

**INVESTIGATING DAVANLOO'S ISTDP METAPSYCHOLOGY IN A
LABORATORY SETTING**

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Abstract

Intensive Short-Term Dynamic Psychotherapy (ISTDP) has been consolidated through extensive systematic reviews and clinical data. In brief, ISTDP works to uncover unconscious complex feelings. If these feelings begin to rise, anxiety is elicited, and defenses are activated to reduce anxiety and keep these feelings repressed. The current thesis attempts to replicate this framework (looking at the relationship between feelings/anxiety/defenses) within a laboratory setting (to study it from an experimental perspective). To do this, this thesis aimed to develop a questionnaire (ADQ) to assess for ISTDP anxiety discharge experiences (three main types: striated muscles [STM]; smooth muscles [SM]; and cognitive perceptual disruption [CPD]). Additionally, we were interested in investigating the role of dissociation within the ISTDP context. **Study 1** created the ADQ and attempted to induce complex feelings using a preconscious method via picture stimuli. In general, findings showed a good refined 15 item (ADQ-15) measure (good inter-item reliability for STM and CPD factor, but not for SM factor). The ‘attachment’ (AT) condition responsible for inducing preconscious complex feelings did not elicit any anxiety experiences. Thus, no further conclusions were drawn. Brief analysis with anxiety and defense and dissociation indicated increases with general anxiety experiences being associated with less mature defense styles, and high dissociation. **Study 2** focused on improving the ADQ-15 and utilised a conscious film induction method to induce complex feelings to assess if such feelings could be induced experimentally using this method. The refined ADQ-13 measure showed improvements suggesting a three-factor measure, with good inter-item reliability and demonstrated good convergent validity. The induction method offered conscious elicitation of some complex feelings, which elicited some anxiety discharge experiences (specifically STM). Increases in the severity of anxiety manifestation correlated with more immature defenses styles and pathological dissociative experiences. These findings provide some experimental support for the metapsychology in ISTDP.

General Introduction

Intensive Short-Term Dynamic Psychotherapy (ISTDP; developed by Dr Habib Davanloo) has its roots in psychoanalytic therapy but offers a briefer therapy (Marmor, 1980). It is supported empirically and applies to a range of clinical problems (Abbass & Town, 2013; Abbass, Town, & Driessen, 2012; Davanloo, 2005). Davanloo's ISTDP theoretical framework and technique have been consolidated through decades of extensive systematic review of audio-visually recorded case series, demonstrating both well-validated qualitative and quantitative evidence (Davanloo, 1980; Malan, 1980; Neborsky & Solomon, 2001).

Historical Overview of ISTDP

Breuer provided the foundational idea that individuals hold inner experiences (i.e., feelings, thoughts or memories) and how these experiences can impact an individual's everyday life (Breuer & Freud, 1895; Della Selva, 2004). Influenced by Breuer, Freud developed his theoretical system and therapeutic method of *psychoanalysis* in the 1890s (Davanloo, 1980). In brief, Freud proposed that the mind holds conscious and unconscious materials (i.e., repressed by dynamic forces) and that repressed materials contribute to the individuals' psychopathology (Freud, 1962). Ultimately, analytic therapy focused on the re-integration of repressed material to consciousness, using free association¹. However, due to its passive nature when working with difficult patients, problems like ever-increasing therapy time occurred. Many psychoanalysts (e.g., Ferenczi, Rank, Alexander, French, Malan, Mann, and Sifneos) attempted to counteract the progressive passivity in analytic therapy even before the introduction of ISTDP in the 1970s (Davanloo, 1980; Eisenstein, 1980; Marmor, 1978/1994).

¹ To freely speak of whatever came to mind allowing for exploring of any unconscious experiences that patients recalled.

Theoretical Framework of ISTDP

Psychopathological dynamic forces. Psychodynamic theory assumes that repressed conflicting feelings resulting from ruptures in significant relationships in an individual's life contribute to psychopathological manifestations (Davanloo, 1987; Della Selva, 2004). Similarly, Davanloo's psychopathological dynamic forces (Davanloo, 2001, 2005) explains the emergence (predates back to patient's childhood) and maintenance of individuals' neurosis. At the centre, we all strive for *love and attachment*. Due to our vulnerability in infancy, we have an innate biological drive to form emotional attachment relationships to enable survival (Bowlby, 1973; Bretherton, 1992). If *attachment trauma* occurs, the attachment bond would be frustrated (e.g., through separation, abuse, or neglect). The first response the individual may experience is reactive anger (i.e., in Davanloo's framework, this manifests as rage and is associated with impulses, like murder) at the attachment figure for causing such trauma. This rage (including in its murderous form) gives rise to intense and punishing guilt-laden feelings (result of conflict between love and murderous rage). In addition, there is also intense *pain and grief* for loss to some extent of the loving relationship. These complex mixed feelings, in particular the murderous rage and intense guilt, gives rise to anxiety as the child learns that such feelings are unacceptable. Anxiety comes as signal (i.e., potential internal threat) of potential danger of such feelings and their impact on the attachment bond. Thus, there is an urgency on the part of the young child to avoid/repress these unbearable feelings and eliminate discomforts of anxiety using defenses (Davanloo, 1987b, 1996; Gottwik, Ostertag, & Weiss, 2001). Davanloo describes two categories of resistances that form over time (i.e., character defenses and resistances against emotional closeness). Taken together, individuals may use a whole repertoire of defense in desperation to keep complex feelings repressed and reduce anxiety. Defenses protect the individual from further pain. However, they also prevent awareness of their internal processes and hinder them from forming other close relationships later in life.

Using Malan's (1979) triangles, the triangle of conflict (ToC) and triangle of person (ToP), helps illustrate how the connections between unconscious complex feelings, anxiety, and defenses (i.e., ToC, Figure 1A) can be activated when people form close relationships later in life. The ToP (Figure 1B) shows where the habitual process of the ToC originates from (i.e., *past* relationships). In any relational context where there is a possible rise in similar complex feelings being triggered, such as with a therapist probing for expression for such feelings or an angry argument with a partner could set off the ToC. Hence, the ToC can activate in any current relationships or the relationship within a therapeutic context.

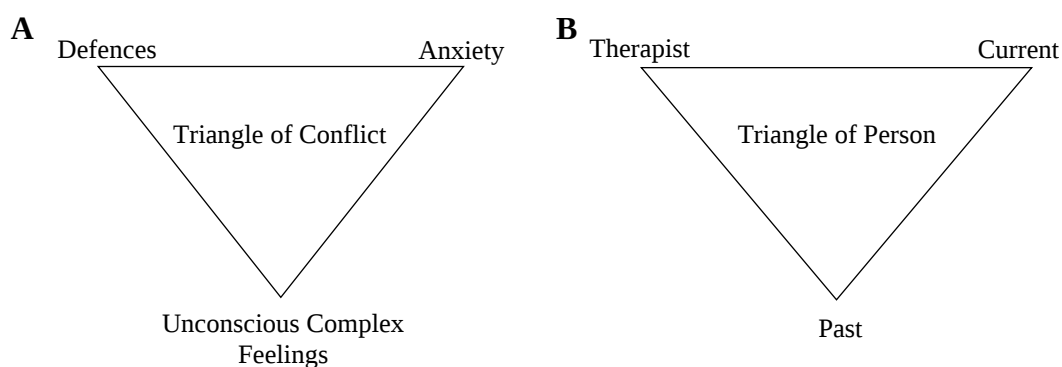


Figure 1. The Triangle of Conflict (A) and Triangle of Person (B).

Unconscious signalling anxiety discharge pathways. Anxiety is conceptualised as a biological warning system that prepares the body to react mentally and physically to potentially dangerous situations (internal or external) to which the body prepares for fight or flight (Hoehn-Saric, 2006). Anxiety signals approaching danger (i.e., rise in complex feelings that have come to be understood as dangerous). The physical feeling of anxiety is the body's way to communicate approaching danger and the need to fend off internal danger (keeping the unpleasant repressed) (Della Selva, 2004; Freud, 1926). Therefore, in ISTDP, a rise in the manifestation of anxiety serves as a signal to the therapist of unresolved unconscious feelings emerging (Gottwik et al., 2001). Davanloo noted that his patients showed different ways to physically experience their anxiety. In addition, the type of anxiety discharge pathway indicated how able clients were in exploring their unconscious feelings in therapy. He noted three main

types of anxiety discharge: striated (voluntary) muscles, smooth (involuntary) muscles and cognitive perceptual disruption (Davanloo, 2005; Gottwik et al., 2001).

The discharge pathway through striated muscles (STM) is when individuals may start to feel tension in their fingers, and as their anxiety increases, tension travels to their arms, then shoulder and neck muscles. From there, anxiety moves to the intercostal muscles (muscles between ribs), where the individual may sigh to relieve the tension, and to the abdominal muscles. In extreme cases, tension may move to facial muscles, lower back muscles, and the individual's leg muscles (e.g., Abbass & Town, 2013; Davanloo, 2001). Individuals who experience anxiety predominantly through their striated muscles have a good idea of how they feel when discussing conflicting experiences and have a fairly accurate idea of what they are anxious about, which indicates some degree of integration between thoughts and feelings (Davanloo, 2005; Della Selva, 2004). For the rest, this discharge of anxiety is viewed as unideal and individuals' being less tolerable to exploring the unconscious. For the discharge of anxiety through involuntary smooth muscles (SM), individuals may feel nauseous, experience a migraine, shortness of breath, the urge to urinate, experience gastrointestinal spasms such as irritable bowel problems. The third discharge pathway is cognitive perceptual disruption (CPD). Here, individuals become anxious and experience disruption in their cognition and perception, such as drifting, becoming confused, losing track of thoughts and concentration, poor memory, visual blurring or ringing in their ears or even dissociating (Fredrickson, 2013). Abbass, Lovas and Purdy (2008) have also noted a fourth type of discharge pathway of anxiety called motor conversion. Here, the individual may experience localised or diffused weakness or paralysis in areas of their body (e.g., an individual cannot speak or move a limb). It could occur in its acute form or be chronic. Generally, one pathway dominates at any time, although the same patient may exhibit different pathways in response to greater or lesser degrees of anxiety (Abbas, Lovas, & Purdy, 2008). When the anxiety is going primarily to SM or CPD, the striated muscles

are relatively relaxed since the anxiety is going elsewhere. Thus, findings of no STM plus the inability to experience emotions combined with symptoms of SM or CPD described above suggest that the unconscious anxiety is being somatised in these routes (Abbass et al., 2008).

Defences. Different anxiety discharge pathways relate to different kinds of defenses. Discharge of anxiety through striated muscles relates to an individual having better tolerance for anxiety, and they use more mature defences (e.g., isolation of affect through rationalisation, intellectualisation). The other types of discharge pathways (SM, CPD) relate to more maladaptive forms of defenses against feelings or anxiety (e.g., repression [going flat], regression, projection) (Della Selva, 2004; Fredrickson, 2013).

ISTDP Therapy Techniques and Patient Population

To appropriately cover the ISTDP literature, this section briefly introduces Davanloo's Central Dynamic Sequence (CDS) and ISTDP patient population. The CDS is an important technique used that eventuates to rapid "unlocking" of unresolved complex feelings (Davanloo, 1988, 2001, 2005). As described briefly using the ToP, some form of relationship occurs between therapist and patient. In general, and simply framed, the CDS focuses on applying consistent *pressure* to the patient to experience any repressed feelings (i.e., mobilise transference complex feelings) and actively *challenge* any resistance (i.e., defenses) that occurs in therapy. By doing so, this eventually leads to the "first breakthrough" of conscious experiences of buried feelings (often the experience of transference complex feelings) with greater depth and more access to guilt, producing an 'unlocking'. Unlocking the unconscious allows a clear view of psychopathological dynamic forces responsible for the patient's symptoms. With repetition, the unconscious becomes more open and fluid, allowing for more *dynamic exploration and restructuring of the unconscious* associated with relational trauma from the patient's past. Once all unconscious complex feelings are brought into awareness, there is no need for defenses. Hence the individual would be able to function at their highest ability.

