

FANTASY PRONENESS CONSTRUCT

AN INVESTIGATION INTO THE FANTASY
PRONENESS CONSTRUCT

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Masters of Science in Psychology

By

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Abstract

Evidence that an instrument measures what it purports to measure is essential to empirically study the given construct. Despite this fact, little attention has been made to investigate the validity of the Inventory of Childhood Memories and Imaginings (ICMI) and the Creative Experiences Questionnaires (CEQ) - instruments that purport to measure the fantasy proneness construct. In assessing the validity of fantasy proneness measures, the aim of the current study was unique, in that, no known study had conducted a factor analysis of scores on the ICMI, CEQ and Dissociative Experiences Scale (DES) separately and simultaneously in the same study. Undergraduate psychology students ($N = 223$) from a large New Zealand University completed six questionnaires measuring fantasy proneness, imagery, dissociation, personality and desirable responding. Separate factor analysis results suggested a three factor solution for ICMI scores accounting for 22.60% of the total variance, a six factor solution for CEQ scores accounting for 42.93% of the total variance, and a three factor solution for DES scores accounting for 81.31% of the total variance. Simultaneous factor analysis results on factor scores of the ICMI, CEQ and DES revealed that dimensions of fantasy proneness loaded on two factors, whereas dimensions of dissociation loaded distinctively on a separate factor. The findings from this study suggest that there is less dimensional overlap between fantasy proneness and dissociation than has been suggested in the recent literature. Findings of this study also suggest that conclusions based on the overall scales of fantasy proneness may be limited and potentially misleading.

An Investigation into the Fantasy Proneness Construct

The term *fantasy proneness* has been used to describe an enduring personality trait of those individuals who spend a large part of their life fantasising. Fantasy prone individuals reportedly share a unique set of characteristics, including, experiencing vivid memories and the ability to voluntarily hallucinate (Wilson & Barber, 1983). Originally, the interest in fantasy prone individuals was due to interest in their supposed excellent hypnotic abilities. Subsequent research however, has linked a number of other phenomena to fantasy proneness, including the particularly controversial link with dissociation. Despite the reported associations between fantasy proneness and a range of phenomena, little research exists on the construct validity of this personality trait. Therefore, research investigating the instruments that purport to measure fantasy proneness is essential, not only to empirically study the construct, but also to clarify findings that are generated in the field of fantasy proneness research.

Discovery of Fantasy Prone Individuals

The term fantasy proneness was coined in what Wilson and Barber (1983) described as a “serendipitous” (p.340) discovery. Whilst conducting individual psychotherapy with two female patients, it became apparent to Wilson and Barber that, despite many aspects of their patients’ lives being markedly different, there was a commonality in a number of their somewhat *unusual* characteristics. Wilson and Barber wrote that both of their patients reported vividly remembering past experiences and having many psychic and paranormal experiences, furthermore, both their patients frequently

experienced vivid fantasies of a hallucinatory nature. Intent on further investigating these somewhat unusual characteristics, Wilson and Barber administered two of their already developed scales, the Creative Imagination Scale (CIS; Wilson & Barber, 1978) and the Barber Suggestibility Scale (BSS; Barber, 1969) to a sample of 52 women. Of the 52 women, 25 did not respond profoundly to all or most of the CIS or BSS items, and therefore were not tested further. Wilson and Barber labelled this sample of 25 women “non-excellent hypnotic subjects” (p. 340), and they evenly represented the range of low, medium and medium high hypnotic abilities. The remaining 27 women responded profoundly, and affirmed practically all CIS and BSS items, rendering them as “excellent hypnotic subjects” (p. 340).

What followed was a series of interviews with the 52 women aimed at investigating their fantasy experiences, amongst a range of other experiences such as child and adulthood memories and psychic experiences. The interviews were structured around 73 questions of which derived from characteristics of their two female patients and 15 of which derived from Hilgard’s (1974) research on hypnotic susceptibility. A further 12 questions were developed during the interviews, resulting in a total of 100 questions which made up the Memory, Imagining, and Creativity Interview Schedule. Interview length varied between 4 and 32 hours, due to individual differences in memory and fantasy abilities. It should be noted that discrepancies in the reported number of original questions exist in the literature (Lynn & Rhue, 1986; Myers, 1983).

Description of Fantasy Proneness

From their interviews Wilson and Barber (1983) concluded that their sample of 27 women labelled *excellent hypnotics* shared a specific set of unique qualities, characterised by (a) spending much of one's waking life in fantasy, (b) experiencing realistic and vivid fantasies of a hallucinatory quality (c) experiencing vivid memories, and (d) experiencing psychic or paranormal experiences. Additionally, compared to *non-excellent hypnotics*, excellent hypnotics often reported patterns of similar childhood experiences, including, (a) a significant adult encouraging involvement in fantasy, (b) fantasizing due to feelings of isolation and loneliness, (c) fantasizing to avoid a bad environment or experience, (d) an extreme involvement to fantasy contributed by special circumstances (e.g., involvement in art, acting, or dance), and (e) a higher frequency of childhood adversity (Wilson & Barber, 1983). As adults, the 27 excellent hypnotics typically reported experiences that included, (a) being able to "see", "hear", "smell" and "touch" (p.340) what is being described whilst engaging in a social conversation, (b) correlated fantasies triggered by specific stimuli, (c) fantasising whilst performing routine tasks, (d) allocating time that is dedicated to the act of fantasizing, (e) prior to sleep experiencing a complete fantasised scenario, and (f) rewarding themselves with a sexual fantasy during an unpleasant situation.

Although fantasy involvement, hallucinatory ability, paranormal experiences, vivid memories and hypnotisability have all been studied individually as separate phenomena, Wilson and Barber (1983) argued that fantasy proneness is characterised by having the unitary experience of most, if not all of these phenomena. With no concrete definition of fantasy proneness,

it is the above characteristics that are typically used to conceptually define what ‘fantasy prone’ means.

Instruments Measuring Fantasy Proneness and Prevalence

Two instruments purport to measure the fantasy proneness construct – the Inventory of Childhood Memories and Imaginings (ICMI) and the Creative Experiences Questionnaire (CEQ). Despite their wide use in the research literature, little attention has been given to investigate the factor structure of either measure or their psychometric properties.

ICMI. From their original 100 item Memory, Imagining, and Creativity Interview Schedule, Wilson and Barber (1983) developed a 52-item pen and paper self-report instrument to measure fantasy proneness. This instrument was titled the *Inventory of Childhood Memories and Imaginings*. There appears to be no literature available in internet databases that documents the process in which this reduced item questionnaire was developed, and development dates of the ICMI differ. The only apparent reported ICMI mean in a clinical population was 14.7 ($SD = 7.3$) (Levin, Sirof, Simeon, & Guralnik, 2004). Levin et al. (2004) noted that in this depersonalisation disordered sample the mean fell at the lower end of the medium fantasy proneness range. Non-clinical population means reportedly range from 9.29 ($SD = 5.2$) (Levin et al., 2004) to 30.0 ($SD = 6.9$) (Gow, Hutchinson, & Chant, 2009; Green & Lynn, 2008, 2010). Inconsistent reports exist regarding sex differences in scores on the ICMI. Some argue that females score significantly higher on the ICMI than males (Gow et al., 2009; Green & Lynn, 2011; Myers, 1983), whereas others reported no sex differences (Green & Lynn, 2008; Levin et al., 2004; Rauschenberger & Lynn, 1995, 2002/2003).

CEQ. Having difficulty locating not only psychometric information, but also the various versions of the ICMI, Merckelbach, Horselenberg, and Muris (2001) developed the second most relied upon measure of fantasy proneness—the *Creative Experiences Questionnaire*. The CEQ is a succinct 25-item self-report instrument, with items alluding to profound fantasising, developmental antecedents, and consequences of fantasising. Clinical population (e.g., dissociative disorders) means have been reported to range from 7.6 ($SD = 4.7$) to 11.8 ($SD = 5.1$) (Huntjens, Peters, Woertman, Bovenschen, Martin, & Postma, 2006; Merckelbach, Campo, Hardy and Giesbrecht, 2005). Non-clinical population means reportedly range from 4.2 ($SD = 3.5$) to 13.2 ($SD = 4.4$) (Geraerts, Merckelbach, Jelicic, Smeets, & Van Heerden, 2006; Giesbrecht & Merckelbach, 2006; Merckelbach et al., 2001; Merckelbach, Rassin, & Muris, 2000; Muris, Merckelbach, & Peeters, 2003). Inconsistent reports exist regarding sex differences in scores on the CEQ. Some reported females obtaining higher scores (Muris et al., 2003; Sánchez-Bernardos & Avia, 2004), whereas Merckelbach et al. (2001) reported no sex differences.

Prevalence of fantasy proneness. Wilson and Barber (1983) proposed that the prevalence of those high in fantasy proneness is 4%. However, there was no mention in which population this reflects. In the research literature, this figure is commonly used as a cut-off point for high (upper 4%) and low (lower 4%) fantasy prone individuals in their respective sample (Lynn & Rhue, 1986; Rauschenberger & Lynn, 1995). Consequently, differences in the literature exist as to what scores of the ICMI and CEQ constitute high fantasy proneness.

Methodological Concerns Associated with Fantasy Proneness

Concerns about the selective sample, selection procedure, failure to standardise the administration of tests, interviewer bias, and the absence of an appropriate comparison group in the original study have been raised in the past (Lynn & Rhue, 1986). All these factors question the validity of the construct and compromise the conclusions drawn not only from Wilson and Barber's (1983) study, but in subsequent research also.

A study by Rhue and Lynn (1987) investigated the construct validity of the ICMI. Their emphasis was on the developmental antecedents of fantasy proneness and involved 53 university students divided into high, medium and low fantasy prone groups. Although their reported results suggested that scores between the three groups were significantly different from each other, closer examination indicated that high fantasy prone individuals were only slightly distinguishable from comparison groups on a range of responses. The most noticeable difference was in reported frequency of childhood punishment, with high fantasy prone individuals reporting higher levels of punishment compared to medium and low fantasy prone individuals. However, only two high fantasy prone subjects reported punishment severe enough to be considered abusive. Although the authors argued that their findings provided strong support for the construct validity of fantasy proneness, caution must be considered, especially given the small sample size and the limited emphasis on developmental antecedents only.

Selection issues. The original study conducted by Wilson and Barber (1983) investigating the fantasy proneness construct involved all women. Women in the sample were selected from a number of places: two were

currently receiving treatment from the researchers, 25 were from a nearby college and were informed that they would receive payment to be interviewed about their memories, imagination ability and creativity, five were therapists working at a local hospital; five had performed in the top percentile of the CIS in previous hypnotic studies conducted by Wilson and Barber, and 15 individuals were from previous hypnotic workshops. With the exception of two, all women were university educated. Some held a Ph.D. or Master's degree, the majority in the area of psychiatry, psychology or counselling. The remaining 25 women recruited from the college were offered an incentive to participate in a study of which they knew the purpose. There are a number of issues that arise with this sample selection, namely that all participants were female. Longitudinal research has found that females reported feeling more comfortable with revealing their inner experiences (Giambra, 1999/2000). Also, the researchers had professional connections with more than half of the participants due to their shared interest in hypnotisability. This type of selection bias may limit the generalizability of the findings.

Failure to standardise hypnotic testing. Performance on the CIS and BSS indicated the level of interaction participant's received from Wilson and Barber (1983). Those who performed to the researcher's expectations received further hypnotic testing and lengthier interviews, compared to those who performed below expectations. Failure to standardise testing and interview sessions may have increased the risk of interviewer bias and, due to inconsistencies in delivery, limited the meaningfulness of the findings (Mitchell & Jolley, 2004). Much of the original study contains qualitative reports from the women, which then appear to be reflected in the ICMI items.

Except for hypnotisability, Wilson and Barber did not appear to use valid and/or reliable instruments to measure the women's reported characteristics.

Interviewer bias. Many problems can arise when conducting interviews of a personal nature; interviewer bias is one. Interviews conducted by Wilson and Barber (1983) ranged from 4 to 32 hours, opening up the possibility that the interviewers may have non-verbally and/or verbally influenced the length and direction of responses. Interviewers may have been friendlier and more engaged towards those who were reporting the characteristics they were seeking, or, the respondent may have tried to respond in a way that would make the interviewer think more highly of them. The differences in responses between the two groups (*excellent hypnotics vs. non-excellent hypnotics*) may have been influenced in part by participants having been informed of their hypnotic abilities prior to entering the interview, thus responding in a biased way to impress interviewers (Mitchell & Jolley, 2004; Shadish, Cook, & Campbell, 2002).

No appropriate comparison group. The goal of the original study was focused on investigating a set of unique characteristics in those thought to be more hypnotizable (Wilson & Barber, 1983). The comparison group comprised those who had not passed the hypnotisability tests. This comparison groups seems somewhat inappropriate given both participant and interviewer were aware of the nature of the study. The comparison group were no doubt aware that the experiences they endorsed were not necessarily what the researchers were interested in, which may have biased their responses.

Research in the Field of Fantasy Proneness

Subsequent research has utilised the ICMI and CEQ to elaborate on many of the unique traits reported to characterise fantasy proneness. However, inconsistent findings, dubious methodological standards and a lack of statistical support in the relationship strength between fantasy proneness and a range of other phenomena have been found. Such phenomena include, hypnotic abilities (Braffman & Kirsch, 1999; Green & Lynn, 2008; Lynn & Rhue, 1988; Terhune, Cardena, & Lindgren, 2010), hallucinatory abilities (Giambra, 1999/2000; Laroi, DeFruyt, Van Os, Aleman, & Van der Linden, 2005), absorption (Braffman & Kirsch, 1999; Green & Lynn, 2011; Kihlstrom, Glisky, & Angiulo, 1994; Levin & Young, 2001/2002; Lynn & Rhue, 1986, 1988), imagery (Levin & Young, 2001/2002), paranormal beliefs and experiences (Bartholomew, Basterfield, & Howard 1991; French, Santomauro, Hamilton, Fox, & Thalbourne, 2008; Gow, Lang, & Chant, 2004; Hough & Rogers, 2007/2008; Irwin, 1990; Lawrence, Edwards, Barraclough, Church & Hetherington, 1995; Merckelbach et al., 2001; Parra, 2006; Spanos, Cross, Dickson, & DuBreuil, 1993), and aversive childhood experiences (Geraerts et al., 2006; Pekala, Kumar, Ainslie, Elliot, Mullen, Salinger, & Masten, 1999/2000; Rauschenberger & Lynn, 1995; Rhue & Lynn, 1987; Sanchez-Bernardos & Avia, 2004). It appears that rather than assisting in a greater understanding of the fantasy proneness construct, research has highlighted the conceptual tension and confusion surrounding the construct.

