exemptions.ethics@ucd.ie quoting your assigned reference number (provided above) in the subject line of your email.

Please note that your research does not require a committee review and also note that this is an acknowledgment of your declared exemption status. All Exemptions from Full Review are subject to Research Ethics Compliance Review.

Best regards,

Maciek
Appendix H: Additional Analyses for Study 2

Mixed ANOVA with median split on basis of pre-test DASS scores

**Median Split- Low distress (Non-imputed)**

Summaries of mean scores, standard deviations, n, and interaction effects for the low distress sample with non-imputed data are provided in Table H1. Using the rough false discovery rate to control for type 1 error, the p value was reduced to .0273. A significant interaction emerged, $F(2, 35)= 4.637; p=.016$; partial $\eta^2=.209$ for well being. The Test of Simple Effects was carried out to determine the source of any significant difference. No significant difference was observed across at pre, $F(2, 35) = .021; p> .05$, however means were found to significantly differ across groups at post, $F(2, 35) = 10.081; p< .01$. A significant difference was observed from pre to post for the intervention group, $F(1, 35)= 7.753; p< .01$, with mean scores decreasing from pre ($M=25.09; SD=2.34$) to post ($M=22.82; SD=2.99$). No significant differences from pre to post were observed in the control, $F(1, 35)= 0.875; p > .05$, or active control condition, $F(1, 35)=0.782; p > .05$. To summarize, these findings suggest significant reductions in well-being for the intervention group from pre to post. A significant main effect for time emerged for deictic ability, $F(1, 24)= 6.287; p=.019$; partial $\eta^2=.208$, with scores increasing for all groups from pre to post regardless of condition. No other significant effects emerged.
Table H1: Summary for Mixed Between-Within Subjects ANOVA for the Intervention, Active Control and Control group (Non-imputed Median Split- Low distress)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Intervention</th>
<th>Control</th>
<th>Active Control</th>
<th>Interaction F statistic, p-values &amp; n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
</tr>
<tr>
<td>Deictic Ability (DRT)</td>
<td>5.86 (2.55)</td>
<td>8.86 (1.86)</td>
<td>4.33 (1.58)</td>
<td>5.11 (2.32)</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>16.70 (8.39)</td>
<td>18.50 (8.16)</td>
<td>13.00 (6.62)</td>
<td>12.20 (6.32)</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>50.36 (5.39)</td>
<td>48.45 (11.29)</td>
<td>44.10 (5.15)</td>
<td>43.00 (8.30)</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>53.18 (8.51)</td>
<td>54.73 (7.75)</td>
<td>57.00 (6.90)</td>
<td>55.70 (9.09)</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>5.09 (2.07)</td>
<td>7.27 (2.87)</td>
<td>4.00 (1.89)</td>
<td>4.30 (3.83)</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>2.45 (2.21)</td>
<td>4.00 (2.61)</td>
<td>2.70 (1.89)</td>
<td>3.80 (4.83)</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>3.45 (2.09)</td>
<td>4.82 (2.96)</td>
<td>2.40 (1.51)</td>
<td>3.20 (5.05)</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>25.09 (2.34)</td>
<td>22.82 (2.99)</td>
<td>25.20 (4.16)</td>
<td>26.00 (5.16)</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>10.09 (6.17)</td>
<td>11.00 (6.25)</td>
<td>6.70 (5.03)</td>
<td>7.10 (6.28)</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>36.00 (8.97)</td>
<td>33.91 (6.75)</td>
<td>39.40 (6.59)</td>
<td>40.20 (6.27)</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation
3.3.5.4 Median Split- Low Distress (Imputed)

Summaries of mean scores, standard deviations, n, and interaction effects for the low-distress sample with imputed data are provided in Table H2. Using rough false discovery rate to control for type 1 error, the $p$ value was reduced to .0275. A significant interaction between time and group emerged for well being, $F(2, 78)= 3.954; p =.023$; partial $\eta^2=.092$. The Test of Simple Effects was carried out to determine the source of any significant difference. No significant difference across groups was observed at pre, $F(2, 78)= 0.65; p >.05$, however means were found to differ significantly across groups at post, $F(2, 78)= 5.113; p <.01$. Significant differences from pre to post were observed for intervention, $F(1, 78)= 19.681; p <.01$, and control conditions, $F(1, 78)= 4.257; p <.05$, but not for the active control group, $F(1, 78)= 0.102; p >.05$. Mean scores revealed decreases from pre to post for both the intervention group (Pre: $M=25.60; SD=3.47$; Post: $M=23.10; SD=1.77$) and control group (Pre: $M=25.71; SD=2.90$; Post: $M=24.41; SD=3.51$). To summarize, these findings suggest significant reductions in well-being for the intervention and control group from pre to post.