Patients within the ISTDP framework falls under one of two spectra based on their anxiety discharge patterns and defenses (Davanloo, 1988, 1995b, 2001, 2005). First is the spectrum of psychoneurotic disorders. Individuals who fall on the extreme left are highly responsive to treatment, have good striated muscle anxiety, mature defenses, and mild psychopathology. They show little resistance and have a high capacity to tolerate anxiety and painful affects. On the extreme right, individuals have highly complex core pathology. There is the presence of major trauma in the early phases of life, with the individual holding lots of unconscious pain and reactive murderous rage, with intense guilt and grief-laden feelings. Therefore, they use major resistance to seal off these unacceptable and painful feelings. The second is the spectrum of patients with fragile character structures (mild, moderate and severe degree). Patients with severe fragility have extremely low capacity to tolerate anxiety and painful affects, with access to primitive defences. This group requires extended work to raise their tolerance for anxiety and painful affects before access to their unconscious can occur.

The Current Study

This thesis focused on developing a self-reported measure to assess ISTDP anxiety discharge experiences to assist in studying ISTDP metapsychology from an experimental perspective (the overarching aim). Study 1 created an initial anxiety discharge questionnaire (ADQ) and attempted to replicate the ISTDP framework by inducing similar unconscious complex feelings using a preconscious induction method. The second study focused on refining the ADQ further and utilising a conscious induction method to induce these complex feelings to assess if such complex feelings could be induced experimentally using this format.

Study 1 - Introduction

Subliminal Induction of Unconscious Feelings

To replicate the ISTDP framework within an experimental setting, one needs to mimic the activation of unconscious (or at least preconscious) complex feelings (i.e., feelings of rage,

love, sadness, and guilt) within an individual. An empirically tested approach to investigate psychodynamic ideas (i.e., induce preconscious experiences) uses subliminal stimulation (Mayer & Merckelbach, 1999; Merikle, 2007). A major issue within subliminal research has been the disagreement about defining constructs such as consciousness, unconsciousness or preconsciousness, and how these can be assessed experimentally (i.e., how these processes are distinguished or measured; Merikle, 2007).

Fortunately, authors such as Baars and McGovern (1996) provided operational definitions for consciousness and unconsciousness, allowing these to be experimentally measured. Characteristics of a conscious experience included the following: a) are claimed by people to be conscious; b) can be reported and acted upon; c) with verifiable accuracy; and d) under optimal reporting conditions (i.e., minimum delay between the event and the report, free from distraction). Alternatively, an unconscious mental event occurs if: a) its presence can be verified (e.g., could influence other observable tasks); b) it is not claimed to be conscious; c) and it cannot be voluntarily reported, operated on, or avoided; d) even under optimal reporting conditions. While, from a psychoanalytic perspective, preconscious awareness can be mental or thought content that does not reach full consciousness, however, *have the potential* to become conscious (Freud, 1949). These preconscious materials might be *temporarily* inaccessible to an individual being cut off by certain resistances (i.e., preconscious materials held from consciousness by defense mechanisms). However, if these resistances were resolved, these materials have the potential to be accessed consciously. Following consideration of Freud's definition, an operational definition for preconscious awareness could be similar to Baars and McGovern (1996) definition for unconscious experience. However, the difference would be that, under optimal reporting conditions (i.e., without any "resistance" or environmental distractions), the preconscious experience could become a conscious experience. Thus, it is

crucial to know how subliminal stimulation offers a *suboptimal reporting condition* for a conscious target to be processed preconsciously.

Merikle (2007) claimed that subliminal stimulation could dissociate an individual's initial perception and the conscious experience. A popular approach is to present a target stimulus under degraded conditions where the observer is generally "unaware" of its occurrence (Mayer & Merckelbach, 1999; Merikle, 2007). For example, suppose stimuli were presented for ultrashort durations and not perceived consciously (i.e., the suboptimal reporting condition) but significantly influences an individual's later behaviour, feelings or judgements. In that case, there must be a preconscious effect that mediated it (Mayer & Merckelbach, 1999). Given this approach, to induce preconscious complex feelings, backward patterned masking² was utilised. Here, the target stimulus is presented first, quickly followed by an extended presentation of the masking stimulus (time between target and mask is between 0-200ms (Bachmann & Francis, 2013; Mayer & Merckelbach, 1999). In this procedure, two theoretical assumptions underpin the preconscious experience. First, visual information processing is separated into two stages, and stage one is the build-up of the literal visual representation of the target (bottom-up processing). After which, the second stage uses the features obtained from the first stage to identify the stimulus (top-down processing). Secondly, a patterned mask, often visually similar to the target, is assumed to interrupt the second stage of processing, thus only retaining a build-up of the figural representation of the target stimuli (Holender, 1986).

Subliminal stimulation of emotions. This study was concerned with inducing preconscious emotions, informed by research illustrating that emotion can be subliminally stimulated. For example, Murphy and Zajonc (1993) affective primacy hypothesis (Zajonc, 1980) hypothesizes that affective reactions occur immediately and under voluntary control

² Masking, a method used that impairs perception of a briefly presented target stimulus, by presenting another stimulus (the mask) close in time and space (i.e., same location in the visual field) to the target (Bachmann & Francis, 2013; Holender, 1986).

when certain emotionally laden information is presented preconsciously. Using a backward masking procedure to induce subliminally emotion-laden stimuli (picture of faces) along with Chinese ideographs (non-meaningful characters) as their mask. Participants were to rate whether they liked the characters or not (Study 1) or judge whether the characters meant something good or bad (Study 2). Results showed that presentation of subliminal affective primes influenced participants' judgements on their preference/meaning for these ideographs. Concluding that affective reactions could occur at a preconscious level and influence an individuals' conscious behaviour. Mayer and Merckelbach (1999) argued that subliminally induced affect could significantly influence the emotional states of individuals, with the priming of evocative pictures significantly *manipulating an individual's level of anxiety*.

Guided by the above evidence, the current study utilised a backward central masking method using visual stimuli (i.e., pictures) ranging in emotional salience. Specifically, to induce preconscious complex feelings in relationships, pictures showing different emotions expressed between two people were selected. To allow the separation between perceptual detection of visual stimuli, these were presented for ultrashort durations (i.e., 16ms), consistent with other studies (e.g., Jansen & De Vries, 2002; MacLeod & Hagan, 1992; Macleod & Rutherford, 1992; Van Den Hout, Tenney, Huygens & De Jong, 1997).

Checking for awareness. Stimuli awareness needed to be tested for correct implementation of the subliminal stimulation. To test for conscious awareness, subjective (e.g., free recall self-report) and objective (e.g., forced-choice recognition task) methods were considered. In an objective measure, several different stimuli (including the target) are presented simultaneously. Selection of the correct stimuli at below chance level suggests no critical information was consciously perceived (Merikle, 2007). An objective test eliminates factors that could influence an individual's subjective report (i.e., response bias). Subjective responses could also contain traces of preconceived ideas concerning perception rather than a

“true” description of their experience (Merikle, 2007). Furthermore, Eriksen (1960) raised concerns that participants’ may struggle to accurately self-report complex-perceptual stimuli despite having consciously seen the target. A multiple-choice task hence enables participants to identify the stimuli if consciously perceived. However, there was also support for using a subjective measure. Merikle (2007) argued that both tests of awareness often are consistent with one another (i.e., self-report translates to performance in objective task and vice versa). Merikle (2007) concluded that a subjective measure could be favoured as it is a less complicated test to conduct and that an objective task would be more conservative and hence underestimate the preconscious experience.

Our pilot study opted for a subjective free recall task; however, most participants recalled a maximum of six to seven pictures (but not all), indicating that participants were aware of the stimuli presented. One explanation was that due to limited working memory capacity (Cowan, 2010; Miller, 1956), participants could not freely recall all the pictures seen but a limited number of them. Therefore, it was essential to collect all information about the extent of stimuli awareness. Thus, Study 1 used a more conservative recognition task.

Measuring for Anxiety Discharge Pathways

The study explored subjective and objective measures for anxiety discharge experiences. The constructed questionnaire (Anxiety Discharge Questionnaire, ADQ) subjectively assessed for common symptoms that correspond to STM, SM, MC and CPD (see method for specifics). Objective assessments included physiological and cognitive measures.

Physiological measure. Physiological measures to assess anxiety have been used in many studies (Ray, Cole, & Raczynski, 1983; Wilhelm, Trabert, & Roth, 2001). However, it is often not used in isolation, as it may not capture the complexity of an individual’s anxiety experience, given anxiety is believed to consist of multiple domains, including subjective, behavioural or physiological experience (Pennebaker, 1982; Yartz & Hawk, 2002). Subjective

measures (i.e., self-report) can be a rapid method to gain insight into an individual's state experience. However, subjectively reported experiences can be different from information about anxiety collected from other domains. Due to this desynchrony, it is often valuable to include other indices, such as behavioural or physiological measures to assess anxiety (Yartz & Hawk, 2002). An example, McLeod, Hoehn-Saric, and Stefan (1986) compared self-reported and physiological measures for anxiety in patients diagnosed with Generalised Anxiety Disorder. They found parallel directional changes between self-report and physiological data (for skin conductance and heart rate, but not for muscle activity: electromyography – EMG data) when under stress (i.e., Stroop task). However, besides heart rate, there were no significant correlations between self-reported ratings and physiological measures (higher self-report ratings may not reflect higher physiological activity and vice versa). The authors concluded that individuals could reliably report the directional changes in their bodily symptoms (i.e., for skin conductance and heart rate but not muscular tension). However, patients may not be able to report the extent of their physical symptoms reliably. As illustrated in McLeod et al. (1986)'s study, there was only small correspondence between self-report and physiological data.

Interestingly, within the ISTDP literature, with the use of physiological measures, Fleury, Fortin-Langelier, and Ben-Cheikh (2016) reported significant physiological changes (i.e., Heart Rate Variability; HRV) during ISTDP therapy sessions in their single case study. Furthermore, during different phases of Davanloo's CDS, the patient showed significantly different patterns of change in their HRV during breakthroughs (i.e., consciously experienced their complex feelings that were previously unconscious).

Cognitive measure for CPD. A Stroop task was chosen to objectively measure any CPD-related experiences (i.e., test for changes in cognitive functioning). The Stroop task is commonly used to test for executive functioning skills, such as an individuals' cognitive competency like attentive, cognitive flexibility or inhibitory processes (C. M. MacLeod, 1991;

Wang, Fan, Liu, & Cai, 2016). This task relies on the individual attending to the physical printed coloured word while ignoring the word's colour meaning. For example, in so-called incongruent trials, the word RED is presented in blue ink. Due to the overlearned skill of word reading, individuals may struggle to inhibit the word's semantic meaning and respond rapidly to its ink colour. Thus, performance would be impaired compared to a neutral or control condition (e.g., XXX in red ink). The Stroop interference effect illustrates an individual's ability to inhibit the automatic semantic meaning of the word. Therefore, worse performance accuracy and responding time would be expected for individuals experiencing CPD symptoms.