Scores on the ICMI and CEQ have been found to be associated with a number of factors not discussed in the original description of fantasy proneness. Some of which include expressions of creativity and talent (Dunn,

Corn, & Morelock, 2004; Fuchs, Kumar, & Porter, 2007; Hill & Clark, 1998; Lack, Kumar, & Arevalo, 2003; Merckelbach et al., 2001; Thomson & Jaque, 2011), the personality traits Agreeableness, Neuroticism, and Openness to experience (Sánchez-Bernardos & Avia, 2004), personality disorders (Merckelbach, et al, 2000; Merrit & Waldo, 2000; Rauschenberger & Lynn, 1995; Sanchez-Bernardos & Avia, 2006; Waldo & Merrit, 2000), major depression (Rauschenberger & Lynn, 1995), schizophrenia (Merckelbach et al., 2005), and dissociation (Geraerts et al., 2006; Huntjens et al., 2006; Levin & Spei, 2004; Merckelbach & Muris, 2001; Merckelbach et al., 2005; Muris et al., 2003; Pekala et al., 1999/2000; Rauschenberger & Lynn, 2002/2003; Silva & Kirsch, 1992; Waldo & Merrit, 2000). The reported association between fantasy proneness and dissociation will be discussed in more depth below.

Many of the aforementioned studies investigating the correlates of fantasy proneness rely typically on samples of introductory psychology or dramatic arts students, of which often consist of entirely females (Merckelbach et al., 2000; Schelleman-Offermans & Merckelbach, 2010). Although student samples are convenient for recruitment, and overrepresentation of females reflects the demographic nature of psychology courses, results are difficult to generalise.

Many of these associations with fantasy proneness have been attributed to item overlap, constructs tapping into similar dimensions, and a positive response bias towards unusual or bizarre items (Merckelbach et al., 2000; Merckelbach et al., 2001; Merckelbach, Muris, Horselenberg, & Stougie, 2000; Pekala, Angelini, & Kumar, 2001). Until further investigations have been conducted on the instruments that measure fantasy proneness,

conclusions from research utilising the ICMI and CEQ may be somewhat limited (Dalenberg et al., 2012; Klinger et al., 2009; Lynn & Rhue, 1986).

Is fantasy proneness adaptive or maladaptive? Although many maintain that the shift of attention from external to internal stimuli (Singer, 1966) is an essential and healthy functional aspect of daily life (Colman, 2006; Halderman, Zelhart, & Jackson, 1985; Killingsworth & Gilbert, 2010; Mason, Norton, Van Horn, Wegner, Grafton, Macrae, 2007; Raichle, Macleod, Synder, Powers, Gusnard, & Shulman, 2001), some maintain that an extreme internal focus and an inability to control fantasising is maladaptive. Fantasy proneness has been linked to a low tolerance for frustration, diminished self-efficacy, and, as noted, psychopathology (Brewin, Gregory, Lipton, & Burgess, 2010; Geraerts et al., 2006; Greenwald & Harder, 1994, 1995, 1997; Levin & Spei, 2004; Merckelbach et al., 2005; Merckelbach & Muris, 2001; Merckelbach et al., 2000; Merrit & Waldo, 2000; Muris et al., 2003; Pekala et al., 1999/2000; Rauschenberger and Lynn, 1995, 2002/2003; Sánchez-Bernardos & Avia, 2006; Silva & Kirsch, 1992; Waldo & Merrit, 2000). Not all those who have a propensity to engage in fantasy are, or could be diagnosed with a psychological disorder, but a subset of the more extreme fantasiers are potentially at risk (Merrit & Waldo, 2000). Lynn and Rhue (1988) estimated between 20% and 30% of fantasy prone individuals display an indication of psychopathology and/or maladjustment.

Function of fantasy proneness. Wilson and Barber (1983) claimed that a deep involvement in fantasy functions as a learned psychological mechanism to cope with aversive realities. However, evidence against the use of fantasy as an affective coping strategy, has been emphasised by the

association between increased scores of fantasy proneness and psychopathology (Waldo & Merrit, 2000). McCrae and Costa (1986) also argued that escaping into fantasy and withdrawal techniques of coping fail to encourage adjustment and lead to poorer outcomes. Regardless of how effective fantasy is as a form of coping, the ICMI does not include any item that assesses involvement in fantasy as a form of coping. Although the ICMI and CEQ were to necessarily designed to assess the function of fantasising, Wilson and Barber (1983) claim that high levels of fantasy involvement is a means to cope with aversive realities. No items of the ICMI appear to assess fantasy as a means of coping with adversities. The CEQ includes one item that assesses involvement in fantasy as a form of coping.

Content of fantasy. Research has found that fantasy content greatly influences the consequences of fantasizing, and may provide more of an understanding of the adaptive or maladaptive features of fantasy proneness. Fantasies with a negative theme (e.g., shame, power, revenge, death, illness, withdrawal, and suffering) are associated with a greater risk of psychopathology, whilst fantasies with a positive theme (e.g., success, admiration, enjoyment) are less associated with risk (Greenward & Harder, 1994, 1995, 1997; Holmes, Lang, & Deepro, 2009; Brewin et al., 2010). Both the ICMI and CEQ lack items that assess the content of fantasies. Although the ICMI and CEQ were not necessarily designed to assess the content of fantasies, knowledge of content themes maybe beneficial to understanding the nature of psychopathological associations with fantasy proneness (Brewin et al., 2010; Conway, Meares, & Standart, 2004; Giambra, 1999/2000).

Description of Dissociation and a Brief Overview of the Association with Fantasy Proneness

Of all the phenomena that fantasy proneness has been associated with, perhaps the most researched, yet also most controversial, is dissociation.

Definition of dissociation. The term dissociation is used to describe a complex range of traits, states and symptoms that have been extensively studied within the research literature. More recently, dissociation has been defined as, “an experienced loss of information or control over mental processes that, under normal circumstances, are available to conscious awareness, self-attribution, or control, in relation to the individual’s age and cognitive development” (Cardeña & Carlson, 2011, p.246). This definition encompasses the various forms of dissociation, namely psychological detachment (characterized by a sense of separation from self and/or others) and psychological compartmentalization (characterized by ones psychological processes lacking integration) (Holmes et al., 2005). This definition also allows for the labelling of normal everyday dissociative experiences that cause little or no distress such as forgetfulness, through to the more extreme dissociative experiences which may cause severe distress and impairment to daily functioning (Cardeña & Carlson, 2011). It is beyond the scope of this paper to go into the many interesting and controversial facets of dissociation. This paper will however offer an overview of the reported relationship between fantasy proneness and dissociation, and attempt to explore the reasons and implications of this association.

Aetiology of dissociation. Unlike fantasy proneness, there is a historical (Middleton, Dorahy, & Moskowitz, 2008; Van der Kolk & Van der

Hart, 1989), empirical (Cardeña & Spiegel, 1993; DiTomasso & Routh, 1993; Eisen & Carlson, 1998; Foote, Smolin, Kaplan, Legatt, & Lipschitz, 2006; Macfie, Cicchetti, & Toth, 2001; Naring & Nijenhuis, 2005; Richardson, Murray, & Bates, 2007), cross-cultural (Xiao et al., 2006) and widely accepted view that dissociative experiences are generally the result of various traumatic experiences (Cardeña & Spiegel, 1993; Cardeña & Weiner, 2004; Dalenberg et al., 2012; Gershuny & Thayer, 1999), of which symptoms can occur during, and for many months following (Cardeña & Carlson, 2011). It is thought that dissociation functions as a psychological defence mechanism against internal or external sources of actual or perceived threat (Dorahy, 2006; Van der Kolk & Van der Hart, 1989). Although dissociative symptoms may persist for some after trauma, for the majority of individuals, they generally subside over time (Cardeña & Spiegel, 1993). Furthermore, not all those who experience dissociative symptoms develop a trauma-related disorder (Bremner, 2010; Cardeña & Carlson, 2011).

The reported association between dissociation and fantasy

proneness. Silvia and Kirsch (1992) first reported a correlational link between fantasy proneness and dissociation ($r = .42$). Since then, numerous authors have also reported correlational associations in both clinical and non-clinical populations, ranging from .42 to .72 (Geraerts et al., 2006; Huntjens et al., 2006; Levin & Spei, 2004; Merckelbach & Muris, 2001; Merckelbach et al., 2005; Muris et al., 2003; Pekala et al., 1999/2000; Rauschenberger & Lynn, 2002; Silva & Kirsch, 1992; Waldo & Merrit, 2000). Studies researching the fantasy proneness and dissociation link utilise the ICMI or CEQ as measures of fantasy proneness and typically the *Dissociative Experiences Scale* (DES:

Bernstein & Putnam, 1986), a measure of frequency of dissociative experiences. Of note is the mean score of 9.9 ($SD = 4.4$) on the CEQ found in a Dissociative Identity Disorder (DID) population (Huntjens et al., 2006). This score falls within the range of scores found in non-clinical samples (Geraerts et al. 2006; Giesbrecht & Merckelbach, 2006; Merckelbach et al., 2001; Merckelbach et al., 2000; Muris et al., 2003).

Why is the association between fantasy proneness and dissociation controversial? The association between fantasy proneness and dissociation is controversial, because fantasy proneness has been used to construct an alternative to the trauma – dissociation link, which states that traumatic experiences lead to dissociative problems. This alternative to the trauma model is referred to as the sociocognitive model (Spanos, 1994).

The Sociocognitive model. The sociocognitive model implies that DID and possibly other dissociative disorders are iatrogenically created through psychotherapy, social expectancies, media references and learning rather than through trauma. Furthermore, supporters of the sociocognitive model suggest that the cognitive mechanisms related to dissociation, are more consistent with the socio-cognitive model as opposed to the trauma model (Giesbrecht, Lilienfeld, Lynn, Merckelbach 2008, 2010; Lilienfeld et al., 1999; Lynn, Lilienfeld, Merckelbach, Giesbrecht, & Van der Kloet, 2012; Spanos, 1994).

The Fantasy model. Extending from the sociocognitive model, the fantasy model proposes that dissociation is related to fantasy proneness, suggestibility and cognitive distortions which create a positive response bias and reality monitoring difficulties. These cognitive features are actually argued to produce elevated reports of (feigned) trauma. Thus this model

subverts the trauma model, by suggesting that via processes like fantasy proneness, dissociation leads to trauma reporting (Dalenberg et al., 2012; Giesbrecht et al., 2008, 2010; Merckelbach et al., 2005).

The great debate. Proponents of the fantasy model argue that the theory of trauma directly causing dissociation is “ubiquitous” (Giesbrecht et al., 2008, p.618) in the literature, due to a tendency to present as a simple and uncontroversial link. Furthermore, central to the argument of both the sociocognitive and fantasy models, is there is a lack of objective data available that supports the trauma – dissociation link. With some fantasy proneness theorists arguing that the relationship between trauma and dissociation is weak and typically only appears when subjective self-report measures are utilised (Dalenberg et al., 2012; Giesbrecht et al., 2008, 2010; Kihlstrom, 2005; Spanos, 1994).

Yet proponents of the trauma model challenge these views by arguing the following points (a) the correlations between trauma and dissociation are not weak and have been studied and confirmed in a range of populations, unlike fantasy proneness, (b) subjective measures appear to be the norm in psychology, and by any means reports of fantasy are far from objective, (c) lack of conceptual clarifications, especially in regards to the fantasy proneness construct and measures pose numerous difficulties, (d) viewing a memory as entirely false is quite different to viewing the memory as inaccurate, and (e) how it would be a shame to have to dismiss the large amount of research on the link between trauma and dissociation, in lieu of research that presents a relatively weak case that reports of trauma are merely the result of fantasy

(Bremner, 2010; Dalenberg et al., 2012; Gleaves, 1996; Gleaves & Williams, 2005).

Understanding the association between fantasy proneness and dissociation. Neatly summarising the research literature, Dalenberg et al., (2012) propose that the association between fantasy proneness and dissociation can, at best, be explained by item overlap, shared conceptual foundations and spurious correlations due to trauma being related to both constructs.

Item overlap. Item overlap with measures of related constructs, can contribute to tautological findings. For example, four ICMI items, “when I was a child or teenager, sometimes I was accused of lying when I was just reporting what I had seen”, “when I was a child or adolescent, it was difficult for me to determine whether something had happened or whether I imagined it happened”, “I have had an out-of-the-body experience: that is, I have felt as if “I” (my mind or my spirit) left my body and existed for a while independently of my body”, and “I have at times written poems, inspirational messages, stories or songs, etc., and I did not feel it was I who was creating them”, overlap with the DES items “Some people have the experience of being accused of lying when they do not think that they have lied”, “Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed it”, “Some people have the experience of feeling that their body does not seem to belong to them” , and “Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing”, respectively. In terms of the CEQ, its developers note that there is overlap

between it and DES item content (Merckelbach et al., 2001). The two CEQ items being “I often confuse fantasies with real memories” and “I sometimes feel that I have an out of body experience” clearly overlap with the DES items “the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them” and “the experience of feeling that their body does not seem to belong to them”. Giesbrecht et al. (2010) claim that even after removal of these overlapping items, correlations between fantasy proneness and dissociation still hold. Researching the contribution that item overlap may have would be beneficial in further understanding the fantasy proneness and dissociation link.

Shared conceptual foundations. Tapping into the same dimensions may also explain the correlational associations between fantasy proneness and dissociation. Absorption is the most commonly noted concept related to both constructs. Factor analytic studies involving measures of absorption reported the considerable dimensional overlap with measures of dissociation, especially for the DES dimension of imaginative involvement/absorption (Carleton, Abrams, & Asmundson, 2010; Holtgraves & Stockdale, 1997; Jamieson, 2005).

It is also of note that measures of both fantasy proneness and dissociation have reported associations to the personality traits Neuroticism and Openness to experience (Kwapil, Wrobel, & Pope, 2002; Sánchez-Bernardos & Avia, 2004), and schizotypy (Gleaves & Ebernez, 1995; Irwin, 2001; Merckelbach et al., 2000; Merrit & Waldo, 2000; Rauschenberger and Lynn, 1995; Sánchez-Bernardos & Avia, 2006; Waldo & Merrit, 2000). There is a gap in the research investigating the underlying dimensions of fantasy

proneness and dissociation measures, and whether any dimensional overlap exists. The only known factor analytic study (Klinger et al., 2009) in which researchers investigated the two constructs in separate factor analyses included the *Creative Experiences Scale* (CES: Goldberg, 1999). Although the CES is a revision of the DES, differences do exist, and the majority of the research reporting the fantasy proneness - dissociation link utilises the DES.