A significant main effect for time also emerged for well-being, $F(1, 78)= 14.952; p<.001$; partial $\eta^2=.161$, with reductions from pre to post across all groups. Box’s M statistic revealed a violation of homogeneity of intercorrelations and Levene’s test indicated that assumption of homogeneity of variance was violated therefore these findings must be interpreted with caution. A significant main effect for time emerged for empathy, $F(1, 76)= 5.440; p=.022$; partial $\eta^2=.067$, with reductions from pre to post regardless of group.
A significant main effect for time emerged for stress, $F(1, 79) = 23.693;\ p < .001;\ \text{partial } \eta^2 = .231$, depression, $F(1, 79) = 43.336;\ p < .001;\ \text{partial } \eta^2 = .354$, and anxiety, $F(1, 79) = 34.392;\ p < .001;\ \text{partial } \eta^2 = .303$, with scores increasing from pre to post for all groups in each case. A significant effect for time also emerged for anxiety, $F(2, 79) = 6.437;\ p = .003;\ \text{partial } \eta^2 = .140$, with pairwise comparisons revealing significant differences between intervention and active control groups, and control and active control groups regardless of timepoint. Box’s M statistic revealed a violation of homogeneity of intercorrelations for anxiety, and depression and Levene’s test indicated that assumption of homogeneity of variance was violated for anxiety, depression, and stress therefore these findings must be interpreted with caution.
Table H2: Summary for Mixed ANOVA for Intervention, Control, and Active Control group (Imputed Median Split-Low Distress)

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>Active Control</th>
<th>Interaction F statistic, p-values &amp; n</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>16.37 (6.41)</td>
<td>17.79 (4.57)</td>
<td>14.79 (6.85)</td>
<td>15.26 (4.76)</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>48.14 (7.42)</td>
<td>46.43 (6.94)</td>
<td>46.33 (5.89)</td>
<td>44.28 (5.31)</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>54.80 (8.25)</td>
<td>53.13 (4.71)</td>
<td>54.83 (6.56)</td>
<td>53.66 (5.95)</td>
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<tr>
<td>Stress (DASS-Str)</td>
<td>4.83 (2.45)</td>
<td>7.15 (1.69)</td>
<td>4.54 (2.62)</td>
<td>5.92 (2.78)</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>2.67 (2.09)</td>
<td>4.63 (1.61)</td>
<td>2.33 (1.49)</td>
<td>4.50 (3.08)</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>2.90 (1.97)</td>
<td>5.14 (1.76)</td>
<td>2.88 (1.73)</td>
<td>4.44 (3.34)</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>25.60 (3.47)</td>
<td>23.10 (1.77)</td>
<td>25.71 (2.90)</td>
<td>24.41 (3.51)</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>9.30 (5.51)</td>
<td>10.69 (3.68)</td>
<td>7.04 (4.45)</td>
<td>9.09 (4.29)</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>35.67 (7.71)</td>
<td>34.39 (3.98)</td>
<td>37.88 (5.64)</td>
<td>36.97 (4.81)</td>
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</tbody>
</table>

Note: M=Mean; SD=Standard Deviation
3.3.5.5 Median Split- High Distress (Non-Imputed)

Summaries of mean scores, standard deviations, n, and interaction effects for the high distress sample with non-imputed data are provided in Table H3. Using the rough false discovery rate to control for type 1 error, the $p$ value was reduced to .0273. No significant interactions or main effects were observed from pre to post.
Table H3: Summary for Mixed Between Within Measures ANOVA for the Intervention, Active Control and Control group (median split- High distress- Non-imputed)