Because anxiety experiences could occur instantaneously and quickly dissipate, both the Stroop task and self-reported ADQ needed to be administered quickly after the preconscious task. A shortened Stroop task was used and administered. Recommended short versions of the computerised Stroop task contain at least 24 incongruent trials (C. M. MacLeod, 1991, 2005). With similar amount of control trials added, the total number of trials would be 48. However, Everett, Laplante, and Thomas (1989) successfully used a Stroop task consisting of only ten trials per condition. The study also chose a verbal response over keypresses, as keypress responses are typically slower than verbal responses due to the need to translate responses from a covert vocal response to an overt keypress (C. M. MacLeod, 1991, 2005; Peterson et al., 2002).

The current study administered the self-reported ADQ with objective measures of anxiety (i.e., physiological measures and Stroop task). The physiological measures adopted were muscle tension at the forearm (early rendering of STM symptomology, first becoming evident in the thumbs and fingers and then moving up the arms), heart rate (i.e., STM or SM result in increase in heart rate) and respiration to assess STM sighing or SM asthmatic breathing (i.e., rapid short breathes).

Assessing for Defense Mechanisms

The Defense Style Questionnaire, DSQ (Bond, Gardner, Christian, & Sigal, 1983) assesses different defenses styles and individual defense mechanisms (Muris & Merckelbach, 1994). DSQ (or its various versions) is frequently used in research to investigate its associations with anxiety. For example, using the DSQ, Andrews, Pollock, and Stewart (1989) found associations between anxiety disorders with higher neurotic and immature defenses but correlated lower with mature defenses. Similarly, Muris and Merckelbach (1994), using the DSQ 36 items, explored the relationship between defenses and anxiety. Three anxiety experiences were examined i.e., trait anxiety, worry and somatisation of anxiety. Their findings showed that high trait anxiety and worry were associated with neurotic and immature defense styles (not mature). Additionally, mature defense style was negatively associated with anxiety somatisation, indicating that habitual use of mature defenses within an individual reported fewer bodily symptoms of anxiety.

The current study chose the DSQ-40 item (Andrews, Singh, & Bond, 1993) to assess for defense styles. The DSQ-40 is research-friendly, requiring less administration time (Tapp et al., 2018). Also, the DSQ-40 addresses the DSQ's psychometric shortcomings (i.e., unreliable discrimination between patient and community samples, unclear item phrases, unequal item representations for defenses; Tapp et al., 2018; Wilkinson & Ritchie, 2015).

Addition interest with dissociation. Broadly speaking, dissociation is defined as two or more mental processes or contents that should be integrated becoming or remaining unintegrated, which disrupts the smooth functioning of normally integrated systems (e.g., conscious awareness, memory, or identity) (Cardeña, 1994)³. Dissociation is often viewed as a defense mechanism activated to ward off physical or emotional pain from being felt consciously

³ Dissociation can be normative i.e., overlearned behaviours such as driving on a familiar route without being consciously aware of all steps to reach the destination (Cardeña, 1994).

or remembered (Steinberg, 1995). Associations between dissociation and anxiety have been mentioned in the literature. Empirically, Tapp et al. (2018); Wilkinson and Ritchie (2015) found association between dissociative symptoms with anxiety-based symptoms (e.g., anxiety in general, hyperarousal, fear, or panic). Moreover, McKeogh, Dorahy, and Yogeewaran (2018), in an investigation of the relationship between shame and dissociation, found that when anxiety scores were controlled for, the link between shame ratings and dissociation was no longer significant. The researchers concluded that rather than shame being a ubiquitous emotional response to dissociation, anxiety which may accompany shame was responsible for the higher shame ratings found following experiences of dissociation. From an ISTDP perspective, dissociation could be a defense mechanism or an extreme CPD experience (Davanloo, 1995b; Frederickson, 2013). There are similarities with the theoretical model of ISTDP and the etiology of dissociative disorders with their associations with childhood trauma (82-98% of dissociative disorders noted of history of abuse, Dalenberg et al., 2012). The ISTDP model offers a succinct account of the development of dissociative defenses that developed over time. In the early phase of life, a child who repeatedly faces attachment trauma each time it occurs, unbearable complex feelings arises. Hence, the desire to defend against the pain and to maintain the attachment relationship leads the child to suppress these complex feelings. When such feelings arise an overwhelming amount of anxiety arises, and to regulate both anxiety and suppress complex feelings, a child may develop defense mechanisms like dissociation. Whilst the dissociative defense may be ideal at the time, over time an automatised activation of dissociative experiences may not be ideal for the individual and can result in formation psychopathology.

It was of interest to include the investigation of dissociation into our study, therefore, the current study attempted a small-scale investigation, using a quick measure of dissociation, i.e., Dissociative Experience Scale Taxon, DES-T.

Current Study

The current study intended to replicate the ISTDP model within a laboratory setting and develop a self-reported questionnaire to assess anxiety discharge pathways. Preconscious induction of complex feelings (i.e., associated with attachment relationships) was warranted using rapidly presented pictures that portrayed different emotions expressed between two people (relationship-related pictures hypothesised to activate emotions associated with attachment). This condition was compared to two other picture stimuli conditions: control (neutral pictures) and a comparison (general-threatening pictures). Furthermore, picture stimuli conditions were compared to baseline self-report and physiological anxiety discharge experiences. If preconscious complex feelings were induced, a successful replication of the ISTDP model would activate anxiety discharge experiences (i.e., assessed by the ADQ and objective measures). In addition, different manifestation of anxiety discharge would correlate with different defenses styles (assessed by the DSQ-40 or DES-T).

Aims and Hypotheses. The ADQ was developed, and the goal was to assess whether it measured the different anxiety discharge pathways. It was hypothesised that most proposed items should fall into its relevant discharge factors. The *second aim* was to investigate the relationship between attachment-based pictures containing strong emotions and anxiety discharge pathways experienced. It was hypothesised that participants would experience similar anxiety experiences between the general threat and attachment-based condition compared to baseline or neutral condition. The *third aim* was to test whether there were relationships between the severity of different anxiety discharge symptoms and the types of defense styles people may use. It was expected that participants' that report STM (more adaptive) anxiety discharge pathways would likely report more mature defense styles. Whereas more severe anxiety discharge symptoms (i.e., SM and CPD experiences) would be associated with more maladaptive defense styles.

Method

Pilot Study

A pilot study was conducted to refine the methodology of Study 1.

Participants. Participants were University of Canterbury students ($n = 6$, age range = 20-35, four females and two males).

Material.

Stimuli programme. The experimental conditions consisted of three blocks of trials that corresponded to Neutral (N), General Threat (GT) and Attachment-related (AT) conditions. Each condition comprised of 36 trials of pictures (twelve novel pictures, randomly repeated three times) that reflected the tone of the condition. Each trial consisted of a one-second fixation cross followed by a picture (16ms) and then a colour pattern mask (500ms).

Awareness check. An awareness check condition featuring similar pictures to experimental conditions was administered at the end. Two approaches were piloted, the free recall task and a three alternative force choice task (3AFC). In the free recall task, participants had to describe as many pictures as they could recall from the awareness trials (see Appendix G for form). For one participant, the 3AFC task was administered. This test assessed the participant's ability to identify target picture descriptions.

Questionnaires. The ADQ was administered to measure different types of anxiety discharge experienced during the experimental conditions. In addition, the DSQ-40 and the DES-T were administered to assess individuals' defenses.

Procedure. At the start of the session, participants provided verbal consent. Then the demographic questions and baseline ADQ was completed. Following which, the picture tasks were introduced in a randomised order (N, GT, AT). In between conditions, participants filled the ADQ followed by a distractor task (paper and pen – noughts and crosses). After the last

picture condition and prior to the awareness check, participants filled out the DES-T and DSQ-40. Once participants completed the awareness check task, they were debriefed before leaving.

Data Analysis and Results. ADQ total scores were higher in conditions N and GT than AT (but, no statistical significance found, $F(2,10) = .29$, $p = .75$, $\eta_p^2 = .056$). Most participants recalled (free recall task) six to seven pictures (of 12) in the awareness check condition. The 3AFC result indicated a below chance performance (<33%). Due to limits in working memory (recall limit of 6-7 items), the free recall task was insufficient to test participants full extent of awareness to picture stimuli. The 3AFC was chosen in Study 1 as it allows for awareness to be queried for each picture. Also, several adjustments to the picture stimuli programme were made following these results: 1) reduce awareness to picture stimuli; 2) improve picture stimuli salience in AT condition; and 3) add an objective measure of anxiety.

Study 1

Participants. Seventy-three participants were recruited for Study 1. Most were first-year University of Canterbury psychology students (76.71%), and the remaining students were from other departments from the University (23.29%). See Table 1 for Demographics. All participants were proficient in English and had adequate or corrected eyesight to comprehend and complete the computer tasks and questionnaires.

Table 1.
Study 1 Demographics

	Mean	SD	Range	N	Percent
<i>Age</i>	20.47	6.60	17-56	72	
<i>Sex</i>					
Female				53	72.6
Male				20	27.4
<i>Relationship Status</i>					
Single				49	67.1
Relationship				21	28.8
Engaged				1	1.4
Married				2	2.7
<i>Mental Health Status</i>					
None				57	78.1
Depression				3	4.1
Anxiety				1	1.4
Depression and Anxiety				6	8.2
Depression, Anxiety and Eating disorder				2	2.7
Anxiety and Bipolar				1	1.4
ADHD				1	1.4
SLD				1	1.4
Did not disclose				1	1.4
<i>Medication</i>					
None				65	89.0
Anti-depressants					9.6
Did not disclose				1	1.4

Note. One missing age. ADHD=Attention Deficient Hyperactivity Disorder. SLD=Specific Learning Disorder.

Materials.

Stimuli programme. There were several adjustments made from the pilot study. The computerised programme consisted of three blocks of trials (each block consisted of 20 novel pictures repeated twice, $20 \times 2 = 40$, and presented in a randomised fashion). These blocks of trials represented the three experimental conditions, N, GT, and AT. Most pictures were selected from the International Affective Picture System, IAPS (Lang, Bradley, & Cuthbert, 2008). IAPS pictures have been normatively rated for their affective content and provide experimental control in selecting emotional stimuli. A total of 28 IAPS images were selected: 12 for N condition (5395, 5410, 5500, 5551, 7001, 7004, 7009, 7026, 7052, 7175, 7211, 7233, 7235, 7236 and 7705), 12 for GT (1120, 1220, 1300, 1820, 1931, 2120, 2682, 2692, 2811, 9594,

9810 and 9940) and four for AT (2151, 2154, 2311 and 6313). See Appendix F for IAPS image information. Additional pictures were sought via Google search using keywords such as “threatening”, “guilt”, “anger”, “sadness” or “emotions in relationships”. Furthermore, pictures that depicted more negatively expressed emotions were added to AT (total of 16:4 ratio, negative vs. positive emotions). More negative emotional interactions were added to improve salience to trigger more anxiety provocative experience (priming more negative emotions may create a more distressing mixture of feelings to arise in an individual).