Shared reports of trauma. Both fantasy proneness and dissociation have been cited as coping mechanisms when faced with aversive experiences (Cardeña & Spiegel, 1993; Cardeña & Weiner, 2004; Donahue & Tuber, 1993; Rhue & Lynn, 1987; Watson & Hubbard, 1996; Wilson & Barber, 1983). Although, severe trauma such as combat, incest, and rape have been linked to dissociation, less severe forms of trauma such as emotional maltreatment and negative family environment may have a significant developmental impact (DiTomasso & Routh, 1993; Nash, Hulse, Sexton, Harralson, & Lambert, 1993; Simeon, Guralink, Schmeidler, Sirof, & Knutelska, 2001). Less severe forms of trauma seem to parallel the aversive experiences that were described in the original study on fantasy proneness (Wilson & Barber, 1983). Lynn, Rhue and Green (1988) (as cited in Pekala et al., 2001) noted that although they are unsure if fantasy proneness developed prior to or after a traumatic experience, dissociation could be understood as an “imagination – based cognitive strategy” (p. 207) (Rhue & Lynn, 1987). Future research investigating the link between fantasy proneness and trauma could be fruitful in understanding the overlap and aetiology of the two constructs.

Factor Analytic Investigations of the ICMI and CEQ and Descriptions of their Items

Despite, first being suggested nearly three decades ago (Hough & Rogers, 2007/2008; Lynn & Rhue, 1986), only four studies have investigated the factor structure of either the ICMI or CEQ.

Factor analyses on the ICMI. The first reported factor analysis on the ICMI was conducted by Myers (1983) on a related form of the ICMI tailored for 1,337 children and adolescents aged between 8 and 18 years. The children's form (ICMIC) included 48 of the original items; however, the first four items were reported as "warm up" (p.84) questions and omitted from final analyses. Myers reported that following orthogonal rotation, 14 factors accounted for 49% of the total variance, the largest factor accounted for 3.14% of the total variance. The 14 factors were, (1) make-believe world, (2) childhood activities, (3) hypnosis, (4) cartoons, (5) compulsion to do something, (6) ability to make-believe, (7) vivid memories of early years, (8) psychic experiences, (9) mental adventures, (10) fantasised sensory perception, (11) philosophizing, (12) rebirth, (13) fairy tales, and (14) vivid pretending. Factor four and seven had only one item loading on each (loadings .30 and greater), and factors 3, 6, 10, 11, and 12 had only two. No information was provided on data consideration prior to analysis, and all factors with an eigenvalue greater than 1.0 appear to have been retained.

Klinger et al. (2009) conducted what is thought to be the first factor analysis on the original 52 item ICMI (Wilson & Barber, 1983). Initial principal components analysis on ICMI scores of 232 university students (170 female, $M_{age} = 20.6$ years) in their study indicated 18 factors with eigenvalues greater than 1.0, of which accounted for 64% of the total variance, with the largest factor accounting for 14% of the total variance. Klinger et al. reported

that the 18 factors were difficult to characterise, and further analyses suggested a two factor solution was most interpretable. The first factor had seven items with loadings .50 or higher and was related to vivid imagery, and potentially pathological daydreaming. This factor positively correlated with all three subscales (absorption, amnesia and depersonalisation) of the CES, as well as all nine subscales of the Symptom Checklist – 90 – R (SCL; Derogatis, 2003), an instrument used to screen for psychological disorders. Factor two had six items with loadings .50 or higher and was related to particular enjoyment in imagining and daydreaming. Although the authors noted that factor two was unrelated to psychopathology, the factor still correlated significantly with absorption and depersonalisation subscales of the CES, and fell marginally short of significance with the taxon subscale of the same measure.

Klinger et al. (2009) concluded that the ICMI is too complex to establish as a conceptually consistent measure, and conclusions based on the full-scale cannot produce sound statements in regards to an individual's propensity to fantasize. Klinger et al. further concluded that to affirm that the ICMI measures fantasy proneness, may be misleading.

Terhune et al. (2010) recently used the two factor ICMI with 64 individuals (48 female, $M_{age} = 23.5$ years) in a study of the relationship between dissociation and hypnosis. Results indicated factor one (pathological fantasy) of the ICMI is related to higher levels of hypnotic suggestibility and dissociation, compared to factor two (imaginative involvement). The findings of Terhune et al. (2010) support Klinger et al.'s (2009) claim that factor one of the ICMI is related to psychopathology, whereas factor two is not.

Factor analyses on the CEQ. Following the development of the CEQ, Merckelbach et al. (2001) conducted analyses investigating the factor structure of the measure. A principal components analysis was performed on CEQ scores of 332 high school students and university students and staff (172 females, $M_{age} = 22.7$ years). Initial analysis indicated nine factors with an eigenvalue greater than 1.0, which accounted for 56% of the total variance, the largest factor accounting for 15%. However, following examination of the scree plot, Merckelbach et al. decided to go for a single-factor solution, despite the factor only accounting for 15% of the total variance. Merckelbach et al. reported that as a single-factor measure the CEQ had adequate internal consistency (*Cronbachs' alpha* = .76) with a non-clinical sample.

In a sample of 495 Spanish students aged between 14 to 18 years (211 females, $M_{age} = 15$ years), Sàncchez-Bernardos and Avia (2004) also examined the factor structure of the CEQ. Following the removal of five items (6, 7, 16, 17 & 24) due to their corrected item total correlations being lower than 0.15, a principal components analysis (varimax rotation) on the CEQ scores was conducted. Initial analysis indicated a six-factor solution with eigenvalues greater than 1.0, accounting for 48% total variance. However, following examination of the scree-plot, Sàncchez-Bernardos and Avia decided on a three-factor solution which accounted for 31% of the total variance. Factor one had nine items with loadings .30 and higher and was related to vividness-intensity of fantasies. Factor two was related to fantasy of escape and factor three was related to make-believe/suggestibility.

Summary of factor analyses of the ICMI and CEQ. Little attention has been given to investigate the factor structures of the instruments

measuring fantasy proneness, despite the great contribution factor analysis can have on understanding a construct. Evidence that an instrument measures what it purports to measure is essential to empirically studying the given construct (Matasunaga, 2011; McKelvie, 1994). Within the limited research there appears to be conflicting findings regarding the factor structure of the ICMI and CEQ. What can be summarised is, that despite the developers of the ICMI and CEQ suggesting the instruments measure a unidimensional construct, the fantasy proneness construct is in fact more likely to be multidimensional, especially given the relatively small amount of variance accounted for the single factors. Many screening instruments meant for measuring complex concepts may be multidimensional, and it is not uncommon for screening instruments to have reported inconsistencies of dimensionality (Dalenberg et al., 2012). However, what distinguishes fantasy proneness is that the multiple factors found for the ICMI and the CEQ do not appear to be measuring the same construct, and if they are not in equal ways (Dalenberg et al., 2012; Klinger et al., 2009; Sánchez-Bernardos & Avia, 2004).

Limitations of the ICMI and CEQ items. Overall there appears to be a lack of items included in fantasy proneness measures that assess the reported characteristics of the construct. Moreover, concerns regarding the nature of some items included in the ICMI and CEQ are evident.

Confusing reality with fantasy. Central to the arguments made by fantasy proneness theorists, is those who score high in fantasy proneness have reality monitoring difficulties (Giesbrecht et al., 2008, 2010). Wilson and Barber (1983) reported that 85% of their fantasy prone sample had difficulties in differentiating memories of fantasies with memories of actual events. Yet

the ICMI and CEQ each only contain one item that assesses reality monitoring difficulties.

Hypnotisability. Susceptibility and a positive attitude towards hypnosis is another central component of the fantasy proneness construct (Wilson & Barber, 1983). The ICMI contains two items related to hypnosis, however each item is worded in such a way that makes it difficult to interpret the response (e.g., “I would like to experience hypnosis (or I have enjoyed experiencing hypnosis”). The CEQ contains no items related to hypnotisability.

Developmental antecedents. Wilson and Barber (1983) reported four prominent patterns emerging in childhood related to fantasy proneness (a) encouragement to fantasize; (b) fantasising due to loneliness or isolation; (c) fantasising to escape from a negative environment; and (d) a special life situation, such as beginning ballet, music or art lessons by the age of 2, 3, 4 years. One item, relating to developmental antecedents is included in the ICMI and three in the CEQ. In general, instead of items assessing the prominent childhood experiences, it appears that the ICMI and CEQ contain items more related to imaginary companions and belief in fairy-tale characters

Irrelevant questions. Some items within the ICMI appear to have questionable relevance to what has been described as characterising fantasy proneness. Items one to four, for example, ask whether as a child the respondent enjoyed active movement such as running and jumping, swinging, some kinds of music, and cartoons. These are not the four items that Myers (1983) state are the “warm up” questions in the ICMIC, as item four constitutes the entire factor in the same study labelled “cartoons”. Irrelevant

questions may explain why little total variance has been reported in studies examining the factor structure of the ICMI.

Inclusion of long statements and limited response options. Many ICMI items that are specific to identifying fantasy proneness characteristics are worded in a way that assess two variants (e.g., “when I was a child, I would have enjoyed or I did enjoy taking ballet dance lessons”) or are incredibly long; one item for example contains 92 words. Longer statements can confuse or overwhelm respondents, and increase the risk of item misinterpretation (Mitchell & Jolley, 2004). These items are potentially misleading and make the interpretability of responses difficult.

Furthermore, both the ICMI and CEQ require dichotomous responding. This form of responding may increase the risk of under and/or over representation of reported experiences. Many of the items are of an ambiguous nature and not suited to dichotomous responding, making responses even more polarised. Furthermore, the lack of an objective standard with which one can compare their own imaginative involvement and experience, hinders the conclusions that can be made from responses (Jamieson, 2005; McAvinue & Robertson, 2006; Pearson, Rademaker, & Tong, 2011).

Overall Conclusions

A review of the literature implies that Wilson and Barber’s (1983) fantasy proneness construct lacks a clear conceptual and operational definition (Klinger et al., 2009; Sánchez-Bernardos & Avia, 2004), with original methodology weak (Lynn & Rhue, 1986). Furthermore, concerns have been raised as to the validity and reliability of the ICMI and CEQ. Despite these concerns, the ICMI and CEQ have been associated with a number of

constructs. The most controversial association being with dissociation, and the more recent arguments presented in favour for the fantasy model. The reviewed literature strongly suggests however, that until methodological and conceptual clarification of the fantasy proneness construct and related instruments are achieved, conclusions and associations based on the ICMI and CEQ may be somewhat misleading (Dalenberg et al., 2012; Klinger et al., 2009; Lynn & Rhue, 1986).

Current Study

As outlined, further research is needed on the methodological and conceptual characteristics of the fantasy proneness construct. Especially in light of the proposed fantasy model (Dalenberg et al., 2012). Despite the important contribution to the construct validity of fantasy proneness, limited research exists that investigates the factor structure of the two instruments purported to measure it. The aim of the current study was to conduct a factor analysis on the ICMI, CEQ and DES separately and simultaneously in the same study. A separate factor analysis on each of the three measures provides further understanding of their underlying dimensions. A simultaneous factor analysis on factor scores of the ICMI, CEQ and DES assists in understanding any potential dimensional overlap between fantasy proneness and dissociation. Examining the factor structure of the ICMI and CEQ will provide insight into the fantasy proneness construct, and is important for several reasons: (a) to further understand what the ICMI and CEQ are actually measuring and how; (b) to provide an understanding of the underlying dimensions of this personality trait; (c) to provide support for previous findings; (d) to provide further psychometric information for the ICMI and CEQ; and (e) to further

investigate the reported link between fantasy proneness and dissociation and constructs that have been previously associated (such as the “big five” personality traits). Given that fantasy proneness has been attributed to positive response bias, a measure of socially desirable responding was also included in the study to determine whether participants were responding in an inflated manner. The following research questions were addressed by this research:

1. Are measures of fantasy proneness multidimensional?
2. Do dimensions of the ICMI, CEQ and DES conceptually overlap?
3. What links are there between fantasy proneness, dissociation and related constructs?

In line with previous research, it was hypothesised that the ICMI and CEQ are multidimensional instruments.

Method

Participants

Participants in this study were undergraduate students from the psychology department of a large New Zealand University. Undergraduate students were used in this study because the majority of studies of fantasy proneness use student populations, therefore, this population of individuals was thought most suitable to examine the factor structure of measures.

Participants were recruited through either a first year psychology participant pool, poster advertisements placed around the department (see Appendix A) or via recruitment email (see Appendix B) circulated to all 2nd and 3rd year - level psychology students by department administrators. Each volunteer had his or her name cross-checked to ensure participants were not recruited twice, although no identifying information was able to be traced to their responses.

The study was titled “Early Childhood Experiences and Personality”. This title has been used in previous studies (Lynn & Rhue, 1986; Rhue & Lynn, 1987) and broadly defines the study’s content. The broadly defined title was aimed to minimise the possibility that participants did not volunteer their participation out of particular interest in the subject or respond in a particular way.

In total 223 students voluntarily participated. Of this sample, 172 participants completed the web-based questionnaires individually in a departmental laboratory. Of these 172 participants, 146 were recruited through the participant pool and received course credit as an incentive to participate - the remaining 26 participants were recruited via poster advertisements and were offered a chocolate bar and entry into the draw to win one of four \$50 local shopping centre vouchers. The additional 51 participants completed the study outside of the laboratory, after responding to a recruitment email and were also offered a chocolate bar and entry into the prize draw. Incentives were provided whether participants completed the questionnaires or not. It was made clear to all participants that although their responses were electronically collected and assigned a code, the code could not be traced back to the student. Once the data were collated it was apparent that six students did not complete all of the six questionnaires. For one student, a network server crash on campus explained this, for the remaining five it was unknown, however not clicking the ‘submit responses’ button may offer an explanation.