<table>
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<tr>
<th>Measures</th>
<th>Intervention</th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>F statistic</td>
</tr>
<tr>
<td>Deictic Ability (DRT)</td>
<td>4.63 (1.30)</td>
<td>5.13 (1.25)</td>
<td>4.92 (3.29)</td>
<td>5.58 (3.42)</td>
<td>5.83 (3.31)</td>
<td>7.33 (1.97)</td>
<td>.445 .647</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>24.89 (3.48)</td>
<td>23.33 (3.12)</td>
<td>21.15 (7.35)</td>
<td>19.85 (5.11)</td>
<td>24.67 (7.97)</td>
<td>21.83 (7.57)</td>
<td>.186 .832</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>44.22 (8.74)</td>
<td>42.44 (11.45)</td>
<td>47.00 (6.21)</td>
<td>44.77 (9.28)</td>
<td>46.50 (7.48)</td>
<td>43.83 (10.25)</td>
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</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>46.20 (11.60)</td>
<td>45.80 (11.70)</td>
<td>49.46 (9.06)</td>
<td>48.38 (7.02)</td>
<td>53.67 (10.37)</td>
<td>50.17 (13.83)</td>
<td>.360 .701</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>10.44 (2.30)</td>
<td>10.44 (3.97)</td>
<td>12.46 (3.13)</td>
<td>9.92 (3.01)</td>
<td>9.67 (1.75)</td>
<td>8.17 (2.79)</td>
<td>1.131 .339</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>12.22 (5.50)</td>
<td>9.89 (6.57)</td>
<td>8.23 (4.604)</td>
<td>6.23 (3.75)</td>
<td>9.17 (2.86)</td>
<td>6.67 (4.76)</td>
<td>.052 .950</td>
</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
<td>8.22 (5.12)</td>
<td>9.00 (5.15)</td>
<td>10.15 (3.89)</td>
<td>8.62 (4.03)</td>
<td>6.67 (3.20)</td>
<td>7.00 (4.98)</td>
<td>.820 .452</td>
</tr>
<tr>
<td>Well being (SWEMWBS)</td>
<td>20.30 (5.08)</td>
<td>19.80 (6.84)</td>
<td>23.85 (5.35)</td>
<td>21.62 (4.81)</td>
<td>22.00 (5.33)</td>
<td>21.67 (4.13)</td>
<td>1.158 .330</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>16.11 (6.37)</td>
<td>16.33 (6.96)</td>
<td>14.54 (7.42)</td>
<td>12.62 (4.27)</td>
<td>15.33 (7.76)</td>
<td>13.83 (7.47)</td>
<td>.598 .558</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>30.33 (6.46)</td>
<td>27.44 (6.80)</td>
<td>33.46 (8.09)</td>
<td>33.15 (5.57)</td>
<td>30.17 (9.28)</td>
<td>29.17 (9.11)</td>
<td>.413 .666</td>
</tr>
</tbody>
</table>

Note: M=Mean; SD=Standard Deviation
3.3.5.6 Median Split- High Distress (Imputed)

Summaries of mean scores, standard deviations, n, and interaction effects for the high distress sample with imputed data are provided in Table H4. Using rough false discovery rate to control for type 1 error, the \( p \) value was reduced to .0275. Significant main effects for time emerged for stress, \( F(1, 72)= 31.343; p<.001; \) partial \( \eta^2 = .303 \), depression, \( F(1, 72)= 47.824; p<.001; \) partial \( \eta^2 = .399 \), and anxiety, \( F(1, 72)= 20.299; p<.001; \) partial \( \eta^2 = .220 \), with mean scores decreasing for all groups from pre to post in each case. Box’s M statistic revealed a violation of homogeneity of intercorrelations and Levene’s test indicated that assumption of homogeneity of variance was violated for stress, and depression therefore these findings must be interpreted with caution.

A significant main effect for time also emerged for well-being, \( F(1, 72)= 5.660; p=.020; \) partial \( \eta^2 = .073 \), with increases from pre to post for intervention and active control groups. Box’s M statistic revealed a violation of homogeneity of intercorrelations and Levene’s test indicated that assumption of homogeneity of variance was violated for well-being, therefore these findings must be interpreted with caution. Significant main effects for time emerged for avoidance, \( F(1, 72)= 20.444; p<.001; \) partial \( \eta^2 = .221 \), and for distraction \( F(1, 72)= 21.727; p<.001; \) partial \( \eta^2 = .232 \), with scores decreasing for all groups from pre to post for both variables.
Table H4: Summary for Mixed Between Within Measures ANOVA for the Intervention, Active Control and Control group (Imputed median split-High distress)