The programme was presented through E-prime (version two) on a full colour 22-inch LCD monitor with 1650x1050 resolution (picture size 1600x1050). A single trial began with a central fixation cross, which was replaced by the target picture (16ms) and immediately substituted by a coloured pattern mask (appeared for an extended 800ms). An effective masking procedure occurs when picture stimuli are rapidly replaced by a perceptually similar but meaningless stimulus to prevent awareness to the target (Fox, Cahill, & Zougkou, 2010). Picture stimuli were presented in colour, and thus a coloured patterned mask (perceptually similar) was used. The mask was the same size and positioned to overlap the target stimuli. Incorporated into the presentation was the Simon arrows response speed task (Simon & Rudell, 1967) used by Bialystok, Craik, and Luk (2008). The task helped reduce awareness of the target stimuli and facilitated attention to the computer screen. This task was administered after the mask stimuli; participants were presented with a central arrow pointing left or right. Participants responded with the appropriate key press to the direction of the arrow (collected using a Chronos® box⁴). Once a response occurs, the next trial would begin. See Figure 2 for a single picture trial. Participants’ performance for average reaction time (*avRT*) and percentage correct (%Correct) on the Simon arrow task were collected to measure their cognitive performance.

⁴ A multifunctional response and stimulus device that allows for millisecond accuracy in collecting tactile and auditory responses (Babjack et al., 2015)

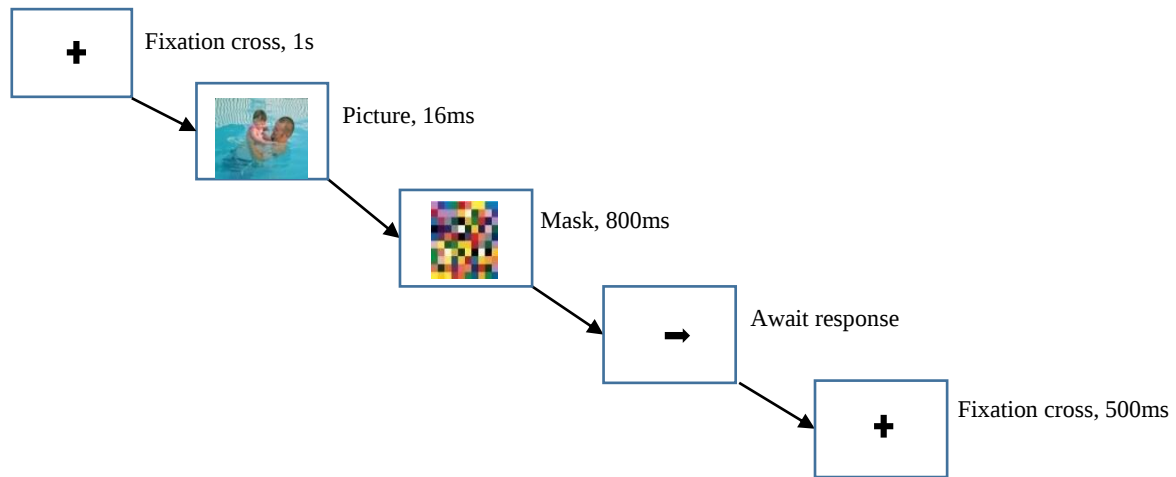


Figure 2. Presentation sequence of one picture stimuli presentation trial.

Awareness check. A 3AFC awareness check was implemented and included novel yet similar pictures to the experimental conditions (combination of N, GT and AT types). This condition consisted of 12 pictures, ten selected from the IAPS (1321, 1726, 2150, 2455, 5390, 5726, 6260, 6315, 7012 and 7021) and two neutral images (a leaf and a pencil) obtained through Google Image. A 3AFC task (adapted from Taylor and Henson, 2012) assessed participants' recognition of possible picture stimuli seen in the awareness check condition. A total of 36 written picture descriptions were presented in the format of a questionnaire asking what participants had seen (36 "Yes/No" questions). Participants were to identify the correct picture description that they have seen over other unrelated or perceptually similar picture stimuli descriptions. For example, if participants had seen a picture of a bear, they would select "Yes" to the question "did you see a picture of a grizzly bear?" and "No" to "did you see a picture of a monkey?" (an unrelated description to the bear picture) or "did you see a picture of a wolf?" (perceptually similar description to the bear picture). See Appendix H for the 3AFC form. All picture descriptions in the questionnaire were randomised. Correctly identified "Hits" and incorrectly identified "Misses" scores were calculated.

Questionnaires. Paper copies of the demographic questionnaire, the ADQ, and trait measures assessing for defenses (DSQ-40 and DES-T) were administered.

Demographic Questionnaire. The questionnaire sought information about participants' age, sex, relationship status, and mental health information (includes related medication) (see Appendix I).

Anxiety Discharge Questionnaire (ADQ). The ADQ was constructed to assess for different types of anxiety discharge individuals might experience. The ADQ consisted of 23 items and assessed the three anxiety discharge pathways and motor conversion: six items for STM, seven for SM, eight for CPD and two for MC (See Appendix J for questionnaire). Each item in the ADQ corresponded to common characteristics that could be experienced in a certain anxiety discharge pathway. The ADQ was administered as a baseline measure and after each experimental condition. Items were scored on a 5-point-Likert scale, with 0 being "None" and 4 being "A lot". The ADQ total (an overall anxiety score) was calculated by adding all item scores together (range from 0-96). Higher scores represented higher levels of anxiety. Subscale scores (STM, SM, MC and CPD) were calculated by adding scores from its relevant items.

Defense Style Questionnaire 40, DSQ-40. The DSQ-40 items was administered to identify different defense styles participants may endorse. The DSQ-40 assesses for 20 defense mechanisms that fall under three main categories: mature, neurotic, and immature defenses (i.e., factor scores). See Appendix M for defense styles and individual defense scores. Each defense is represented by two items, and items are rated on a 9-point-Likert scale, ranging from 0 ("strongly disagree") to 9 ("strongly agree") (see Appendix L for form). Factor and defense scores were calculated by obtaining an average of items that correspond to these scores. Internal consistency for factor scores were reported to have comparable reliability to the DSQ-72, coefficient alpha scores ranged from moderate to high for mature ($r = .68$), neurotic ($r = .58$) and immature ($r = .80$) factors. Test-retest coefficients were reported to be acceptable and good for mature ($r = .75$), neurotic ($r = .78$) and immature ($r = .85$) factors. Furthermore, the DSQ-40 showed good discrimination between normal to clinical samples (Andrews et al., 1993).

Watson and Sinha (1998) also found good item-scale correlation (average $r = .78$) and reported internal reliability Cronbach's alpha for the DSQ-40, $\alpha = .80$.

Dissociative Experience Scale Taxon (DES-T). This measure consisted of eight items selected from the original DES (28 items) to detect pathological dissociation (Waller et al., 1996). These items measured 1) amnesia (items 3 and 5), 2) derealisation and depersonalisation (items 7, 8, 12, 13) and 3) identity alteration or confusion (item 22) (see Appendix K for questionnaire). Items within the DES-T were reported to have a strong Cronbach's coefficient alpha of 0.85 (Modestin & Erni, 2004). The DES-T measures the frequency of how often these experiences happen to the individual in their daily life. Each item is rated on an 11-point Likert scale, ranging from 0% (never) to 100% (always) at 10 percent point increments. Mean scores were calculated for each participant.

Physiological measures. PowerLab 4/25T and LabChart 7 (computer programme) collected data for forearm muscle tension, respiratory and heart rates. Involuntary forearm EMG (Electromyography - a method used to record skeletal muscular electrical activity) was recorded using three surface metal electrode clips. The positive clip was attached beneath the left elbow, with the negative clip attached to the left wrist and the earth clip attached to the participants' right wrist (vice versa for left-handed participants). This set-up allowed participants to use their other hand to complete computer tasks and questionnaires while resting their equipped arm on the chair's armrest. Respiratory data was recording via a chest belt, and heart rate was recorded using a finger pulse monitor. The onset of picture stimuli was recorded in another channel to help indicate the start and finish of a condition. The equipment was calibrated adequately at the start of the session. See Appendix N for diagram of equipment placement and for specific channels set up on LabChart.

Data extraction. Physiological data for each condition were extracted from LabChart. The first three and last picture trials were removed (participants is likely to make voluntary

movements when settling down or become restless anticipating the end of tasks). Respiration rate (breaths per minute) and heart rate (beats per minute, BPM) were calculated by dividing the R-R intervals (interval between successive peaks from wave signals) extracted from LabChart by 60. Tidal representations of a sigh were identified based on Ramirez's (2014) review and then confirmed by checking video recordings. A sigh was defined by: 1) an initial normal eupneic breath (wave signal of normal regular breath); 2) followed by a large amplitude inhale (a large peak followed by a larger than usual trough in the wave signal); and 3) finishing with a post-sigh apnea (few seconds with no waves in signal). See Figure 3 for an example of a sigh identified. Total sigh count for a condition included sighs during the picture presentation and two seconds after the last picture onset (two seconds after trial 40). Raw EMG signals were extracted and exported to the Brain Vision Analyzer (BVA) software to extract into a time-independent data score⁵. EMG signals were first rectified by taking the absolute values of signals and then removing non-stimuli related artefacts (e.g., movements caused by coughing). Next, signals in each condition were smoothed, and a moving average was calculated at 2s segments (measured as the area under the activity, $\mu V \times ms$). Overall EMG average for each condition was calculated by summing the averages of the 2s segment divided by the total number of 2s segments within a data section.

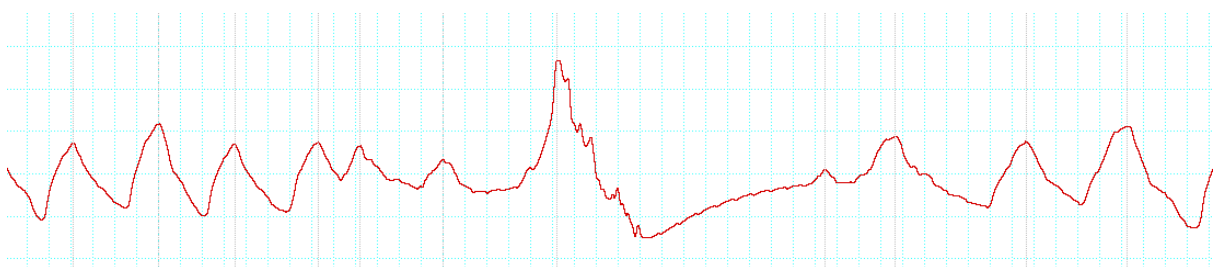


Figure 3. Tidal representation of a sigh identified in the dataset.

⁵Literature based EMG preparation method (specifically: Fridlund and Cacioppo, 1986; Kaye, Bradford, and Curtin, 2016; Saponas, Tan, Morris, and Balakrishnan, 2008; and Tan et al., 2012). Includes discussions with physiological data experts at the University.

The Stroop Task. A shortened computerised Stroop task was presented to assess for changes in participant's cognitive functioning (administration time of under two minutes) after each block of trials. Three Stroop tasks were constructed (each task consisted of 40 trials: 20 neutral and 20 incongruent items). Items were presented in a pseudo-random order to avoid negative or positive priming effects, which could cause response time bias and influence the overall Stroop interference-effect⁶. The Stroop tasks were presented in a fixed order, where Stroop task *one* was presented after the *first* block of trials and so forth.