In total, data were available for 217 participants. Listwise deletion method was used to deal with missing data, thus reducing the final sample size used for analyses to 193 participants. Of the 193 participants, 67% ($n = 130$)

were female and 33% ($n = 63$) were male. The ages of participants ranged from 17 years to 45 years, with a mean of 21 years and standard deviation of 4.48. In terms of ethnicity, 74% ($n = 143$) identified as New Zealand European, 6% ($n = 12$) as Māori, and 3% ($n = 6$) as Chinese. The remaining 18% indicated their ethnicity as ‘other’, of which included American, Belgian, Bengali, British, Canadian, Egyptian, Filipino, German, Iranian, Irish, Korean, Libyan, Malay, Moldavian, South African, and Swiss. Age, gender and ethnicity were the only demographic information collected during this research, in an attempt to ensure that as little personally identifying information was collected.

Measures

In addition to three brief questions pertaining to demographic information (sex, age, and ethnicity), six questionnaires were used in this study which measured: (a) fantasy proneness, (b) imagery, (c) dissociation, (d) personality, and (e) desirable responding. Questionnaires were presented online by Qualtrics Survey Software and prefaced with instructions of how to respond to the items of each scale.

Fantasy Proneness. The Inventory of Childhood Memories and Imaginings (ICMI; Wilson & Barber, 1983) (see Appendix C) includes items such as “When I was playing make-believe games as a child, I usually would imagine so vividly that what I pretended seemed real to me” and “At times, when I was a child or adolescent, it was difficult for me to determine whether something had actually happened or whether I had imagined it happened”. Participants respond in a dichotomous (yes/no) way; yes responses are summed to obtain a total score for fantasy proneness. Higher scores indicate

higher levels of fantasy proneness. In a sample of university students, the ICMI was reported to have adequate internal consistency (*Kuder-Richardson 20* = .89) and test-retest reliability ($r = .87$ to $.89$) (Lynn & Rhue, 1986). In the current study, internal consistency of the scores as measured by KR-20 was .80.

The Creative Experiences Questionnaire (CEQ; Merckelbach, Horselenberg, & Muris, 2001) (see Appendix D) includes items such as, “As a child, I could very easily identify with the main character of a story and/or movie” and “Many of my fantasies have a realistic intensity”. Participants respond in a dichotomous (yes/no) way, yes responses are summed to obtain a total score of fantasy proneness. Higher scores indicate higher levels of fantasy proneness. In samples of university students, the CEQ shows adequate reliability in terms of internal consistency as measured by KR-20 = .68 (Giesbrecht & Merckelbach, 2006), and test-retest (6 weeks) reliability was measured at $r = .95$ (Merckelbach, Horselenberg, & Muris, 2001). The CEQ demonstrates concurrent validity with the original measure of fantasy proneness (ICMI) (Merckelbach, Wiers, Horselenberg, & Wessel, 2003) and measures that tap related constructs such as absorption, as measured by the Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974) (Levin & Young, 2001/2002). In this study internal consistency of the scores as measured by KR-20 was .77.

Imagery. The Short Imaginal Processes Inventory (SIPI; Huba, Singer, Aneshensel, & Antrobus, 1982) (see Appendix E) is a 45-item, self-report measure which assesses Positive constructive daydreaming, Guilt/fear of failure daydreaming, and Poor attentional control. Items include “A really

original idea can sometimes develop from a really fantastic dream”, “In my fantasies a friend discovers I have lied”, and “I am the kind of person whose thoughts often wander”. Participants rate statements related to images, dreams and daydreams on a five-point scale ranging from “definitely untrue or strongly uncharacteristic of me” to “very true or strongly characteristic of me”. In a sample of university students, internal consistency of scores as measured by Cronbach’s Alpha for the Positive constructive day-dreaming, Guilt/fear of failure daydreaming, and Poor attentional control subscales were .80, .82, and .83, respectively (Huba, Aneshensel, & Singer, 1981). In this study the overall internal consistency of scores as measured by Cronbach’s alpha was .84, and the three scales Positive constructive daydreaming, Guilt/fear of failure daydreaming, and Poor attentional control internal consistencies were .75, .82, and .75 respectively.

Dissociation. The Dissociative Experiences Scale (DES; Carlson & Putnam, 1993) (see Appendix F) is a 28-item self-report measure which assesses the frequency of dissociative experiences. Items include “Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person” and “Some people have the experience of being in a familiar place but finding it strange and unfamiliar”. On a scale of 0% to 100%, participants rate the percentage of time in their daily lives that they have the described dissociative experience. In a sample of university students, the DES exhibited high internal consistency (*Cronbach’s alpha* = .93) and adequate test–retest reliability ($r = .74$ to $.84$)

(Holtgraves and Stockdale, 1997). In this study internal consistency as measured by Cronbach's alpha was .93.

Personality. The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) (see Appendix G) is a 44-item, five domain self-report instrument that measures the big five personality dimensions. Items include "I see myself as someone who is full of energy" and "I see myself as someone who has an assertive personality". Participants respond to how likely the statements relate to them on a five-point likert scale ranging from "disagree strongly" to "agree strongly". The five scales correspond to Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items), Neuroticism (8 items), and Openness to experiences (10 items). In a sample of university students, internal consistency of scores for the five domains of the BFI was reported to range between *Cronbach's alpha* = .81 to .88, have adequate test-retest reliability ($r = .80$) and good convergent and discriminant validity (Soto & John, 2009). In this study Cronbach's alphas for the five domains, Agreeableness, Conscientiousness, Extraversion, Neuroticism and Openness to experience were .79, .83, .87, .85, and .74 respectively.

Desirable responding. The Balanced Inventory of Desirable Respondings (BIDR; Paulhus, 1984) (see Appendix H) is a 40-item instrument that measures desirable responding. Participants respond to statements that assess Impression management (IM) (20 items) and Self-deceptive enhancement (SD) (20 items) on a seven-point scale ranging from "not true" to "very true". In a sample of university students, internal consistency of IM scores and SD scores as measured by Cronbach's Alpha, were .74 and .73 respectively. Internal consistency ranges from .68 to .80, with test-retest

reliability at .69. In a university student sample, convergent validity was reported as .71 and .80, with the Marlowe-Crowne scale and the Multidimensional Social Desirability Inventory, respectively (Paulhus, 1991). In this study Cronbach's alpha was .67 for both the IM and SD scales.

Procedure

Prior to commencing this study, appropriate ethical approval was obtained. Data collection was completed over a six week period.

Participants completing in laboratory. Following voluntarily signing up to the study titled "Early Childhood Experiences and Personality", the 172 participants who completed the study in a laboratory received an email thanking them for their interest in the study and providing directions to the location and time of the study. Upon arrival participants were greeted by the researcher and requested to sit in front of a computer. All information sheets, debriefing sheets, and questionnaires including the three brief questions pertaining to demographic information were presented and completed online using Version 28611 Qualtric Survey Software (2011). Questionnaire responses and layout were kept identical to original paper versions, with the exception of the added response for all items "I do not wish to answer this question". This additional response option was added due to the personal nature of some items. Verbal instructions informed each participant to please read the information sheet (see Appendix I) in their own time and follow the instructions provided on the computer screen. In addition to being mentioned in the information sheet, participants were told that if at any time they wish to withdraw their participation, then clicking out of the browser would stop their data submission. Verbal instructions were also given that if at any time they

had any questions or concerns they could ask the researcher. Following the information sheet, three brief demographic questions were displayed, followed by the six questionnaires of interest in the following order; ICMI, BFI, DES, SIPI, BIDR, CEQ. There was no specific reason for this order, other than the two fantasy proneness measures were presented first and last.

Participants were required to provide a response for each item before they could move onto the next screen. The researcher was not present during the study, rather seated outside to answer any questions if necessary. After completion of the questionnaires a debriefing sheet was displayed (see Appendix J), and participants left the laboratory to indicate they had completed. At this stage participants were asked if they had any questions or comments regarding the study and offered a paper version of the debriefing sheet. For participants receiving course credit, an additional verbal debriefing was provided which again outlined and clarified the rationale behind the study. These participants also were instructed to complete three questions pertaining to aspects of the study (see Appendix K) as a form of assessment.

Participants not completing in laboratory. Following their voluntary interest in the study via recruitment email, the 51 participants received an email (see Appendix L) in reply, which provided instructions and a link to the online questionnaire. The online survey procedure was identical for all participants. The only difference was participants in this condition were instructed to record the last 5 digits of the unique code that was provided to them following completion of the questionnaire. Participants then met with the researcher and had their unique code cross matched with a list of submitted data and provided their incentive (chocolate bar and entry into the prize draw).

Evidence of the unique code was destroyed immediately, with no identifiable information present.

Data Analyses

Data were automatically collected through Qualtric Survey Software (2011) and later exported into Version 19 of the Statistical Package for Social Sciences (SPSS) for analyses. Due to the practical constraints of time, data collection was completed after 223 participants.

All items were reverse coded and recoded as necessary. As mentioned, in order to set sample consistency, listwise deletion ($N = 193$) was selected for analyses. All “I do not wish to respond to the question” responses were classed as missing data. Internal consistencies (Cronbach’s alpha) and descriptive statistics were initially examined for each of the measures. Separate exploratory factor analyses (EFA) were then conducted on data from the ICMI, CEQ and DES. This was followed by a second order analysis on factor scores of the ICMI, CEQ and DES and correlational analyses.

The following terminology was used to describe methods associated with factor analyses in this study. *Bartlett’s test of sphericity* was used to test whether the factor model was appropriate for analyses, and that the correlation matrix was not an identity matrix. The *Kaiser-Meyer-Olkin* also called the *Measure of Sampling Adequacy* was used to test whether the correlations between instrument variables could be explained by other dataset variables (Sarstedt & Mooi, 2011). *Total variance* refers to the sum of the common variance and unique variance associated with that variable. *Common variance* refers to variance that is shared by the other variables in the analysis (Tinsley & Tinsley, 1987).

Results

Descriptive Statistics

Descriptive statistics and internal consistency were calculated initially on all six measures and their subscales, as seen in Table 1.

Exploratory Factor Analyses

In a two-step process, EFA was conducted first separately and then simultaneously on the ICMI, CEQ and DES.

First order factor analyses. The first step involved separate factor analyses on each of the ICMI, CEQ and DES scores.

Factor analysis of the ICMI. A Principal Axis Factoring (PAF) with an oblique (Promax) rotation was performed on the ICMI. Oblique rotations have been argued to better represent phenomena in psychology, given that many phenomena are more or less interconnected (Matsunaga, 2011). In addition, it has been argued that oblique rotations produce better estimates of simple structure (Tinsley & Tinsley, 1987).

Data consideration. To determine if the data were appropriate for factor analysis two well-established criteria, *Bartlett's test of sphericity* and the *Kaiser-Meyer-Olkin* (KMO) measure of sampling adequacy were computed. *Bartlett's test for sphericity* was statistically significant, $\chi^2(1326) = 2364.82, p < .001$, and the overall KMO for the 52 items of the ICMI was .64. According to Kaiser (1974) this value falls in the "mediocre" range for adequacy. Examination of the variable specific *measures of sampling adequacy* (MSAs) revealed that seven items were below the recommended

Table 1

Mean, Standard Deviation and Internal Consistency for Data Scores (N = 193)

Measure	Mean	SD	α
ICMI	24.04	6.72	.82
CEQ	8.67	4.41	.78
DES	16.31	11.48	.93
SIPI	137.82	18.22	.85
PC	48.90	8.19	.76
GFF	38.04	9.37	.81
PA	50.88	7.58	.75
BIDR	10.15	5.13	.78
SD	4.35	3.08	.69
IM	5.73	3.42	.74
BFI (A)	27.06	5.85	.80
BFI (C)	31.23	6.03	.83
BFI (E)	27.06	6.40	.88
BFI (N)	24.07	6.42	.84
BFI (O)	35.96	5.56	.73

Note. SD = Standard deviation; α = Cronbach's alpha; ICMI = Inventory of Childhood Memories and Imaginings; CEQ = Creative Experiences Questionnaire; DES = Dissociative Experiences Scale; SIPI = Short Imaginings Processes Inventory; PC = Positive constructive daydreaming; GFF = Guilt/fear of failure daydreaming; PA = Poor attentional control; BIDR = Balanced Inventory of Desirable Responding; SD = Self-deceptive enhancement; IM = Impression management; BFI = Big Five Inventory; A = Agreeableness; C = Conscientiousness; E = Extraversion; N = Neuroticism; and O = Openness to experience.

value of .50 (Sarstedt & Mooi, 2011). Each of these items were removed individually (MSAs in parentheses), item 2 (.39), item 3 (.46), item 7 (.33), item 38 (.44), item 41 (.49), item 5 (.50), and item 43 (.48), respectively. Removal of the seven items increased the overall KMO of the ICMI to .68, (still in the "mediocre" range of sampling adequacy), and variable specific MSAs ranged from .52 to .83.

Determining the number of factors to retain. Sixteen factors had eigenvalues greater than 1.00. However, examination of the scree plot

suggested a possible three or four factor model. After examination of the theoretical coherence, pattern of loadings from the pattern matrix of both three and four factor solutions, and the initial percentage of variance discrepancies, the three factor solution was the most interpretable. Following rotation, the three factor solution accounted for 22.60% of the total variance and 64.68% of the common variance in the ICMI scores. In the same analysis, factor scores using the regression method were saved for each identifiable factor. Table 2 shows the factor loadings for the three factors. Factor one, accounting for 8.24% of the total variance and 23.57% common variance, consisted predominately of items relating to time spent imagining and how use of imagination was a major part of one's life, for example "When I was a child, I would spend at least half of my total waking day imagining". This factor was labelled *Commitment to imaginings*. Factor two, accounting for 7.81% of the total variance and 22.32% common variance, consisted predominantly of items assessing an individual's ability to experience his or her imagination with vividness and quality, for example "Many or most of my dreams tend to be at least as vivid as actual life experiences"[original emphasis]. This factor was labelled *Vivid experiences*. Factor three, accounting for 6.58% of the total variance and 18.79% common variance, consisted predominantly of items relating to make believe play and belief as a child that dolls or stuffed animals were alive, for example "When I was a young child, I believed that my doll(s) or stuffed animal(s) were alive". This factor was labelled *Childhood make believe*.

Factor analysis of the CEQ. A PAF with an oblique (Promax) rotation was performed on the CEQ.

Data consideration. To determine if the data were appropriate for factor analysis, *Bartlett's test of sphericity* and the KMO measure of sampling adequacy were computed. *Bartlett's test for sphericity* was significant, $\chi^2(300) = 876.00, p < .001$, and the overall KMO for the 25 items of the CEQ was .74. According to Kaiser (1974) this value falls in the "middling" range for adequacy. Examination of the variable specific MSAs revealed that all items were within the range of .55 to .84.