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>Active Control</th>
<th>Interaction F statistic, p-values &amp; n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
<td>Pre M (SD)</td>
<td>Post M (SD)</td>
</tr>
<tr>
<td>Distraction (CAMM)</td>
<td>22.56 (6.64)</td>
<td>19.63 (3.37)</td>
<td>21.29 (6.39)</td>
<td>18.56 (3.62)</td>
</tr>
<tr>
<td>Empathy (TEQ)</td>
<td>43.44 (9.45)</td>
<td>44.13 (6.74)</td>
<td>48.21 (7.56)</td>
<td>45.00 (6.19)</td>
</tr>
<tr>
<td>Self-as-Context (SACS)</td>
<td>48.52 (10.51)</td>
<td>49.65 (7.85)</td>
<td>49.96 (10.05)</td>
<td>50.43 (5.07)</td>
</tr>
<tr>
<td>Stress (DASS-Str)</td>
<td>10.76 (3.02)</td>
<td>8.43 (2.85)</td>
<td>11.00 (3.23)</td>
<td>8.40 (2.47)</td>
</tr>
<tr>
<td>Depression (DASS-Dep)</td>
<td>10.64 (4.93)</td>
<td>6.96 (4.52)</td>
<td>8.00 (3.80)</td>
<td>5.57 (2.57)</td>
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<tr>
<td>Anxiety (DASS-Anx)</td>
<td>9.24 (4.32)</td>
<td>6.85 (3.54)</td>
<td>9.25 (3.87)</td>
<td>6.85 (3.18)</td>
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<tr>
<td>Well being (SWEMWBS)</td>
<td>20.36 (5.15)</td>
<td>21.88 (4.54)</td>
<td>22.82 (4.48)</td>
<td>22.50 (3.31)</td>
</tr>
<tr>
<td>Psychological Inflexibility (AFQ-Y8)</td>
<td>15.12 (6.53)</td>
<td>12.77 (4.92)</td>
<td>14.07 (6.39)</td>
<td>11.49 (3.04)</td>
</tr>
<tr>
<td>Self Compassion (SCS-SF)</td>
<td>30.48 (5.44)</td>
<td>31.98 (5.26)</td>
<td>33.04 (6.44)</td>
<td>33.96 (3.79)</td>
</tr>
</tbody>
</table>

*Note: M=Mean; SD=Standard Deviation*
Appendix I Alternative analyses for Study 2

As pre-test scores for anxiety differed marginally across conditions for Study 2, additional alternative analyses were conducted using ANOVA of change scores, which are considered less biased than ANCOVA with baseline as covariate (van Breukelen, 2006; Tabachnick & Fidell, 2007). Between-subject ANOVAs were run with change scores wherein participants’ scores across variables at pre are subtracted from their post scores. Descriptive statistics for both imputed and non-imputed values are presented in Tables I1 and I2, while analyses summaries are presented Tables I3 & I4.
Table I1: Descriptive Statistics for Non-imputed Change Scores across groups from pre to post

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
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<tbody>
<tr>
<td>Self Compassion</td>
<td>Intervention</td>
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<td>6.66</td>
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<td>Control</td>
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<td>6.85</td>
<td>-21-13</td>
<td>-1.02</td>
<td>3.31</td>
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<td>Active Control</td>
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<td>4.80</td>
<td>-9-13</td>
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<td>.725</td>
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<tr>
<td>Stress (DASS-Str)</td>
<td>Intervention</td>
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<td>-5-8</td>
<td>-.126</td>
<td>-.338</td>
</tr>
<tr>
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<td>Control</td>
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<td>3.24</td>
<td>-9-7</td>
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<td>1.78</td>
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<td>-6-5</td>
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<td>.344</td>
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<td>Depression (DASS-Dep)</td>
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<td>-7-9</td>
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<td>-6-7</td>
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<td>-7-6</td>
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<tr>
<td>Distraction (CAMM)</td>
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<td>-14-9</td>
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<td>Deictic Ability (PersTot)</td>
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<td>Note: M=Mean; SD=Standard Deviation</td>
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345
Table 12: Descriptive Statistics for Imputed Change Scores across groups from pre to post

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>Min-Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<tbody>
<tr>
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<tr>
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<td>-21-13</td>
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<td>-12.33-13</td>
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<td>.351</td>
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<td>.188</td>
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<td>-9-7.08</td>
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<td>-8.92-6.08</td>
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<td>.443</td>
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<td>-12-5</td>
<td>-1.08</td>
<td>.709</td>
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<td>Control</td>
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<td>Active Control</td>
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<td>-8-7</td>
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</tr>
<tr>
<td>Anxiety (DASS-Anx)</td>
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<td>.654</td>
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<td>-9-10</td>
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<td>Active Control</td>
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<td>-7.68-4.32</td>
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<td>.274</td>
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<td>.567 8.64</td>
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Note: M=Mean; SD=Standard Deviation

Table 13: Non-Imputed Change Scores across groups
Table 14: Imputed Change Scores across groups

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