Participants named the ink-colour of a colour word or a string of Xs (XXXX) presented on the computer (font: Arial, 36). Neutral trials consisted of a string of Xs presented in four different colours (red, blue, green, and yellow). The number of Xs in the string was matched to the number of characters of the coloured words, e.g., red ink colour would have three Xs presented. For incongruent trials, colour words appeared in a different ink colour incongruent to its written form, e.g., the word “Red” presented in green coloured ink. Each trial began with a blank screen for 500ms (inter-trial interval, ITI) followed by a central fixation cross (500ms), then either a neutral or an incongruent Stroop item would appear (see Figure 4). Once a verbal response was registered through noise activated relay using computer headsets connected to the Chronos® box, this would terminate a Stroop trial. If no response were registered, after 2secs, the trial would terminate. Both the Stroop stimuli and the ITI onset time were recorded through E-prime, and the experimenter manually recorded the accuracy of participants' verbal responses (Appendix O for Stroop task answer sheet). Before the picture stimuli presentation, participants took two Stroop task practises (10 trials per practice), and after each, feedback on accuracy was provided. Also, it allowed for headsets to be adjusted if verbal responses were not registered.

⁶ Negative priming effect - The word “Red” (in yellow ink colour) precedes “Green” (in red ink colour). Longer response time in second trial, as previously inhibited its target (i.e., red). Positive priming effect - when “xxx” (red) precedes “Green” (red). Target is presented in two immediate trials resulting in faster responses in second trial (C. M. MacLeod, 1991).

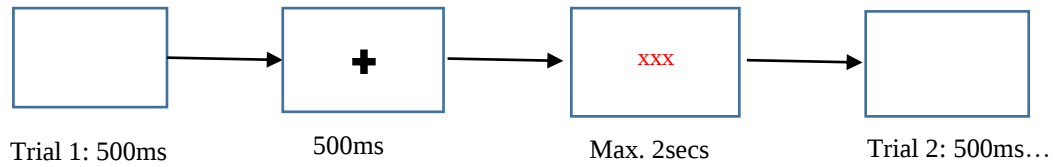


Figure 4. Presentation sequence of one colour-word interference trial.

Due to equipment failure, the RTs for each item was not recorded. Instead, the RT for each trial was calculated from the ITI onset time minus the target stimuli onset time that preceded. See formula below:

$$RT = ITI \text{ Onset time}_{(b,c,d,...)} - Target \text{ Stimuli Onset time}_{(a,b,c,...)}$$

Consequently, 39 RTs (out of 40 items) were calculated for each participant (because the first trial could not be used). In addition, the RT analysis excluded any trials where an incorrect or correct response was made. Following other researchers, trials with RTs under 200ms or over 2000ms were considered invalid and removed (Davidson, Zacks, & Williams, 2003; Kane & Engle, 2003; Orem & Bedwell, 2010). RTs $\pm 2.5S.D$ were removed to ensure no extreme outliers were accounted for in the final RT analysis (Antón, García, Carreiras, & Duñabeitia, 2016; Wang et al., 2016). In the end, 7.97% in N, 6.04% in GT and 5.66% of AT Stroop RTs were removed from the final analysis. The Stroop interference effect for each condition was calculated by subtracting the *avRT* for neutral trials from the *avRT* for incongruent trials. Therefore, each participant had three Stroop interference effect scores (N, GT, and AT). Percentage correct (%Correct) scores within each Stroop task was also calculated.

Design. The study was a one-way within-subjects design, with experimental conditions (N, GT AT) and baseline (BS) as the independent variable. Dependent variables included scores from the ADQ, physiological and defense measures.

Procedure. Study 1 was approved by the University of Canterbury Human Ethics Committee (HE 2015/115) (See Appendix A). Information sheets and consent forms were provided to participants before the commencement of the experimental session (See Appendix

B & C for these forms). The complete objectives were not disclosed initially to control for any influences on participants' performance. However, participants were informed that the study investigated the experience of anxiety when being shown pictures outside of awareness and if reactions were related to coping strategies used in daily life.

The experimental session took approximately 40 minutes. First, participants filled out the demographic questionnaire, and then baseline data (i.e., BS condition) was collected. Next, baseline ADQ was administered, followed by calibration and recording of baseline physiology (1-2 min) for each participant. Before participants were introduced to the picture stimuli programme, the experimenter began the video recordings of them completing tasks throughout the session. Participants were shown all three picture stimuli blocks (N, GT, and AT) in a randomised order. In between each picture block, the Stroop task (immediately followed the picture presentation), followed by an ADQ, and two games of noughts and crosses (distractor task) were administered. Following the completion of the ADQ after the third picture presentation, participants completed the DES-T and DSQ-40. Then the awareness check procedure was administered after the defense measures. Finally, seven positive images were shown (IAPS: 1463, 1602, 1710, 4626, 5202, 7405 and 8162) to counterbalance any lingering negative affects participants may have experienced during the session.

Participants were provided with a debrief (written and oral) of the full objectives, that the study investigated how individuals processed preconscious emotional information like attachment-based, general threat or neutral emotions. It was explained that when individuals experience certain emotions outside of their awareness, they may experience different types of anxiety manifestation. Dependent on the type of anxiety an individual experiences, this could predict the coping strategies they usually adopt (see Appendix D & E for debrief forms). Participants were reimbursed for their participation with 2% course credit (for first-year

psychology students) or with ten-dollar Westfield mall vouchers. The order in which this within-subjects experiment procedure was carried out is presented in Table 2.

Table 2.

Study 1 procedure for the experimental session (steps)

1	Participant express interest and session time is scheduled.
2	Information sheet and consent form presented prior to the start of the session.
3	Demographic questionnaire and baseline ADQ administered.
4	Physiological equipment set up and calibrated.
5	Start video recording for the session.
6	First picture condition presented.
7	Stroop task, then ADQ and then distractor task administered.
8	Second picture condition presented.
9	Stroop task, then ADQ and then distractor task administered.
10	Third picture condition presented.
11	Stroop task, then ADQ, and then DES-T and DSQ-40 administered.
12	Awareness check presentation, followed by the 3AFC task.
13	Positive images are shown.
14	Written and oral debrief about the full objectives of the study.
15	2% course credit or a \$10 Westfield mall voucher were given for participation.

Data Analysis. Statistical Package for Social Sciences, SPSS was used for analysis. Exploratory analysis was completed, and the distribution of the data and extreme outliers were identified. To test for factorial validity (i.e., whether items proposed assessed for that discharge type) of the ADQ, Exploratory Factor Analysis (EFA) using principal component analysis (PCA) was used. If poorly fitted items were found, the ADQ would be adjusted accordingly (i.e., refining the ADQ). The new ADQ would then be compared to objective measures of anxiety via bivariate non-parametric Spearman's rank correlation (two-tailed).

Repeated Measures ANOVAs were conducted to test for the relationship between different experimental conditions (independent variable; GT, AT & N) and individuals' anxiety experiences (dependent variables, i.e., ADQ, physiological data & cognitive test scores) (i.e., hypothesis 2). Mauchly's test of sphericity and Shapiro-Wilk test of normality were performed for each dependent variable. When assumption of normality was violated for ANOVAs, its non-parametric equivalent (Friedman test) was used. If significant differences were found in the tests, post-hoc *t*-test or its non-parametric equivalent (Wilcoxon Signed Ranks) were used to

compare the means (Field, 2009). ADQ-15 discharge scores were examined by comparing these within and across experimental conditions.

Two-tailed Spearman's bivariate correlations were conducted to identify any significant relationships between anxiety measures (ADQ-15 scores, physiological and cognitive measures) with defense measures (DES-T & DSQ-40) (i.e., hypothesis 3).

Results

Exclusion and Outlier Analysis

Physiological data which contained more than 25% noise was removed, and data scores were left as missing scores in SPSS. Resulting in one participant's entire physiological data set, and two EMG scores (i.e., from different participants) being removed. In addition, data scores that were believed to be invalid due to an administration error were excluded from analysis ($n = 1$, N condition Stroop scores). For extreme outliers, nine ADQ (totals or discharge type scores) data points, 13 physiological data points and three Simon arrow task data points were identified. All extreme outlier scores were adjusted to the next closest data point for that variable.

Descriptive Statistics and Item Reliability

Table 3 shows ADQ descriptive statistics, including internal consistency statistics.

Table 3.
Descriptive Statistics for Anxiety Discharge Questionnaire

	<i>n</i>	Median	Mean	SD	α
<i>Baseline Total</i>	72	6	8.72	8.04	.89
Striated Muscle	73	3	3.40	3.02	.74
Smooth Muscle	73	1	1.52	2.14	.73
Motor Conversion	72	0	0.85	1.12	.54
Cognitive Perceptual Disruption	73	2	2.93	3.49	.83
<i>Neutral Total</i>	72	9	11.49	8.47	.88
Striated Muscle	73	4	4.38	3.20	.75
Smooth Muscle	73	1	1.27	1.64	.50
Motor Conversion	73	0	0.89	1.17	.45
Cognitive Perceptual Disruption	72	4	4.32	4.31	.86
<i>General Threatening Total</i>	71	10	13.85	11.06	.91
Striated Muscle	72	4	5.21	3.68	.77
Smooth Muscle	72	1	1.64	2.21	.50
Motor Conversion	73	1	1.71	1.67	.66
Cognitive Perceptual Disruption	73	3	5.15	5.54	.90
<i>Attachment-Related Total</i>	73	9	11.47	9.26	.88
Striated Muscle	73	3	4.40	3.74	.82
Smooth Muscle	73	1	1.33	1.88	.45
Motor Conversion	73	1	1.55	1.57	.53
Cognitive Perceptual Disruption	73	3	4.15	4.40	.86

Note. An acceptable Cronbach's alpha (α) range from .70-.95 (Tavakol & Dennick, 2011).

Table 4 displays descriptive statistics for physiological data and Table 5 for sighs.

Table 4.
Descriptive Statistics for Physiological Data

	Conditions	<i>n</i>	Median	Mean	SD
<i>Electromyography (EMG)</i>					
	Baseline	71	5936.32	7267.29	4873.93
	Neutral	71	6584.68	10356.66	9097.36
	General Threat	72	9130.31	20562.37	13489.90
	Attachment	72	6905.85	12913.24	24354.91
<i>Heart Rate</i>					
	Baseline	71	81.42	82.12	13.22
	Neutral	71	79.89	80.45	12.21
	General Threat	72	79.74	80.20	13.24
	Attachment	72	80.05	79.75	12.56
<i>Rate of Respiration</i>					
	Baseline	71	15.42	15.14	3.81
	Neutral	71	19.11	18.89	3.90
	General Threat	72	18.14	18.87	3.35
	Attachment	72	19.50	19.87	4.35

Note. EMG units: $\mu\text{V} \times \text{ms}$. Heart and respiration rate measured in bpm.

Table 5.
Descriptive Statistics for Sighs

Conditions	<i>n</i>	Median	Sum
Baseline	71	0	7
Neutral	72	0	13
General Threat	73	0	17
Attachment	73	0	12

Table 6 and 7 shows descriptive statistics for cognitive tests and trait measure scores, respectively.

Table 6.
Descriptive Statistics for Cognitive Tasks

	<i>n</i>	Median	Mean	SD
<i>Arrow Task %Correct</i>				
Neutral	73	100	98.49	1.99
General Threat	73	97.50	97.88	2.75
Attachment	73	97.50	97.74	2.86
<i>Arrow Task Reaction Time (ms)</i>				
Neutral	73	400.79	401.47	42.59
General Threat	73	395.10	407.14	45.34
Attachment	73	402.31	405.88	44.63
<i>Stroop Interference effect (ms)</i>				
Neutral	72	97.50	110.03	47.95
General Threat	73	100	107.53	47.91
Attachment	73	100	101.72	51.75
<i>Stroop %Correct</i>				
Neutral	72	108.05	97.78	2.67
General Threat	73	100.88	98.32	2.25
Attachment	73	92.98	98.08	2.78

Alpha coefficients for ADQ totals in each condition were good ($\alpha > .87$). However, inter-item reliability was poor for MC and SM discharge scores in ADQs across conditions. For trait measures (DES-T and DSQ-40), alpha coefficients were comparable to reported reliabilities from other studies (Andrews et al., 1993; Modestin & Erni, 2004). See Appendix M for descriptive statistics for specific defenses.