Determining the number of factors to retain. Eight factors had eigenvalues greater than 1.00, however, examination of the scree plot suggested a possible six or seven factor model. After examination of the theoretical coherence and pattern of loadings from the pattern matrix of both six and seven factor solutions, the six factor solution was the most interpretable. Following rotation, the six factor solution accounted for 42.93% of the total variance and 166.50% common variance¹ in the CEQ scores. In the same analysis, factor scores using the regression method were saved for each identifiable factor. Table 3 shows the factor loadings for the six factors.

¹ Common variance percentages for both the CEQ and DES add up to a number greater than the total variance (and greater than 100% in both cases) because the factors are correlated; thus the variance explained is not unique.

Table 2

Factor Loadings of the Pattern Matrix of ICMI Scores Based on Principal Axis Factoring with Promax-Rotation (N=193)

ICMI item #	Commitment to imaginings	Vivid experiences	Childhood make believe
1	-.18	.12	-.09
4	.09	.09	.11
6	.05	.19	.02
8	.07	-.10	.53
9	.26	.07	.06
10	.02	.21	.25
11	-.03	-.09	.48
12	.05	-.01	.43
13	.16	.16	.16
14	.33	.16	-.02
15	.39	-.11	-.15
16	.32	-.08	.40
17	.07	.07	.46
18	.50	-.05	.19
19	.53	-.03	.08
20	-.13	.15	.45
21	.07	.06	.26
22	.20	.11	.33
23	.27	.13	-.04
24	-.07	-.08	.37
25	.35	-.11	.11
26	.16	.12	.16
27	.39	.12	-.29
28	.13	.10	-.15
29	.64	-.04	.02
30	.57	.00	.00
31	.48	.07	.00
32	.03	.20	.29
33	.14	.23	-.19
34	.33	.09	-.04
35	.31	-.01	.06
37	.19	.32	-.09
39	.16	.32	.08
42	-.06	.24	-.25
44	-.04	.33	.15
45	-.21	.30	.29
46	.02	.46	.14
47	-.17	.46	.07
48	-.12	.60	.12
49	-.10	.51	.02
50	.16	.56	-.06
51	.03	.41	-.04
52	.09	.20	.04

Note. Factor loadings > .40 are in boldface. Items 2, 3, 5, 7, 38, 41, 43 excluded from analysis.

Table 3

Factor Loadings of the Pattern Matrix of CEQ Scores Based on Principal Axis Factoring with Promax-Rotation (N=193)

CEQ Item #	Vivid/frequent imagining	Physical/emotional effects	Childhood make-believe	Clairvoyance	Developmental	Spiritual
1	.00	.04	.67	-.15	.06	-.03
2	-.04	.20	.35	.09	.21	-.07
3	.05	-.15	.43	.02	-.05	.04
4	-.05	-.11	.36	.22	.09	-.03
5	.17	.06	.11	.28	.18	-.11
6	-.08	.08	.03	-.01	.63	-.05
7	.41	-.03	.04	.04	-.20	.06
8	-.07	.20	-.04	.01	.35	-.02
9	.51	-.07	-.30	.00	.25	.01
10	.70	.09	.04	-.09	-.07	-.01
11	.54	-.04	.21	.00	.04	.12
12	.63	-.07	.12	.10	.02	-.05
13	.22	.19	.16	.07	-.10	.02
14	.60	.04	-.13	.00	.04	-.11
15	.49	.11	.03	.04	-.19	-.03
16	.03	-.11	.16	-.11	.37	.16
17	-.06	-.08	-.01	.06	.27	.26
18	.03	.57	-.22	.13	.03	-.01
19	.01	.55	.02	.02	.03	-.04
20	.03	.63	-.01	-.14	.10	.17
21	.08	-.03	-.06	.57	-.04	.05
22	-.07	.06	.03	.64	-.02	.14
23	.26	-.06	-.06	-.10	.15	.23
24	.01	.16	.00	-.01	-.06	.66
25	-.05	-.05	-.01	.27	.02	.48

Note. Factor loadings > .35 are in boldface.

Factor one, accounting for 11.32% of the total variance and 43.90% common variance consisted predominately of items relating to amount of time currently spent daydreaming and fantasies with realistic intensity often as lively as a film, for example “Many of my fantasies have a realistic intensity”. This factor was labelled *Vivid/frequent imagining*. Factor two, accounting for 7.48% of the total variance and 29.03% common variance, consisted predominantly of items relating to physical and emotional effects of imagining, for example “When I think of something cold, I actually get cold”. This factor was labelled *Physical/emotional effects*. Factor three, accounting for 7.19% of the total variance and 27.88% common variance, consisted predominantly of items relating to when one was a child and belief that dolls or stuffed animals were alive, the existence of fairy tale figures, and having an imaginary companion, for example “As a child, I strongly believed in the existence of dwarfs, elves, and other fairy tale figures”. This factor was labelled *Childhood make-believe*. Factor four, accounting for 6.92% of the total variance and 26.85% common variance, consisted of two items relating to the prediction of future events, for example “I often have the feeling that I can predict things that are bound to happen in the future”. This factor was labelled *Clairvoyance*. Factor five, accounting for 6.00% of the total variance and 23.25% common variance, consisted predominantly of items relating to the encouragement of imagining and creative experiences as a child, for example “As a child, I devoted my time to playing a musical instrument, dancing, acting, and/or drawing”. This factor was labelled *Developmental*. Factor six, accounting for 4.02% of the total variance and 15.59% of common variance, consisted of two items relating to intense religious experiences and

outside forces, for example “During my life, I have had intense religious experiences which influenced me in a very strong manner. This factor was labelled *Spiritual*.

Factor analysis of the DES. A PAF with an oblique (Promax) rotation was performed on the DES.

Data consideration. To determine if the data were appropriate for factor analysis, *Bartlett’s test of sphericity* and the KMO measure of sampling adequacy were computed. *Bartlett’s test for sphericity* was statistically significant, $\chi^2 = (378) = 3121.96, p < .001$, and the overall KMO for the 28 items of the DES was .90. According to Kaiser (1974), this value falls in the “marvellous” range. Examination of the variable specific MSAs revealed that all items were within the range of .73 to .95.

Determining the number of factors to retain. Six factors had eigenvalues greater than 1.00. However, examination of the scree plot suggested a three factor solution. After examination of the theoretical coherence and pattern of loadings from the pattern matrix of one, two, three and six factor solutions, the three factor solution was the most interpretable. Following rotation, the three factor solution accounted for 81.31% of the total variance and 127.47% of common variance in the DES scores. In the same analysis, factor scores using the regression method were saved for each identifiable factor.

Table 4 shows the factor loadings for the three factors following rotation. Factor one, accounting for 29.66% of the total variance and 55.36% common variance, consisted predominately of items relating to zoning out, becoming absorbed in daydreams or TV and movies, and not being sure if events were

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imagined or actually real, for example “Some people have the experience of driving or riding in a car or bus or subway and suddenly realising that they don’t remember what has happened during all or part of the trip”. This factor was labelled *Absorption*. Factor two, accounting for 28.10% of the total variance and 52.46% common variance, consisted predominantly of items relating to overall difficulties with one’s memory, such as, finding things that one does not remember buying, or finding evidence of having done things that one does not remember doing, for example “Some people have the experience of finding new things among their belongings that they do not remember buying”. This factor was labelled *Amnesia*. Factor three, accounting for 23.55% of the total variance and 43.95% common variance, consisted predominantly of items relating to experiencing and feeling removed from oneself or the world, for example “Some people have the experience of looking into a mirror and not recognising themselves”. This factor was labelled *Depersonalization/derealisation*.

Correlational analyses between the factor scores of the ICMI, CEQ and DES following initial EFA. To investigate the relationships between the factor scores following EFA, Pearson Product-Moment correlation coefficients were calculated. As presented in Table 5, with the exception of six non-significant associations, all factor scores of the ICMI, CEQ and DES were significantly and positively related to one another, correlations of which ranged from small to medium in size based on Cohen’s criteria.

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Table 4

Factor Loadings of the Pattern Matrix of DES Scores Based on Principal Axis Factoring with Promax-Rotation (n=193)

Item #	Absorption	Amnesia	Depersonalisation/derealisation
1	.59	-.04	.06
2	.59	.09	-.04
3	.24	.08	.38
4	-.16	.34	.55
5	-.25	.68	.11
6	-.06	.75	-.03
7	-.07	.44	.36
8	-.08	.19	.26
9	.08	.29	.11
10	.22	.50	-.11
11	-.18	.18	.74
12	.20	-.29	.77
13	-.03	-.18	.85
14	.65	-.05	-.09
15	.86	-.09	-.10
16	.65	.18	-.03
17	.78	-.17	.03
18	.45	.12	.25
19	.17	.38	.13
20	.53	.16	.04
21	.17	.27	.00
22	.30	.17	.23
23	.27	.59	-.12
24	.54	.36	.00
25	.23	.63	-.02
26	.02	.79	-.09
27	.05	.07	.54
28	.29	.06	.45

Note. Factor loadings >.40 are in boldface.

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Table 5

Pearson Product-Moment Correlations Between Factors of the ICMI, CEQ, and DES (N=193)

Factor scores	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. ICMI Commitment to imaginings	-	.50**	.36**	.69**	.28**	.32**	.48**	.35**	.17*	.33**	.26**	.26**
2. ICMI Vivid experiences		-	.43**	.54**	.42**	.52**	.53**	.43**	.18*	.46**	.39**	.26**
3. ICMI Childhood make believe			-	.40**	.55**	.72**	.37**	.47**	.08	.34**	.23**	.27**
4. CEQ Vivid/frequent imagining				-	.43**	.36**	.45**	.36**	.16*	.50**	.40**	.41**
5. CEQ Physical/emotional effects					-	.54**	.42**	.30**	.11	.37**	.22**	.20**
6. CEQ Childhood make believe						-	.42**	.47**	.13	.32**	.19**	.27**
7. CEQ Clairvoyance							-	.46**	.20**	.36**	.28**	.10
8. CEQ Developmental factors								-	.07	.27**	.19**	.07
9. CEQ Spiritual experiences									-	.20**	.18*	.21**
10. DES Absorption										-	.77**	.66**
11. DES Amnesia											-	.60**
12. DES Derealisation/depersonalisation												-

Note. * $p < .05$, two tailed. ** $p < .01$, two tailed.

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Relationship of ICMI factors and all other measures. Table 6 shows that scores on all three subscales of the ICMI had small to medium correlations with scores of Positive constructive daydreaming, compared to the other two SIPI scales. Scores on the ICMI had small to medium correlations with scores on two personality domains, Neuroticism and Openness to experience.

Relationship of CEQ factors and all other measures. Scores on five subscales of the CEQ had small to medium correlations with the Positive constructive daydreaming subscale of the SIPI (see Table 6). Scores on all six subscales of the CEQ had small to medium correlations with scores on the personality domain Openness to experience, and scores on five of the subscales had small correlations with scores of Neuroticism. No significant correlations were found between any of the CEQ subscales and subscales of the BIDR.

Relationship of the DES factors and all other measures. Highlighting aspects of Table 6, scores on all three subscales of the DES had small correlations with two personality domains, Neuroticism and Openness to experience. All three subscales of the DES had small to medium correlations with the three SIPI subscales.

Second order factor analysis. To further examine the construct validity of the ICMI, CEQ and DES, a second order factor analysis was conducted on the factor scores of each identifiable factor from these three measures. The three factors from the ICMI, six from the CEQ and three from the DES were entered into a PAF with oblique (promax) rotation.

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Table 6.

Pearson Product-Moment Correlations of Promax-Rotated Factors of the ICMI, CEQ, and DES, with all other Measures (N = 193)

	BFI	BFI	BFI	BFI	BFI	SIPI	SIPI	SIPI	BIDR	BIDR
	(A)	(C)	(E)	(N)	(O)	(PC)	(GFF)	(PA)	(IM)	(SD)
ICMI Commitment to imagining	-.22**	-.29**	-.11	.25**	.44**	.46**	.36**	.20**	-.16*	-.02*
ICMI Vivid experiences	-.01	-.06	.20**	.17*	.35**	.52**	.37**	.23**	-.19*	-.09
ICMI Childhood make believe	.16*	.03	.01	.20*	.17*	.33**	.20**	.12	.06	-.19*
CEQ Vivid/frequent imagining	-.13	-.18*	-.15*	.20**	.36**	.49**	.34**	.26**	-.08	-.05
CEQ Physical/emotional effects	.07	-.03	.02	.24**	.11	.35**	.31**	.20**	.09	-.10
CEQ Childhood make believe	.08	-.01	.03	.19*	.20*	.32**	.25**	.18*	.02	-.13
CEQ Clairvoyance	-.03	-.10	.09	.10	.26**	.39**	.21**	.06	.02	.10
CEQ Developmental factors	.12	.06	.06	.01	.21**	.40**	.11	.10	.02	-.01
CEQ Spiritual experiences	-.06	-.04	-.02	.07	.10	.10	.10	-.03	.06	-.01
DES Amnesia	-.07	.00	.05	.17*	.04	.27**	.23**	.12	-.15*	-.05
DES Absorption	-.03	-.02	-.08	.27**	.17*	.33**	.22**	.30**	-.02	-.04
DES Derealisation/ depersonalisation	-.10	-.08	-.17*	.22**	.10	.20*	.21**	.18*	-.11	-.07

Note. * $p < .05$, two tailed. ** $p < .01$, two tailed.

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Data consideration. To determine if the data were appropriate for factor analysis, *Bartlett's test of sphericity* and the KMO measure of sampling adequacy were computed. *Bartlett's test for sphericity* was significant, $\chi^2 = (66) = 1078.16, p < .001$, and the overall KMO for the 12 factor scores was .84. According to Kaiser (1974), this value falls in the "meritorious" range for adequacy of the correlations. Examination of the variable specific MSAs revealed that all factors were all good, ranging from .79 to .92.

Determining how many factors to retain. Three factors had eigenvalues greater than 1.00. Examination of the scree plot also suggested a three factor solution. Two and four factor solutions were also examined. After examination of the theoretical coherence and pattern of loadings from the pattern matrix of both two, three and four factor solutions, the three factor solution was the most interpretable. Following rotation, the three factor solution accounted for 86.75% of the total variance.

Table 7 shows the factor loadings for the three factors taken from the pattern matrix following rotation. Factor one, accounting for 30% of the total variance and 59.06% common variance, had higher loadings relating to childhood involvement and encouragement and enjoyment of make believe. Factor two accounting for 26.33% of the total variance and 51.85% common variance, had loadings relating solely to the three factors of the DES. Factor three, accounting for 30.42% of the total variance and 59.89% common variance, had higher loadings relating to frequency and high importance associated to imagining. Of note, the CEQ Spiritual experiences factor had noticeably low loadings on all factors.

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Table 7

*Factor Loadings Taken from the Pattern Matrix of the ICMI, CEQ and DES
Factor Scores Following Principal Axis Factoring with Promax-Rotation
(N=193)*

Factor Score	Factor 1	Factor 2	Factor 3
ICMI			
Commitment to imaginings	-.01	-.06	.89
ICMI Vivid experiences	.28	.10	.47
ICMI Childhood make believe	.84	.02	-.06
CEQ Frequent/vivid imagining	-.02	.18	.72
CEQ Physical/emotional effects	.56	.06	.09
CEQ Childhood make believe	.93	-.01	-.10
CEQ Clairvoyance	.24	-.08	.54
CEQ Developmental factors	.43	-.12	.29
CEQ Spiritual experiences	-.02	.16	.16
DES Absorption	.07	.87	.03
DES Amnesia	-.07	.83	.04
DES Derealisation/depersonalisation	.01	.78	-.08

Note. Factor loadings >.40 are in boldface.

Correlations between factor scores. To investigate the relationship between the underlying dimensions of the three measures following the second step EFA, the factor correlation matrix was examined. The three factors had

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small to medium correlations between them and were all significant at the $p < .01$ level. The correlation between factor one, consisting of ICMI and CEQ subscales relating to childhood involvement, encouragement and enjoyment of make believe and factor two, consisting of solely DES subscales, was $r = .41$. Factor one and factor three, consisting of subscales relating to frequency and high importance of imagining, correlated $r = .62$. Factor two and factor three correlated $r = .50$.

Correlations between factor scores and all other measures. In order to examine the relationships between the factor scores and all other measures in this study, Pearson Product-Moment Correlations were calculated. As shown in Table 8, all three factors had small to medium correlations with all three SIPI subscales, and two personality domains Neuroticism and Openness to experience

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Table 8

Pearson Product-Moment Correlations of Promax-Rotated Factors Scores of the ICMI, CEQ, and DES, with all other Measures(N=193)

Measure	Factor 1	Factor 2	Factor 3
BFI (A)	.10	-.07	-.12
BFI (C)	-.01	-.04	-.19**
BFI (E)	.05	-.08	-.03
BFI (N)	.23**	.27**	.25**
BFI (O)	.25**	.16*	.44**
SIPI (PC)	.44**	.34*	.58**
SIPI (GFF)	.29**	.26**	.40**
SIPI (PA)	.21**	.27**	.25**
BIDR (IM)	.03	-.08	-.12
BIDR (SD)	-.14	-.07	-.03

Note. * $p < .05$, two tailed. ** $p < .01$, two tailed.

Discussion

The primary aim of the current study was to further examine the psychometric properties and validity of the fantasy proneness construct. Three specific research questions were asked (a) are measures of fantasy proneness multidimensional, (b) do dimensions of the ICMI, CEQ and DES conceptually overlap, and (c) what links are there between fantasy proneness, dissociation and related constructs? To answer these questions a two-step EFA was conducted on ICMI, CEQ and DES scores. As well as correlational analyses on resultant factor scores and BFI, BIDR and SIPI measures.

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Findings with the ICMI

EFA results from this study support the hypothesis and confirm previous research that the ICMI is a multidimensional measure. Similar to previous factor analytic studies of the ICMI, a small amount of variance was accounted for. However, unlike the 14 factors that Myers (1983) and the two factors that Klinger et al. (2009) reported, three factors were interpreted in this study. Differences in the number of factors may be attributed to different methods of analyses.

At the item level, many items that appear to assess key components of fantasy proneness lacked contribution to the construct. For example, item five “I can remember clearly one or more things that happened to me when I was two years of age or younger” and item 43 “I think I am hypnotizable; that is, I could be hypnotised (or I have been hypnotised)” were amongst the seven items that were excluded from analyses due to low variable specific MSA. The remaining five excluded items may reflect their ambiguous nature. For example, item two “When I was a child I enjoyed (swinging on a swing)”. Furthermore, following initial EFA, other items that would appear to assess key characteristics of fantasy prone individuals, failed to meet factor loading criterion on any of the three factors. This included, item 14 “At the present time, I am very imaginative” and item 32 “At times, when I was a child or adolescent, it was difficult for me to determine whether something had happened or whether I had imagined it happened”, the latter appears to be related to reality monitoring difficulties.

All three dimensions of the ICMI were positively associated with the personality domain Neuroticism. One interpretation of these results are guided

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by both McCrae and Costa's (1986) and Watson and Hubbard's (1996) findings, that amongst a range of coping mechanisms, Neuroticism has been associated with escapist fantasies and mental disengagement. All three dimensions of the ICMI were positively associated also with the personality domain, Openness to experience. Openness to experience is not thought to be associated with a coping mechanism to deal with adversities; rather, fantasy has been described as one of the six traits associated to this personality domain (Costa & McCrae, 1995; Watson & Hubbard, 1996).

In addition, similar to previous findings, all factors of the ICMI were associated with Positive constructive daydreaming (Green & Lynn, 2008; Klinger et al., 2009; Levin & Young, 2001/2002), and Guilt/fear of failure daydreaming (Green & Lynn, 2008) more so than the Poor attentional control subscale of the SIPI. High scorers on the Positive constructive daydreaming subscale hold the belief that daydreams help to generate ideas, solve problems, are stimulating, future orientated, and generally worthwhile and pleasant. In comparison, high scorers on the Guilt/fear of failure daydreaming subscale report daydreams of a more negative quality, such as failing others, revengeful acts, anger and aggression towards others, and guilt. High scorers on the Poor attentional control subscale have increased tendencies to become easily bored and distracted, and find themselves frequently mind wandering (Huba et al., 1982). Thus, it appears that dimensions of the ICMI are related to both adaptive and maladaptive aspects of imaginings.

In terms of socially desirable responding, the two ICMI factors Commitment to imagining and Vivid experiences were negatively associated with both the IM and SD scales of the BIDR, however only the association

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with the former were significant. This suggests that those who scored higher on those two ICMI factors did not intentionally fake responses to create a more socially desirable image of themselves, which in this study could have meant exaggerating imagining experiences.

Findings with the CEQ

EFA results in this study support the hypothesis and confirm previous research, that the CEQ is a multidimensional measure. However, unlike Sánchez-Bernardos and Avia's (2004) three factor solution this study interpreted six factors, which again may be attributable to different methods of analyses. Merckelbach et al. (2001) initially interpreted a nine factor solution of the CEQ, however, after inspection of the scree-plot choose to go with a one factor solution. In this study, the little total variance accounted for by the six factors, some of which had only two items that met the factor loading criterion confirms previous research.

Although no items were excluded from analysis, it is important to note that item 13, "I often confuse fantasies with real memories" did not meet factor loading criterion on any of the six factors. Interestingly, one of the primary arguments that fantasy proneness theorists put forth is that reports of childhood trauma by fantasy prone individuals may not be reliable due to their inability to distinguish memories of fantasy and memories of actual events. Results in this study at best indicate that this item contributes little variance to the CEQ measure. Research extending this finding would be beneficial to this argument, especially given also that an item (#32) of the ICMI related to reality monitoring difficulties was entirely excluded from analyses.

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Dimensions of the CEQ were associated to the Positive constructive daydreaming subscale of the SIPI more so than Guilt/fear of failure daydreaming and Poor attentional control subscales. As mentioned for the ICMI, Positive constructive daydreaming is associated to the positive aspects of daydreaming, such as assisting in generating ideas and problem solving. The Guilt/fear of failure daydreaming subscale assesses daydreams of a more negative quality, with themes such as revenge, anger and guilt. Poor attentional control subscale assesses the tendency to become easily distracted and bored (Huba et al., 1982). The Spiritual experiences factor did not correlate with any of the SIPI subscales. This finding may be due to an individual's perception of apparitions or religious experiences as existing in their environment rather than inside their mind, thus not classified as mental imagery.

Some dimensions of the CEQ were positively associated to the personality traits Neuroticism and Openness to experience. Neuroticism has been associated to escapist fantasies and mental disengagement as a form of coping mechanisms to aversive experiences. Thus, it appears that in line with findings of the ICMI, dimensions of the CEQ are related to both adaptive and maladaptive aspects of imaginings.

Findings with the DES

EFA in this study confirmed a three factor solution of DES scores, factors of which were conceptually similar to previous three factor solutions of the DES – Absorption, Amnesia, and Depersonalisation/Derealisation (Holtgraves & Stockdale, 1997; Ross, Joshie, & Currie, 1990; Stockdale, Gridley, Balogh, & Holtgraves, 2002). Although three-factor solutions are

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most commonly reported, one and four factor solutions have been identified in clinical populations (Dunn, Ryan, & Paolo, 1994; Marmar et al., 1994).

All three dimensions of the DES, particularly absorption, were positively associated with the personality trait Neuroticism. Neuroticism has been linked to escapist fantasising and mental disengagement in the face of aversive experiences, a similarly described function of dissociation. Similar to measures of fantasy proneness, dimensions of the DES were more associated with the Positive constructive daydreaming subscale of the SIPI than Guilt/fear of failure daydreaming and Poor attentional subscales. Thus, it also appears that dimensions of the DES are related to both adaptive and maladaptive aspects of imaginings.

Relationships Between the ICMI, CEQ, and DES

Given that the majority of ICMI, CEQ, and DES factors were positively associated. The strongest associations between the three measures were that between ICMI and CEQ factors, providing evidence of convergent validity, for some factors at least. In addition, although many ICMI, CEQ, and DES factors were correlated in similar ways to related measures of personality, imagery, and desirable responding, there were some slight differences, namely the strength of these relationships. These findings assist in answering the research question – what links are there between fantasy proneness, dissociation and related constructs.

Item overlap had been put forth as a potential cause in explaining the correlational associations between fantasy proneness and dissociation (Dalenberg et al., 2012). However, results from EFA on ICMI scores indicate that of the four items thought to overlap with the DES, three (ICMI items 26,

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32, & 36) failed to meet factor loading criterion on any of the three factors, and one (item 38) was excluded prior to analyses due to low variable specific MSA. Results from the EFA on CEQ scores are not any more convincing either, with both potential overlapping items (#13 & 23) failing to meet factor loading criterion on any of the six factors. These findings confirm claims made by Giesbrecht et al. (2010), that despite being mentioned as a possible explanation for the link between fantasy proneness and dissociation, identified overlapping items of the ICMI, CEQ and DES had minimal influence on associations between fantasy proneness and dissociation. Correlational analyses on items of interest may provide a clearer picture of item overlap.

Shared conceptual foundations have also been put forth as a potential cause for the associations between fantasy proneness and dissociation. In this study, correlational results do suggest that ICMI and CEQ factors are associated to similar constructs as the DES. In particular, the personality domain of Neuroticism and SIPI subscales. One explanation of this could be in line with findings by Vannuci and Mazzoni (2006) who reported that individuals who reported higher frequency of dissociative experiences, had stronger tendencies to generate future orientated images. Findings from the second order factor analysis however, suggest that there is less dimensional overlap between fantasy proneness and dissociation than recent research suggests.

Second Order Factor Analysis

When entered into a simultaneous EFA, eight of the nine factor scores of the ICMI and CEQ loaded on two factors. One dimension relating predominantly to items assessing enjoyment and involvement in childhood

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make believe, the other relating to imaginal involvement. However, the three factor scores of the DES loaded on an independent factor distinct to fantasy proneness. The loading of factors in this analysis suggests that measures of fantasy proneness and dissociation tap different dimensions. Although, the ICMI and CEQ significantly correlate with the DES, in this study there appears to be less dimensional overlap between the two constructs than has been suggested. This finding is somewhat inconsistent with the fantasy model and previous ideas that assert that fantasy proneness and dissociation overlap (Dalenberg et al., 2012; Giesbrecht et al., 2008).

Despite the aforementioned distinctiveness of factors scores, correlational analyses revealed that all three factors were related (small to medium variations) to the same personality traits, openness to experience and neuroticism, and all three subtests of the SIPI. Absorption has been the most commonly noted concept related to both constructs (Carleton, Abrams, & Asmundson, 2010; Holtgraves & Stockdale, 1997; Jamieson, 2005), but also the personality traits of Neuroticism and Openness to experience (Kwapil, Wrobel, & Pope, 2002; Sánchez-Bernardos & Avia, 2004), and schizotypy (Gleaves & Ebernez, 1995; Irwin, 2001; Merckelbach et al., 2000; Merrit & Waldo, 2000; Rauschenberger & Lynn, 1995; Rhue et al., 1992; Sánchez-Bernardos & Avia, 2006; Waldo & Merrit, 2000). Therefore, results of this study confirm previous research and indicate that, some aspect of these other phenomena may be mediating the link between fantasy proneness and dissociation.

Overall Summary and Interpretation of Current Findings

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The findings in this study assisted in answering the three research questions of interest. The instruments purporting to measure the fantasy proneness construct are both multidimensional. The number of interpreted factors are unique to this study, and do not replicate any of the four previous factor analytic studies, however, this could be due to different statistical procedures and research methods. In addition, although factors of the ICMI and CEQ overlap, they appear to be measuring two quite distinct concepts; childhood make believe and imaginative involvement. It may be possible that the former is assessing developmental antecedents of fantasy proneness. The majority of fantasy proneness factors significantly and positively correlated with dissociative factors. Importantly however, there was less dimensional overlap between measures of fantasy proneness and dissociation as has been suggested.

The strongest associations that the majority of fantasy proneness factors had were with SIPI subscales, and, more specifically, Positive constructive daydreaming. One possible explanation for this association is that those who experience imaginings of a positive nature are more inclined to actively engage in the activity, and over time this frequent involvement may lead to increased vividness of content, and thus endorse more characteristics of fantasy proneness. Another could be that fantasy proneness measures tap into normal daydreaming styles as previously mentioned by Klinger et al. (2009). Dimensions of fantasy proneness were also associated with maladaptive patterns of behaviour and thought, for example, the personality domain Neuroticism and the Guilt/fear of failure daydreaming and Poor attentional control scales of the SIPI. It appears that similar to the DES, fantasy proneness

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measures are assessing both adaptive and maladaptive functions of imagining. Thus current findings suggest that both the ICMI and CEQ do not measure fantasy proneness in equal measures or in a unitary way. Rather, they appear to measure different styles of imaginings.