Table 7.

Descriptive Statistics for DES-T and DSQ-40 factor scores

	Mean	SD	α
<i>DES-T, n=73</i>			
Overall Score	14.32	13.06	.80
<i>DSQ-40, n=72</i>			
Mature Factor	5.46	1.07	.65
Neurotic Factor	4.79	0.97	.42
Immature Factor	3.98	0.88	.78

Note. An acceptable Cronbach's alpha (α) range from .70-.95 (Tavakol & Dennick, 2011).

Awareness Check

One sample t-tests were conducted on 3AFC scores to check for awareness. The mean percentage correct (42.86%, SD = 22.42) fell above the 33% chance performance, $t(72) = 3.757$, $p < .001$. Indicating that participants were aware of some of the images presented. We continue the following analysis with the knowledge that some pictures had reached conscious awareness.

Hypothesis one: ADQ Exploratory Factor Analysis

MC anxiety discharge items were excluded from further analysis because: 1) only two items were measuring MC, so a small difference in item scores were likely to result in large discrepancies with factor analysis and inter-item reliability; and 2) MC was described to be the fourth type of discharge (Abbass et al., 2008), however Davanloo (2005) stated of only three major discharge of anxiety. PCAs on the remaining ADQ items were performed for GT and AT conditions. Given previous literature using general threat words, the GT condition was expected to elicit anxiety experiences in individuals. As for the AT condition, it was proposed to elicit specific anxiety discharge pathway experiences. Preliminary Wilcoxon Signed Ranks comparisons indicated that both GT ($Mdn = 10$, $Z = -4.74$, $p < .001$, $r = -.40$) and AT ($Mdn = 9$, $Z = -3.26$, $p = .001$, $r = -.27$) showed significantly higher overall anxiety experiences (ADQ totals) than the BS condition.

Initial PCAs (for AT and GT) were performed with non-orthogonal oblique rotation (direct oblimin) as ADQ items are likely to be related to one another (i.e., items measure anxiety). Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) measured sampling

adequacy for *both* individual ADQ items and for the complete ADQ PCA model. The overall KMO test indicated that each PCA were at an acceptable level, between .70-.80 (GT PCA, 0.78 and AT PCA, 0.73). Further investigation of KMO values for *individual ADQ items* for both PCAs showed that six items fell under the acceptable limit of .50 (taken into consideration in the data reduction phase) (see Table 8). Bartlett's test of sphericity for both GT and AT PCAs were all significant, $p < .001$, indicating that correlations between items were sufficiently large and adequate for PCAs.

Table 8.

KMO values for individual item sampling adequacy that fell under acceptable limits

Items:	Conditions	KMO value
SM – Item 10 “Feeling gassy?”	GT ADQ	.50
SM – Item 12 “Cold hands and/or fingers”	GT ADQ	.44
	AT ADQ	.26
SM – Item 13 “Any irritability in your bowels?”	GT ADQ	.25
CPD – Item 23 “Any ringing in your ears?”	GT ADQ	.38
	AT ADQ	.33

Note. From initial PCAs

Eigenvalues of >1 (Kaiser's criterion) and scree plots were used to determine the number of factors to extract. Eigenvalues of >1 for six to seven factors were identified for each PCAs. However, examination of the scree plot's point of inflexion on both PCAs indicated two factors in the GT PCA and three factors in the AT PCA (Appendix P). Both the fixed two and three factor PCAs were performed for both GT and AT conditions. The fixed three factor PCA seemed most robust (across both PCAs) and suggested “STM” and “CPD” factors in both conditions. Only the AT PCA suggested a third factor, an “SM” factor. The theoretical basis of the three anxiety discharge pathways in ISTDP facilitated the construction of the items in the ADQ; hence, fixed three factor PCAs were used to determine the retention and removal of items. The PCAs explained 52.80% (GT) and 50.93% (AT) of the variance. The Tables in Appendix Q shows factor loadings after factor rotation (pattern and structure matrices).

Factor loading analysis and data reduction. Pattern matrices in both PCAs were used to examine factor loadings. Additionally, the structure matrices were used to examine for any suppressed factor loadings following the oblique rotation (i.e., suppressed due to relationships between factors) (Field, 2009). The term “PCA matrices” below indicates exploration using both pattern and structure matrices. Factor loadings above the recommended .40 (at least 16% of variance explained by the item) were considered in the analysis (Field, 2009). Poor fitting items were removed from ADQ subscales as determined by examining the acceptability of *individual ADQ item* KMO values, low loadings on the desired factor, or high loadings that cannot be explained within a factor. Moreover, considering the third factor on the GT PCA did not suggest an “SM” factor, only the AT PCA was used to analyse item retention and removal in the SM subscale.

ADQ items 1-6 were proposed to assess STM anxiety discharge. Items 1-4 loaded highly on the “STM” factor across all matrices (either exclusively or the highest on the STM factor compared to other factors) and thus were retained. Item 6, “...an increase in heart rate?” did not load significantly ($r < .40$) on this factor for the GT PCA matrices. However, it did load adequately and exclusively in the AT PCA matrices. Thus, item 6 was retained for further inspection in Study 2. Item 5, “...a tension headache?” was removed as it loaded either exclusively on the CPD factor or higher on it than the STM factor.

ADQ items 16-23 were proposed to assess for CPD. Items 16-21 were retained in the CPD subscale as these loaded highly on the “CPD” factor across all matrices. Item 22, “...any distortions in your vision?” and 23, “...any ringing in your ears?” were removed. Item 22 did not load onto this factor in the GT PCA matrices and only weakly ($r = .40$ vs $.70-.80$) in the AT PCA matrices. Item 23 loaded below .40 in both PCA matrices, falling below the acceptable *individual* KMO limits (GT and AT).

ADQ items 7-13 were proposed to assess SM anxiety discharge. In the AT PCA matrices, items 10, 11 and 13 loaded highly and exclusively in the “SM” factor and thus were retained. Item 7, “...feelings of nausea?” was retained with loadings being above $r > .40$, and it loaded exclusively in this factor on both AT matrices. Items 8, “...a dry throat?”, 9, “...feeling Bloated?” and 12, “...cold hands and/or fingers?” were removed. Items 8 and 9 loaded exclusively on the “CPD” factor in both AT matrices. Item 12 did not load in both AT matrices, and it fell below the acceptable *individual* KMO limits (in the AT PCA).

Once poorly fitted items (total of six) were removed, both GT and AT PCAs were re-run, and these PCAs accounted for 64.07% (GT) and 63.62% (AT) of the variance (improved) (see Appendix R). Next, inter-item reliability for the refined ADQ (ADQ-15) totals and subscale scores were calculated (see Table 9). Overall, there were slight reductions in reliability for ADQ totals across all conditions (Cronbach’s alphas were above the acceptable range). Inter-item reliability for STM and CPD showed improvements. Reliability for SM was similar in the GT condition, reduced in BS, and showed some improvements in N and A. However, still below the acceptable range, alpha scores ranged between .50 - .71.

Table 9.

ADQ-15 descriptive statistics with changes in item reliability (Cronbach's alpha, α)

	<i>n</i>	ADQ-15			A	B
		Median	Mean	SD	α	α
<i>Baseline Total</i>	73	5	6.41	6.02	.89	↓ .87
STM	73	3	3.16	2.84	.74	↑ .77
SM	73	0	0.57	1.39	.73	↓ .71
CPD	73	2	2.70	3.27	.83	↑ .87
<i>Neutral Total</i>	72	7	8.03	6.12	.88	↓ .86
STM	73	4	4.05	2.96	.75	↑ .76
SM	73	0	0.30	0.88	.50	↑ .61
CPD	72	3	3.58	3.68	.86	↑ .90
<i>General-Threatening Total</i>	72	7.5	9.74	7.81	.91	↓ .89
STM	73	4	4.75	3.30	.77	↑ .78
SM	72	0	0.49	1.13	.50	= .50
CPD	73	3	4.41	4.94	.90	↑ .93
<i>Attachment-related Total</i>	73	7	7.89	6.44	.88	↓ .85
STM	73	3	4.03	3.52	.82	↑ .84
SM	73	0	0.32	0.81	.45	↑ .55
CPD	73	3	3.51	3.88	.86	↑ .91

Note. A) original ADQ alpha coefficients B) the refined ADQ-15 alpha coefficients. An acceptable α value ranges from .70-.95 (Tavakol & Dennick, 2011).

Relationship between subjective and objective measures of anxiety across conditions. Subjective ADQ-15 scores were compared to physiological and cognitive tests across conditions for any differences in anxiety experiences. Most correlations showed no significant relationships between physiological data (include sighs) and ADQ-15 totals. However, closer examination of discharge scores indicated one weak negative relationship in the N condition with higher EMG and less CPD anxiety discharge scores ($r = -.29$, $p = .02$). The discrepancy between self-reported and physiological measures of anxiety reported within the psychophysiological literature is not uncommon (McLeod et al., 1986; Pennebaker, 1982; Yartz & Hawk, 2002). Instead, these measures may assess for different domains of anxiety. As the important goal for this study was to develop a self-reported measure to assess anxiety discharge pathways, the remaining analysis was performed using the ADQ-15 rather than the

physiological experience of anxiety. However, sighs were included for further analysis due to the importance they have within the anxiety literature.

Some correlations were found between subjective ADQ-15 scores and cognitive tests (see Table 10). In the N condition, weak negative relationships were found with high ADQ-15 total and CPD scores with lower %Correct in the Simon arrow task. Similarly, weak to moderate negative relationships were found in the GT condition with high ADQ-15 total, SM and CPD scores with lower Stroop %Correct scores. The above correlations indicate that anxiety (more severe manifestation) tends to correlate with lower performance on cognitive tasks. Furthermore, in the GT condition, a weak negative relationship was found between high STM scores and lower Stroop interference effect. These correlations seem consistent with the discharge pathway literature than the correlation observed in AT. A small negative correlation was found in the AT, with high STM and lower %correct in the Simon arrow task. There seems to be some uncertainty as to whether AT had induced preconscious complex feelings that were proposed to activate the anxiety discharge pathways.

Table 10.

Spearman's correlation (r) between ADQ, and cognitive test scores.

ADQ-15 x Conditions		Simon-arrow task			Stroop task		
		<i>n</i>	%Correct <i>r</i>	<i>avRT</i> <i>r</i>	<i>n</i>	%Correct <i>r</i>	<i>Stroop Effect</i> <i>r</i>
Neutral	Total	72	-.31**	-.11	71	-.19	-.08
	STM	73	-.19	-.11	72	-.13	-.09
	SM	73	-.17	-.22	72	-.12	.14
	CPD	72	-.33**	-.08	71	-.17	.03
General-Threatening	Total	72	-.12	-.14	72	-.26*	-.16
	STM	73	-.15	-.11	73	-.15	-.27*
	SM	72	-.10	-.11	72	-.43**	.03
	CPD	73	-.10	-.13	73	-.28*	-.04
Attachment-Related	Total	73	-.23	-.01	73	-.17	-.16
	STM	73	-.26*	-.10	73	-.18	-.17
	SM	73	-.14	-.15	73	.02	-.14
	CPD	73	-.12	.03	73	-.13	-.11

Note. * $p < .05$, ** $p < .01$ (2-tailed). Spearman's r strengths: <.19 = very weak; .20 - .39 = weak; .40 - .59 = moderate; .60 - .79 = strong; and >.80 = very strong.