In this study common method variance may have operated, therefore caution needs to be considered when interpreting the results. Common method variance refers to variance of which is attributable to methods of measurement rather than the construct under inquiry. Examples of common method variance include, social desirability, item ambiguity and demand characteristics (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Reio, 2010). In this study, measures of social desirability were included, however, factors such as measurement and item context effect, consistency motif and as already mentioned the ambiguous nature of the items may have had some influence on results.

Practical and Theoretical Implications

In particular, these results may shed light on the trauma and fantasy models of dissociation. Although those in favour of the fantasy model acknowledge the reported link between trauma and dissociation, they argue that this is due to dissociation overlapping with fantasy proneness (Dalenberg et al., 2012; Giesbrecht et al., 2010). However, EFA results of this study suggest that there is fact hardly any overlap between the two constructs. The factors of the ICMI and CEQ overlap, however DES items load distinctively on their own factor.

This study like previous studies has found measures of fantasy proneness to be multidimensional, including, dimensions of which are

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reported to relate to positive constructive everyday non-pathological daydreaming (Klinger et al., 2009). Given this, how likely is it that those fantasy prone are more likely to construct memories of traumatic abuse, which they mistake for memories – a central argument in support of the fantasy model (Giesbrecht et al., 2008, 2010). Especially when the CEQ item (#13) and ICMI item (#32) that specifically ask about memory source confusion failed to meet factor loading criterion in this study.

Evidence for the fantasy model of dissociation relies heavily on the use of the ICMI and CEQ. The current study and previous research suggest that both instruments are lacking psychometric information, and further research on their psychometric properties are needed before any sound conclusions can be made from either (Klinger et al., 2009; Sánchez-Bernardos & Avia, 2004). Therefore, any researchers utilising either the ICMI or CEQ in research need to keep in mind that conclusions based on their use may be limited and potentially misleading.

Similar to actual perception, imagery in the form of memories or fantasy can have a powerful effect on both negative and positive emotions compared to verbal processes. Although the current study does not focus on therapeutic intervention, the results of this current study may be of interest to health professionals utilising cognitive - behavioural and imagery based therapeutic interventions (Holmes et al., 2009). Despite being a relatively burgeoning field, the therapeutic utilisation of imagery rescripting is reported to have been used as early as the late 19th century by Pierre Janet in patients presenting with hysteria (Brewin et al., 2010; Holmes, Arntz, & Smucker, 2007). More recently, imagery has been associated with a number of

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psychological symptoms and disorders, including PTSD (Brewin *et al.*, 2010). Though as the current studies results have shown, not all aspects of fantasy and imagery are maladaptive. Therefore, the targeting of prospective positive imagery in therapy may assist an individual to enhance their adaptive functioning (Greenwald & Harder, 1997; Morina, Deepro, Pusowski, Schmid, & Holmes, 2011).

Limitations

Several limitations in the current study need to be mentioned. Participants were recruited via three different means (participant pool, email, and poster advertisements). All three recruitment methods included mention that the study involved the investigation of personality and early childhood experiences. This may have influenced a particular cohort of students to volunteer their participation, for example students whom had a particular interest in personality testing. The title given to the current study was identical to previous studies utilising university students and fantasy proneness measures, which hopefully lessened any possible bias on participation sign up in this study compared to other studies. Future research may benefit from including a brief questionnaire asking students what they believed the purpose of the study was.

All participants were undergraduate psychology students. Although, this sample was deemed appropriate for this study as the majority of previous research has used similar samples, the results of this study are not generalizable to all populations. Factor analytic studies and studies in general utilising fantasy proneness measures would benefit from using other populations, for example non-university student samples. Additionally, a large

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percentage of participants in this study were female. Although, this reflects the demographic nature of typical undergraduate psychology courses, research has found that females are more likely to report their inner experiences than males (Giambra, 1999/2000). Studies with an equal proportion of males and females would be desirable.

Given the practical constraints of time, data were collected from 223 participants. Although, this sample size would provide a fair appraisal for factor analyses according to Comrey and Lee (1992), missing data and technical issues meant that complete data sets were available for only 193 participants. This amount of participants provides a just below fair appraisal for factor analysis. Thus future research would benefit from a larger sample size.

Despite no statistical indication that participants were responding in a socially desirable way, the fact that all measures were presented during the same session could have made it more possible for participants to be aware of what the study was looking at, generating demand characteristics in participant's responses. Additionally, because measures were given in a fixed order, this study may also be limited by order effects. This limitation feeds into the issue of common method variance. It would be beneficial for future factor analytic studies to not only randomize the measures, but also to consider practices that are more mindful of common method variance influences.

Although well established guidelines were followed in this study when conducting the EFA, overall many aspects of this analysis were due to subjective decisions of the researcher, in particular, how factors were conceptually determined and defined (Fabrigar, Wegener, MacCallum, &

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Strahan, 1999; Funder, 2004; Muris, et al., 2003; Matasunga, 2011). It could be said that too little variance was accounted for in the ICMI and CEQ analyses in this study, and that more factors needed to be retained (Sarstedt & Mooi, 2011). However, in doing so, many items would contribute little variance to the factors and/or fail to meet factor loading criteria. Also, increased factors could possibly be harder to conceptually and meaningfully define.

Future Directions

The current results suggest that both the ICMI and CEQ tap into a dimension relating to childhood experiences, however, no comments can be made on the notion that dissociation and fantasy proneness overlap due to aversive childhood experiences – this area warrants further investigation. This study and previous studies investigating the fantasy proneness and dissociation link have a tendency to rely on western cultures and youthful university students as samples. In addition to previously mentioned populations, cross-cultural research and studies that involved older individuals would help to generalise findings.

Given the finding that aspects of fantasies may serve different maladaptive or adaptive functions, research addressing the factors that lead people to fantasise and the content of fantasies would be beneficial. Likewise, further research of interventions that help to buffer daydreaming styles that lead to an increased risk for psychopathology.

Examination of the original Wilson and Barber (1983) study indicated potential methodological weaknesses in the development of the fantasy proneness construct. Further research that assists in the development of a clear

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and succinct definition rather than a description of fantasy proneness is needed. In turn, further research would assist in the development of a more valid instrument to measure the fantasy proneness construct and address limitations with current item content. Results verify this need. First, many items of the ICMI were statistically inappropriate for inclusion in EFA. Second, little variance was accounted for by factors in both the ICMI and CEQ. Third, verbal feedback from participants in this study during verbal debrief indicated their confusion in not only understanding many of the ICMI and CEQ items, but also how to respond to them.

Conclusions

This research was unique, in that, no known study has conducted a factor analytic investigation of scores on the ICMI, CEQ and DES separately and simultaneously in the same study. This study set out what it hoped to achieve – which was to examine the factor structure of the ICMI, CEQ and DES, which at best would provide further insight into the fantasy proneness construct.

Through a two-step EFA and correlational analyses, all three research questions of this study were able to be answered – assisting to further understand fantasy proneness and the instruments that purport to measure it. The instruments developed to measure the fantasy proneness construct are multidimensional. Although ICMI and CEQ factors are conceptually interpretable and related to fantasy proneness descriptions they account for little variance. So what are the ICMI and CEQ actually measuring? What can possibly be interpreted by these results is that fantasy proneness measures tap into two quite distinct concepts; enjoyment of make believe and imaginative

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involvement. Conceptually these two fantasy proneness dimensions were found to be distinct from dissociation factors, a finding that serves to provide evidence against claims that dimensions of fantasy proneness and dissociation overlap as much as suggested. However, given the unknown extent of common method variance, and that little is known about what the ICMI and CEQ actually measure, we cannot rule out that their associations are not due to shared conceptual foundations, or other influences. With both constructs having similar associations to the personality domains Neuroticism and Openness to experience, and daydreaming styles. At the end of the day, the nature of EFA is to explore a data set (Costello & Osbourne, 2005), and this has been achieved.

Given that many believe that fantasy proneness may undermine the accuracy of self-reported childhood traumas, any future research that further addresses the validity of the ICMI and CEQ will be of benefit to this area of research. Until then, conclusions based on these measures are limited and potentially misleading. It is hoped that factor analyses and examination of the ICMI and CEQ from this study will generate hypotheses for future research.

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APPENDIX B

Dear Student

PARTICIPANTS WANTED....

Undergraduate psychology students are needed for a study that is investigating early childhood experiences and personality.

All that is required is around 40mins of your time to answer a couple of questionnaires. You will be reimbursed for your time – with CHOCOLATE and the chance to WIN \$50 Westfield vouchers!

If you are interested, please contact me at lucy.gilmour@pg.canterbury.ac.nz or

021 XXXXX

Small print: Psyc 106 students, this is a participant pool study so you will receive course credits for participation instead of chocolate and entry into draw. If you have already received your course credit you can still complete this study.

APPENDIX C

Inventory of Childhood Imaginings (ICMI)

- ___ 1. When I was a child, I enjoyed active movement such as running and jumping.
- ___ 2. When I was a child, I enjoyed swinging (on a swing).
- ___ 3. When I was a child, I liked some kinds of music.
- ___ 4. When I was a child, I enjoyed cartoons (on TV or in movies).
- ___ 5. I can remember clearly one or more things that happened to me when I was two years of age or younger.
- ___ 6. When I remember back to when I was 6, 7, or 8 years of age, I can re-experience myself as a child; that is, I can "see" and "hear" again what I saw and heard then and I can feel again the emotions and sensations I felt then.
- ___ 7. Although I have grown and I've had more experiences, I still feel basically the same as I did when I was a child.
- ___ 8. When I was a child, I believed in such beings as fairies, leprechauns, or elves, etc.
- ___ 9. Now that I am an adult, I still in some sense believe in such beings as fairies, leprechauns, or elves, etc.
- ___ 10. When I was a child, I would dream or imagine I was flying with such vividness that I felt as if I actually did fly.
- ___ 11. When I was a child, I enjoyed fairytales.
- ___ 12. As an adult, I would still enjoy fairytales.
- ___ 13. When I was a child, I was very imaginative.
- ___ 14. At the present time, I am very imaginative.
- ___ 15. When I was child, I was "a childhood philosopher". That is, I spent time thinking about such things as the meaning of life, and of death, about hypocrisy, levels of existence, etc.
- ___ 16. When I was a young child (below age 12), I preferred playing make-believe games which require imagining or pretending, such as cowboys, school, house, etc. I preferred such make-believe games over realistic games which require skills such as hopscotch, checkers, building things, ball games, etc.
- ___ 17. When I was playing make-believe games as a child, I usually would imagine so vividly that what I pretended seemed real to me.

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- ___ 18. When I was a child, I lived in a make-believe world much or most of the time.
- ___ 19. As an adult, I still occasionally live in a make-believe world.
- ___ 20. When I was a young child, I believed that my doll(s) or stuffed animal(s) were alive.
- ___ 21. When I was a child, I had an imaginary companion (or companions) such as an imagined person, animal, or object which I talked to, shared feelings with, or took along with me.
- ___ 22. When I was a child, I would at times pretend and in some sense believe I was someone else such as a fairy tale character (e.g., Snow White, Peter Pan, Rapunzel, etc.), a prince or princess, an orphan, etc.
- ___ 23. As an adult, I occasionally pretend I am someone else.
- ___ 24. When I was a child, I would have enjoyed or I did enjoy talking ballet dancing lessons.
- ___ 25. When I was a child or teenager, at times I was afraid my imagining would become so real to me that I would be unable to stop it.
- ___ 26. When I was a child or teenage, sometimes I was accused of lying when I was just reporting what I imagined.
- ___ 27. When I was a young (pre-teenage) child, I had sexual fantasies.
- ___ 28. I have had an orgasm (or orgasms) just by imagining only.
- ___ 29. When I was a child, I would spend at least half of my total waking day imagining.
- ___ 30. Now as an adult, I spend a substantial part of my total waking day imagining.
- ___ 31. If I could not imagine anymore, besides other effects it would have on my life, I wouldn't be me anymore - I would be a basically different person.
- ___ 32. At times, when I was a child or adolescent, it was difficult for me to determine whether something had actually happened or whether I had imagined it happened.
- ___ 33. If given the opportunity, I would be very eager to experience an entirely new sensation - a sensation such as vision, hearing, smell, or touch but as different from all of these as they are all different from each other.
- ___ 34. I have had a deeply moving personal religious, spiritual, or mystical experience.

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- ___ 35. I have felt, heard, or seen an apparition (a spirit or ghost).
- ___ 36. I have had an out-of-the-body experience; that is, I have felt as if "I" (my mind or my spirit) left my body and existed for a while independently of my body.
- ___ 37. I have experienced precognition (prophecy or foretelling the future) in a dream or while awake. That is, I have known something would happen before it happened even though there was no rational way I could have known.
- ___ 38. I have at times written poems, inspirational messages, stories, or songs, etc., and I did not feel it was I who was creating them.
- ___ 39. I have at times felt unexplainably compelled to go somewhere or to do something I wouldn't ordinarily do (such as call someone I wouldn't ordinarily call) and then later discover there was a reason for my compulsion. (For instance, the person I called desperately needed me at that moment).
- ___ 40. I believe reincarnation is possible, and I have become aware of a life (or lives) that I may have lived prior to this one.
- ___ 41. I have at some time in my life experimented with marijuana, psychedelic drugs (LSD, etc.) amphetamines ("uppers"), tranquilizers ("downers"), or other such drugs in order to experience an altered state of consciousness; that is, in order to experience the world in a new way, not just to relax or feel good.
- ___ 42. I would like to experience hypnosis (or I have enjoyed experiencing hypnosis).
- ___ 43. I think I am hypnotizable; that is, I think I could be hypnotized (or I have been hypnotized).
- ___ 44. I have at times thought something happened to me, developed physical symptoms but later found out that what I thought happened never actually occurred. (Some possible examples to illustrate this are as follows: (a) you thought something was in your eye, your eye became irritated, but you couldn't find anything in your eye; (b) or you thought you ate spoiled food, became ill, but later found out that others eating the same food were not bothered; (c) or you thought you touched poison ivy, developed an itch but the doctor said it wasn't poison ivy).
- ___ 45. I have at some time in my life thought I was pregnant and in addition to not menstruating, developed other symptoms of pregnancy (e.g., morning sickness, abdominal enlargement, breast changes, etc.), only to find out later that I was not pregnant.