Hypothesis two: Analysis of Anxiety Measures across Conditions

ADQ-15 totals. Friedman's test revealed a significant difference in total scores across conditions, $\chi^2(3) = 25.76, p < .001$. Wilcoxon Signed Ranks tests with Bonferroni correction⁷ (critical significance level of <.0083) revealed that picture stimuli conditions, N ($Mdn = 7, Z = -3.13, p = .002, r = -.26$), GT ($Mdn = 7.5, Z = -4.35, p < .001, r = -.36$) and AT ($Mdn = 7, Z = -2.73, p = .006, r = -.23$) were significantly higher than BS ADQ-15 total ($Mdn = 5$). It was expected that all picture conditions should provoke more anxiety experiences than BS. GT ADQ-15 total scores were highest amongst picture stimuli conditions but only *significantly* higher to AT ADQ-15 total ($Z = -2.83, p = .005, r = -.23$). No significant differences were found when N was compared to GT, or AT ADQ-15 total scores. The GT condition being higher

⁷ Wilcoxon Sign Ranks Bonferroni correction is calculated by Type I error, α , 0.05 divided by the number of comparisons, six in this case. Thus, the critical value was set at $p < .0083$.

than AT could be expected, however, different from expected was that both GT and AT did not differ from N the control condition.

ADQ-15 discharge scores. Differences between subscale scores were investigated within each picture stimuli condition and between each condition.

Within conditions. For this analysis, tests were conducted using ADQ-15 subscale score averages rather than their totals due to an uneven number of items within each subscale. Friedman's test revealed significant differences between anxiety discharge scores within each condition, BS: $\chi^2(2) = 59.90, p < .001$; N: $\chi^2(2) = 79.60, p < .001$; GT: $\chi^2(2) = 89.24, p < .001$ and AT: $\chi^2(2) = 70.19, p < .001$. Wilcoxon Signed Ranks tests with Bonferroni correction (critical significance level of $< .0167$ for three comparisons) revealed that overall, all STM and CPD scores were significantly higher (large effect size) compared to SM scores within each condition (see Table 11). Additionally, a small, yet significant difference was found where STM scores were higher than CPD scores within each condition.

Table 11.

Wilcoxon Signed Ranks tests for discharge score comparisons within each condition

		median	SM Z (r)	CPD Z (r)
<i>Baseline</i>	STM	.60	-5.94 (-.49) **	-2.79 (-.23) *
	SM	0		-5.21 (-.43) **
	CPD	.33		
<i>Neutral</i>	STM	.80	-7.02 (-.58) **	-2.82 (-.23) *
	SM	0		-6.29 (-.52) **
	CPD	.50		
<i>General-Threatening</i>	STM	.80	-7.20 (-.60) **	-2.97 (-.25) *
	SM	0		-6.37 (-.53) **
	CPD	.50		
<i>Attachment-Related</i>	STM	.60	-6.88 (-.57) **	-2.67 (-.22) *
	SM	0		-6.03 (-.50) **
	CPD	.50		

Note. *r* values: .1 represent a small effect, .3 is a medium effect and .5 is a large effect. Bonferroni corrected with critical significance of * $p < .0167$, ** $p < .001$ (2-tailed)

Between conditions. A primary interest was whether there were any significant differences with discharge scores across conditions. Friedman's test only revealed significant

differences for STM, $\chi^2(3) = 31.86$, $p < .001$, and CPD anxiety discharge total scores, $\chi^2(3) = 11.61$, $p = .009$, when compared across conditions. Wilcoxon Signed Ranks tests with Bonferroni corrections (critical significance level of $<.0083$ for six comparisons) revealed that STM scores in N and GT conditions (however, not AT) were significantly higher than in BS condition. CPD scores did not significantly differ between AT, N and GT conditions. Only one significant difference was found for CPD scores between BS and GT conditions (N or AT did not significantly differ from BS). See Table 12 and Figure 5 for statistical and visual discharge score differences between conditions.

Table 12.

Wilcoxon Signed Ranks tests for discharge score differences between condition

			N	GT	AT
		median	Z (r)	Z (r)	Z (r)
STM	BS	3	-2.80 (-.23) *	-4.16 (-.34) **	-2.20 (-.18)
	N	4		-2.26 (-.19)	-.39 (-.03)
	GT	4			-2.60 (-.22)
	AT	3			
SM	BS	0	-1.38 (-.11)	-.12 (-.01)	-1.25 (-.10)
	N	0		-1.71 (-.14)	-.03 (-.00)
	GT	0			-1.47 (-.12)
	AT	0			
CPD	BS	2	-2.19 (-.18)	-2.90 (-.24) *	-2.02 (-.17)
	N	3		-1.21 (-.10)	-.32 (-.03)
	GT	3			-2.06 (-.17)
	AT	3			

Note. r values: .1 represent a small effect, .3 is a medium effect and .5 is a large effect. Bonferroni corrected with critical significance of $*p < .0083$, $**p < .001$ (2-tailed)

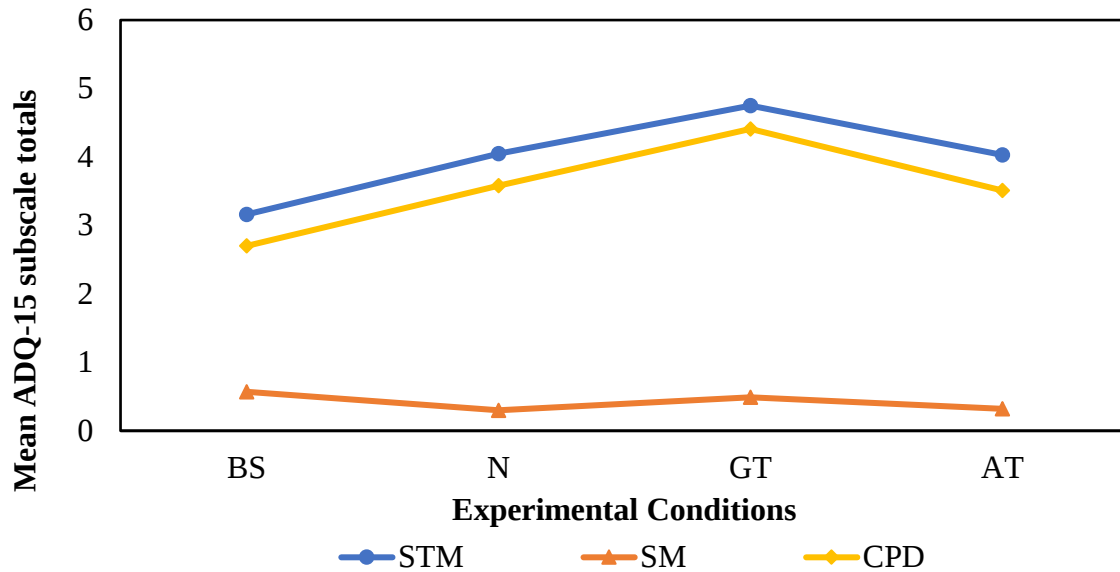


Figure 5. ADQ-15 discharge scores compared between conditions.

Objective anxiety measures across conditions. Objective measures of interest such as sighs and cognitive tests were compared across experimental conditions. Both sighs and cognitive test scores revealed no significant differences across conditions. Friedman's test revealed no significant differences observed with number of sighs across conditions, $\chi^2(3) = 7.27$, $p = .06$. For %Correct in cognitive tasks, Friedman's tests revealed no significant differences across conditions for the Simon arrow task, $\chi^2(2) = 4.11$, $p = .13$, and Stroop task, $\chi^2(2) = 1.57$, $p = .46$. For RT analysis, ANOVA Mauchly's Test of Sphericity was not violated (Simon-arrow task $avRT$, $\chi^2(2) = .49$, $p = .78$, and Stroop interference effect, $\chi^2(2) = .61$, $p = .74$). No significant differences were found for Simon-arrow task $avRT$, $F(2,144) = 1.88$, $p = .16$, $\eta_p^2 = .03$, and Stroop interference effect, $F(2,142) = 1.25$, $p = .29$, $\eta_p^2 = .02$, across conditions. These results indicate that sigh counts and performance on cognitive tasks was not affected by different picture conditions.

Hypothesis three: Non-parametric Correlations between Anxiety and Defense Measures

Spearman's correlations were conducted between anxiety measures (ADQ-15, sighs, and cognitive test scores) and defense measures (see Table 13).

Table 13.

Spearman's correlation (r) between ADQ-15 and DES-T and DSQ-40 scores

		DES-T		DSQ-40			
					Mature	Neurotic	Immature
ADQ-15 scores		n	r	n	r	r	r
<i>Baseline</i>	STM	73	.41***	72	.01	0.15	.33**
	SM	73	.30*	72	-.06	-0.09	.10
	CPD	73	.45***	72	-.01	0.16	.22
	Total	73	.52***	72	.003	.16	.34**
<i>Neutral</i>	STM	73	.24*	72	-.09	.05	.17
	SM	73	.22	72	-.10	-.03	.01
	CPD	72	.26*	71	-.22	.11	.12
	Total	72	.35**	71	-.17	.06	.23
<i>General-Threatening</i>	STM	73	.35**	72	-.08	.02	.24*
	SM	72	.24*	71	-.01	.01	.13
	CPD	73	.38***	72	-.15	.21	.11
	Total	72	.45***	71	-.12	.12	.22
<i>Attachment-Related</i>	STM	73	.26*	72	-.17	.03	.19
	SM	73	.16	72	-.08	-.03	-.02
	CPD	73	.44***	72	-.07	.20	.22
	Total	73	.41***	72	-.11	.06	.27*

Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (1-tailed). Spearman's r strengths: $<.19$ = very weak; $.20 - .39$ = weak; $.40 - .59$ = moderate; $.60 - .79$ = strong; and $>.80$ = very strong.

Anxiety measures and DSQ-40. Two significantly weak correlations were found between higher immature defense scores and higher ADQ-15 totals in the BS and AT conditions. Regarding specific anxiety discharge scores, two significantly weak positive correlations were evident between higher immature defense scores and higher STM scores in the BS and GT condition, respectively. Two significantly weak negative correlations were found between high neurotic defense scores and less sighs in the BS, $r = -.20$, $p = .05$, and N condition, $r = -.26$, $p = .01$, respectively. While only one significantly weak negative correlation was found for cognitive test scores, between higher Stroop %Correct scores and lower neurotic defense scores in the AT condition, $r = -.35$, $p = .002$.

Anxiety measures and DES-T. Significantly weak to moderate positive correlations were found between DES-T and ADQ-15 total scores in all conditions. Furthermore, significantly weak or moderate correlations were found with higher DES-T and higher anxiety

discharge scores in all conditions (however, SM scores in N and AT conditions did not reach significance). A significantly weak positive correlation was found between higher DES-T scores and more sighs in the AT condition, $r = .23$, $p = .02$. Regarding cognitive test scores, a significant weak negative relationship was found between higher DES-T scores and slower Simon-arrow task $avRT$ in the N condition, $r = -.26$, $p = .03$.