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- ___ 46. While listening to my favorite music, in addition to experiencing mood changes (e.g., feeling calm, relaxed, energetic, mellow, etc.), I also often experience a transformation (e.g., a feeling of oneness with the music, or being transported to the past or to another place or time, etc.).
- ___ 47. When I remember significant events in my life, in addition to thinking about them, I can also re-experience them. That is, I can see again what I saw then, hear again the sounds, voices, etc., as I heard them before, feel the emotions and sensations I felt then. I can relive them - not just think about them or see in my mind's eye.
- ___ 48. I can vividly re-experience in my imagination such things as: the feeling of a gentle breeze, warm sand under bare feet, the softness of fur, cool grass, the warmth of the sun, and the smell of freshly cut grass.
- ___ 49. When asked to close my eyes and imagine holding a baby or an animal (dog, cat, etc.) in my lap, I can experience it as if it were actually there. That is, I can feel its weight, touch it, see it, hear it, etc.
- ___ 50. At times just before I fall asleep, I experience vivid images.
- ___ 51. Many or most of my dreams tend to be at least as vivid as actual life experiences.
- ___ 52. If I wish, I am usually able to finish or change a dream after I awaken.

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APPENDIX D

Creative Experiences Questionnaire (CEQ)

- 1] As a child, I thought that the dolls, teddy bears, and stuffed animals that I played with were living creatures.
- 2] As a child, I strongly believed in the existence of dwarfs, elves, and other fairy tale figures.
- 3] As a child, I had my own make believe friend or animal.
- 4] As a child, I could very easily identify with the main character of a story and/or movie.
- 5] As a child, I sometimes had the feeling that I was someone else (e.g., a princess, an orphan, etc.).
- 6] As a child, I was encouraged by adults (parents, grandparents, brothers, sisters) to fully indulge myself in my fantasies and daydreams.
- 7] As a child, I often felt lonely.
- 8] As a child, I devoted my time to playing a musical instrument, dancing, acting, and/or drawing.
- 9] I spend more than half the day (daytime) fantasizing or daydreaming.
- 10] Many of my friends and/or relatives do not know that I have such detailed fantasies.
- 11] Many of my fantasies have a realistic intensity.
- 12] Many of my fantasies are often just as lively as a good movie.
- 13] I often confuse fantasies with real memories.
- 14] I am never bored because I start fantasizing when things get boring.
- 15] Sometimes I act as if I am somebody else and I completely identify myself with that role.
- 16] When I recall my childhood, I have very vivid and lively memories.
- 17] I can recall many occurrences before the age of three.
- 18] When I perceive violence on television, I get so into it that I get really upset.
- 19] When I think of something cold, I actually get cold.
- 20] When I imagine I have eaten rotten food, I really get nauseous.
- 21] I often have the feeling that I can predict things that are bound to happen in the future.
- 22] I often have the experience of thinking of someone and

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soon afterwards that particular person calls or shows up.

23] I sometimes feel that I have had an out of body experience.

24] When I sing or write something, I sometimes have the feeling that someone or something outside myself directs me.

25] During my life, I have had intense religious experiences which influenced me in a very strong manner.

Appendix E

(Not included due to copyright laws)

APPENDIX F

Dissociative Experiences Scale (DES)

These questions describe experiences that you may have in your daily life. Your answer should show how often these experiences happen to you when you **ARE NOT** under the influence of alcohol or drugs. CIRCLE a number from 0% to 100% to show what percentage of the time this happens to you. If it happens 45% of the time, circle both 40% and 50%.

1. Some people have the experience of driving or riding in a car or bus or subway and suddenly realising that they don't remember what has happened during all or part of the trip.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
2. Some people find that sometimes they are listening to someone talk and they suddenly realise that they did not hear part or all of what was said.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
3. Some people have the experience of finding themselves in a place and having no idea how they got there.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
5. Some people have the experience of finding new things among their belongings that they do not remember buying.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
6. Some people sometimes find that they are approached by people that they do not know who call them by another name or insist that they have met them before.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
8. Some people are told that they sometimes do not recognise friends or family members.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
9. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation).
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
10. Some people have the experience of being accused of lying when they do not think that they have lied.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
11. Some people have the experience of looking in a mirror and not recognising themselves.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)

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12. Some people have the experience of feeling that other people, objects and the world around them are not real.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
13. Some people have the experience of feeling that their body does not seem to belong to them.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
15. Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
16. Some people have the experience of being in a familiar place but finding it strange and unfamiliar.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
18. Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
19. Some people find that they sometimes are able to ignore pain.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
20. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
21. Some people sometimes find that when they are alone they talk out loud to themselves.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
22. Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
23. Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.).
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing this (for example, not knowing whether they have just mailed a letter or have just thought about mailing it).
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)

FANTASY PRONENESS CONSTRUCT

25. Some people find evidence that they have done things that they do not remember doing.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
26. Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
27. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)
28. Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear.
(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)

FANTASY PRONENESS CONSTRUCT

APPENDIX G

The Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree	Disagree	Neither agree nor	Agree	Agree
strongly	a little	disagree	a little	strongly
(1)	(2)	(3)	(4)	(5)

I see Myself as Someone Who...

- ___ 1. Is talkative
- ___ 2. Tends to find fault with others
- ___ 3. Does a thorough job
- ___ 4. Is depressed, blue
- ___ 5. Is original, comes up with new ideas
- ___ 6. Is reserved
- ___ 7. Is helpful and unselfish with others
- ___ 8. Can be somewhat careless
- ___ 9. Is relaxed, handles stress well
- ___ 10. Is curious about many different things
- ___ 11. Is full of energy
- ___ 12. Starts quarrels with others
- ___ 13. Is a reliable worker
- ___ 14. Can be tense
- ___ 15. Is ingenious, a deep thinker
- ___ 16. Generates a lot of enthusiasm
- ___ 17. Has a forgiving nature
- ___ 18. Tends to be disorganized
- ___ 19. Worries a lot
- ___ 20. Has an active imagination
- ___ 21. Tends to be quiet
- ___ 22. Is generally trusting
- ___ 23. Tends to be lazy
- ___ 24. Is emotionally stable, not easily upset
- ___ 25. Is inventive

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- ___26. Has an assertive personality
- ___27. Can be cold and aloof
- ___28. Perseveres until the task is finished
- ___29. Can be moody
- ___30. Values artistic, aesthetic experiences
- ___31. Is sometimes shy, inhibited
- ___32. Is considerate and kind to almost everyone
- ___33. Does things efficiently
- ___34. Remains calm in tense situations
- ___35. Prefers work that is routine
- ___36. Is outgoing, sociable
- ___37. Is sometimes rude to others
- ___38. Makes plans and follows through with them
- ___39. Gets nervous easily
- ___40. Likes to reflect, play with ideas
- ___41. Has few artistic interests
- ___42. Likes to cooperate with others
- ___43. Is easily distracted
- ___44. Is sophisticated in art, music, or literature

Please check: Did you write a number in front of each statement?

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APPENDIX H

Balanced Inventory of Desirable Responding (BIDR)

Using the scale below as a guide, write a number beside each statement to indicate how true it is.

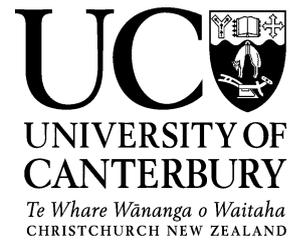
+ _____	+ _____	+ _____	+ _____	+ _____	+ _____	+ _____
1	2	3	4	5	6	7
not true			somewhat			very true

- ___ 1. My first impressions of people usually turn out to be right.
- ___ 2. It would be hard for me to break any of my bad habits.
- ___ 3. I don't care to know what other people really think of me.
- ___ 4. I have not always been honest with myself.
- ___ 5. I always know why I like things.
- ___ 6. When my emotions are aroused, it biases my thinking.
- ___ 7. Once I've made up my mind, other people can seldom change my opinion.
- ___ 8. I am not a safe driver when I exceed the speed limit.
- ___ 9. I am fully in control of my own fate.
- ___ 10. It's hard for me to shut off a disturbing thought.
- ___ 11. I never regret my decisions.
- ___ 12. I sometimes lose out on things because I can't make up my mind soon enough.
- ___ 13. The reason I vote is because my vote can make a difference.
- ___ 14. My parents were not always fair when they punished me.
- ___ 15. I am a completely rational person.
- ___ 16. I rarely appreciate criticism.
- ___ 17. I am very confident of my judgments.
- ___ 18. I have sometimes doubted my ability as a lover.
- ___ 19. It's all right with me if some people happen to dislike me.
- ___ 20. I don't always know the reasons why I do the things I do.
- ___ 21. I sometimes tell lies if I have to.
- ___ 22. I never cover up my mistakes.
- ___ 23. There have been occasions when I have taken advantage of someone.
- ___ 24. I never swear.
- ___ 25. I sometimes try to get even rather than forgive and forget.
- ___ 26. I always obey laws, even if I'm unlikely to get caught.
- ___ 27. I have said something bad about a friend behind his/her back.
- ___ 28. When I hear people talking privately, I avoid listening.
- ___ 29. I have received too much change from a salesperson without telling him or her.

FANTASY PRONENESS CONSTRUCT

- _____ 30. I always declare everything at customs.
- _____ 31. When I was young I sometimes stole things.
- _____ 32. I have never dropped litter on the street.
- _____ 33. I sometimes drive faster than the speed limit.
- _____ 34. I never read sexy books or magazines.
- _____ 35. I have done things that I don't tell other people about.
- _____ 36. I never take things that don't belong to me.
- _____ 37. I have taken sick-leave from work or school even though I wasn't really sick.
- _____ 38. I have never damaged a library book or store merchandise without reporting it.
- _____ 39. I have some pretty awful habits.
- _____ 40. I don't gossip about other people's business.

APPENDIX I

**College of Science****Department of Psychology****Tel: +64 3 364 2902, Fax: +64 3 364 2181****Email: psychology@canterbury.ac.nz****Website: www.psyc.canterbury.ac.nz****Information sheet**

You are invited to participate as a subject in the research project: Early childhood experiences and personality.

Your involvement in this project should take approximately 40-50 minutes, during which time you are asked to answer a few demographic questions, followed by six questionnaires. All questionnaires are anonymous, and you will not be identified as a participant without your consent. You may withdraw your participation, including withdrawal of any information you have provided, until your questionnaire has been added to the others collected. Because it is anonymous, it cannot be retrieved after that. For those in participant pool, there will be a confidential record of the fact that you did participate in this study (so that you can receive your credit) if you choose to withdraw, you will still receive course credit. Your identifying information will not in any way be connected with your responses to the questionnaires.

I would like to remind you that all questionnaires are anonymous, however I am aware also that some of the questions are of a personal nature. Please know that any question you feel uncomfortable answering you may leave blank.

If, during or after your participation in this research project, you became aware of any personal issues related to these topics, please consider contacting the Student Health Centre at the University of Canterbury (03 364 2402)

This research project is being carried out as a requirement for a Masters of Science in Psychology by Lucy Gilmour (lucy.gilmour@pg.canterbury.ac.nz), under the supervision of Associate Professor David Gleaves (david.gleaves@canterbury.ac.nz) and co-supervision of Dr Martin Dorahy (martin.dorahy@canterbury.ac.nz). They will be pleased to discuss any concerns you may have about participation in this project.

This proposal has been reviewed and approved by the Department of Psychology, University of Canterbury.

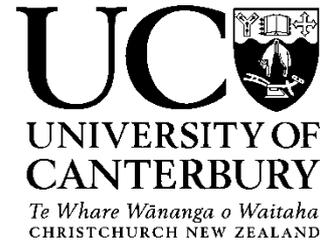
Human Ethics Committee
University of Canterbury
Okeover House

APPENDIX J

College of Science

Department of Psychology

Tel: +64 3 364 2902, Fax: +64 3 364 2181

Email: psychology@canterbury.ac.nzWebsite: www.psyc.canterbury.ac.nz**Debriefing information**

Dear participant,

Thank you for your involvement in this research project, it is greatly appreciated. To avoid potential bias in your responses, prior to your involvement you were provided a broad description that this research was about early childhood experiences and personality. More specifically, this research aims to investigate a personality construct known as ‘fantasy proneness’, and the links it has with dissociation and related constructs. Fantasy proneness is a term used to describe an individual’s propensity to engage in fantasy related activities, such as daydreaming. Despite research claiming that fantasy proneness has links with other human phenomena, there appears to be little information on the validity and reliability of fantasy proneness measures. This research hopes to address this issue.

In this study you completed two measures of fantasy proneness, one measure of dissociation, one measure of imagery, one measure of personality, and one measure of social desirability. By completing these questionnaires you have provided us data that will enable us to conduct analyses that examine the correlations between all these measures. Additionally, the measures of fantasy proneness and dissociation will be entered into an exploratory factor analysis to examine the nature of the factors, enabling us to see how similar or dissimilar the items that measure these constructs are.

Thank you again for involvement in this research project. However, **please do not show this debriefing sheet or discuss any aspect of the study with other students.** In order for this study to work, it is important that future participants do not have this information.

If you have any questions or concerns please do not hesitate to contact myself (lucy.gilmour@pg.canterbury.ac.nz), or the research supervisors who are overseeing this project, Associate Professor David Gleaves (david.gleaves@canterbury.ac.nz) and Dr Martin Dorahy (martin.dorahy@canterbury.ac.nz). They will be pleased to discuss any concerns you may have about participation in this project.

Thank you for your involvement!

APPENDIX L

Hey

Thanks for helping me out with my research! Below is the link that you will need to click on to begin the online survey. If you could complete it in an environment with as little or no distractions as possible that would be awesome! It takes around 25mins.

Once you have completed the study you need to click next to receive your unique code. This confirms to me that your data has been submitted. You will automatically go in the draw to win \$\$, but to receive your chocolate bar you need to write down the last 5 digits of the code and bring it to me sometime this week or next. I'll be in room 714 on level 7 of the psychology building between 9am – 5pm Friday (Today) and 9-3 Monday. If either time doesn't suit just flick me a text (021 XXXX) or email and we can arrange a time.

Click below to begin the study or simply copy and paste into your browser– you will be required to enter a password which is “password28”.

http://canterbury.qualtrics.com/SE/?SID=SV_29KizJanANgsMzG

Thanks so much – seriously appreciate your help!