Discussion

Interpretation of Results

Hypothesis one: ADQ exploratory factor analysis. The ADQ measure created to assess subjective anxiety discharge experiences indicated two factors consistent with STM and CPD discharge symptomology. However, a factor that assessed SM discharge characteristics only appeared in the AT PCA. The refined ADQ-15 inter-item consistency were all above acceptable levels except for the SM factor. The SM factor was determined after the removal of almost half of its proposed items. However, inter-item reliability remained under the acceptable range. SM symptomology selected in this measure described a wide range of different bodily experiences; for example, SM items ranged from feelings of discomfort in the throat, breathing, stomach, urinary tract, and bowels. Given this, individuals need to be fully aware of their bodily experiences to provide a consistent and accurate report for SM experiences. In addition, the inductions would need to be powerful enough to evoke such reactions. The floor effect for SM scores observed throughout picture conditions may suggest that the induction was not powerful enough to evoke smooth muscle anxiety consistently. Thus, it was necessary for Study 2 to explore SM items that individuals may find more relatable, cohesive, and easily identifiable.

ADQ subjective vs. objective anxiety measures. Ideally, both physiological and subjective measures of anxiety should be somewhat related (i.e., increase in self-report of striated muscular tension, increase in EMG). However, findings showed minimal correspondence between physiological data (with one exception) and ADQ-15. The results

were more consistent with Yartz and Hawk (2002) and Pennebaker (1982)'s argument that an individual's subjective experience may not translate to its physiological response. Instead, they are separated into different domains and may not correspond with one another. For example, when one experiences a panic attack, their subjective experience of their heart racing may be different to their actual heart rate. Our findings were similar to McLeod et al. (1986)'s study, where little significant correspondence was found between physiological and self-report data. However, contrary to their conclusion, we did not find similar directional parallels with our physiological vs. subjective data (i.e., no significant correlations, self-reported and physiological data would show similar directional increases). Although, one small negative correlation was found in the N condition between higher EMG to lower CPD scores. The finding seems consistent with the literature that more severe discharge of anxiety (CPD, e.g., confusion in their head) corresponds with less muscular tension (i.e., STM). However, this relationship was not replicated with other conditions, nor was this relationship significant in the GT condition (proposed to induce the most anxiolytic experience). Therefore, conclusions cannot be drawn on this lone correlation. Instead, this may be a spurious correlation that existed within the correlational matrix.

Some small or medium correlations occurred across conditions regarding correlation comparisons between ADQ-15 scores and cognitive test scores. All comparisons (including non-significant correlations) indicated a negative association between cognitive test performance and ADQ-15 scores. All *significant* correlations (besides one) indicated that worse performance on cognitive tests was associated with higher ADQ-15 total ratings or more severe forms of anxiety discharge experiences. However, one correlation found in the AT condition suggested that worse performance in the cognitive task were associated with higher STM scores. This correlation would be contrary to anxiety discharge pathways described in ISTDP. So that, STM (the more adaptive form of anxiety) should not lead to poor performance in a cognitive

test. At the same time, we cannot make many interpretations about the AT condition due to uncertainty about whether this condition was inducing preconscious anxiety, given stimuli were identifiable in the awareness check.

Hypothesis two: replicating preconscious complex feelings within a laboratory setting. Neither subjective nor objective measures (i.e., sighs or cognitive tests) of anxiety experienced in the AT condition showed significant differences from the control condition (neutral pictures). Several reasons were considered why the AT condition did not perform as expected: 1) pictures reached conscious levels of awareness, the preconscious task did not create the suboptimal environment required to induce *preconscious levels* of complex feelings (i.e., internal threat); 2) the presentation of pictures depicting complex feelings within a relationship was too detailed and complex to induce any emotions (i.e., too much detail displayed in a picture presented for 16ms even if consciously perceived); 3) neutral pictures in N were not neutral. GT condition showed significantly higher levels of overall subjective anxiety experience than AT, which was expected. However, it still did not differ from the N condition, supporting that the neutral picture might not be as neutral as proposed.

Findings with individual anxiety discharge scores within or between conditions revealed an overall floor effect for SM scores. The reason being the same as discussed above – individuals may have been less likely to identify with SM experiences, and the induction may not have evoked such experiences. STM experiences were rated the highest *within each* condition, and when compared *across conditions*, higher STM were seen in GT and N picture stimuli conditions (not AT) compared to BS. Given our non-clinical sample, individuals were expected to experience more STM (an adaptive form of anxiety). Uncertainty with what AT induced meant we could not draw conclusions about AT. Hence if AT was not considered, we might conclude that overall high STM experiences were experienced with *picture stimuli* conditions. Higher *tension* experienced in picture stimuli conditions were likely a result of

performing on mildly stressful Simon-arrow or Stroop tasks. High CPD experiences (slightly fewer reports compared to STM) were also seen within each condition. CPD scores potentially showed no differences across conditions, with one small difference observed between GT and BS. High CPD scores may be expected in GT, as this condition was designed to induce high levels of anxiety (i.e., external threat). It is unclear why CPD experiences were elevated at BS. However, high CPD experiences during picture stimuli conditions may be associated with the rapidly flashing coloured pattern mask. Several participants during its presentation experienced some visual discomfort and dizziness. Overall findings concluded that AT did not induce any internal threat (i.e., preconscious complex feelings).

Hypothesis three - did difference in severity of anxiety discharge symptoms correlate with certain defense styles? Certain discharge scores were expected to be associated with specific defense styles (i.e., STM to be positively associated with mature defenses vs. SM or CPD positively associated with neurotic and immature defenses). In addition, we expected to observe these correlations predominantly in the AT condition compared to other conditions. However, no conclusions could not be drawn with AT as discussed above. Instead, a broader investigation (i.e., across all conditions) between one's anxiety experiences compared to defense styles showed small-to-medium positive correlations between high anxiety experiences (self-reported, sighs, lower performance in cognitive tests) with less mature defense styles (i.e., neurotic and immature). Although the replication of the ISTDP framework was not induced for the current study, the findings indicated that those with high anxiety had more neurotic and immature defense styles.

High dissociation was associated with self-reported anxiety experiences overall (ADQ-15 total and discharge scores regardless of picture condition). However, SM discharge scores for N and AT conditions did not reach statistical significance. As discussed above, many items were removed from the original ADQ SM factor, which may have impacted scores reaching a

significant correlation with the dissociation measure. Two separate correlations were found between dissociation with sighs (AT condition) and cognitive test performance (N condition). Interpretations for these correlations were not appropriate due to some uncertainties with both conditions with what AT induced and if N condition was entirely neutral. Two ideas stem from the correlations between self-reported anxiety experiences and dissociation. Firstly, that high dissociative experiences are a manifestation of anxiety, thus regardless of anxiety discharge types, as anxiety increases, so does dissociation. Alternatively, dissociative experiences may be interpreted as a defense mechanism (i.e., in the face of distressing stimuli, one may dissociate to reduce the level of external or internal threat). Dissociation has been regarded as an immature defense mechanism and is associated with less mature defenses (Muris & Merckelbach, 1997). The results could be theoretically framed to indicate that the likelihood of the defense of dissociation being activated is associated with the rise in subjective anxiety (regardless of discharge type).

Methodological Considerations

Additional to study limitations discussed above, there were several other limitations. The *programme used to induce preconscious material*: even with adjustments from the pilot test, participants were consciously aware of the presented picture stimuli. Due to limited hardware such as computer monitors with low refresh rates, flashing pictures could only be presented at 16ms and not a lesser duration. Despite picture stimuli being presented for 16ms, these were consciously perceived. Mayer and Merckelbach (1999) described several procedural factors to achieve good subliminal effects: 1) whether participants were informed prior of such stimuli; 2) the type of awareness test administered (i.e., using a more conservative objective method would result in more reported “awareness” than a subjective method); 3) modality, visual stimuli has a higher probability of being cognitively processed than auditory; 4) masking procedure that if not masked correctly participants could identify the target. Future

improvements such as not informing participants prior about pictures stimuli, using less salient stimuli, for example, auditory (words that induce complex feelings instead), or improving the masking procedure (i.e., Using a mask featuring a jumble fragmentation of the target stimuli) should be considered. Furthermore, another approach could be considered to further degrade target stimuli by presenting them in different spatial locations (help divert the focus of attention to different spatial locations) along with a masking procedure (Merikle, 2007). Repetition of pictures in the current study may have provided consolidation to visual memory leading to an increased likelihood of pictures reaching awareness. Hence, no repetition would be more ideal. *For the ADQ measure:* although the current study compared subjective and objective measures of anxiety, this in no way provided validity to the ADQ measure. Thus, comparing the ADQ-15 to a well-established *self-report* anxiety measure would be ideal for future studies. *For physiological measure:* forearm EMG recordings were assessed using large metal plate electrodes, which increases the chance of capturing the muscles of interest. However, the large surface area compared to more site-specific recording electrodes created very low frequencies. Perhaps site-specific electrodes should be used to obtain better EMG data.

Conclusion

To conclude, overall, the development of the ADQ-15 showed good inter-item reliability for two factors: STM and CPD. However, more work would be required for a better SM factor in the ADQ-15. Due to awareness of picture stimuli, the preconscious awareness task may not represent inducing *preconscious levels* of threat. Findings in AT condition did not support our hypothesis for the induction of preconscious complex feelings, and as a result, anxiety experiences did not differ from the N condition. Findings between anxiety experiences and defense styles and dissociation provided limited support to our third hypothesis. In general, higher anxiety experiences predicted for more maladaptive or neurotic defense styles and high dissociation. A second study was conducted with three goals following from Study 1: 1) to

further develop and investigate the ADQ measure, including testing for convergent validity of ADQ to a well-established anxiety measure; 2) to further investigate the relationship between anxiety discharge experiences with dissociation; 3) implement a more noticeable (conscious) procedure inducing similar complex emotions (i.e., complex feelings of love, anger, sadness, or guilt) to test whether these complex emotions could be induced at all.

Study 2 - Introduction

Further ADQ Changes

In Study 1, the removal of poor fitting items formed the basis of the ADQ-15. The current study added additional items based on their reliability and ease of comprehension after another thorough review of the literature (e.g., Abbass, Lovas, & Purdy, 2008; Davanloo, 2005; Della Selva, 2004; Frederickson, 2013; Ten Have-De Labije, 2012). Items were added with a particular focus on SM manifestations, given the small number in the ADQ-15. Appendix X shows the items and the rationale for their inclusion. The current study aimed to use a larger sample for exploratory analysis by administering an online survey to maximise recruitment. The ADQ measure was tested for convergent validity to determine if it effectively measured for *state* anxiety by comparing it to the state anxiety subscale of the well validated Spielberger State-Trait Anxiety Inventory Form Y - Six items (STAI-Y-6) (Marteau & Bekker, 1992).

Anxiety Discharge Experiences and Dissociation

In Study 1, anxiety discharge experiences (regardless of which discharge pathway) were related to higher dissociation levels as assessed by the DES-T regardless of conditions. Study 2 intended to investigate further dissociation's role and how it could relate to ISTDP anxiety discharge pathways. More comprehensive dissociation measures were used, namely the State Dissociation Questionnaire (SDQ) to assess state dissociation and Dissociative Experience Scale II (DES-II) to measure trait dissociation. The DES contains three subscales: Amnesia (i.e., disturbance with memory), Depersonalisation/Derealisation experiences (i.e., disturbance with

identity) and absorption and imaginative involvement (i.e., being preoccupied and absorbed internally, like daydreaming, or externally, like by books or TV. The former two subscales are often considered to reflect pathological dissociative expressions (Waller et al., 1996), while the latter is *often* described as being a normative and nonpathological dissociative manifestation (Butler, 2006; Waller et al., 1996).

A Different Anxiety Induction Method

In Study 1, preconscious picture stimuli, presented for 16ms, were used. However, the AT (target) condition did not differ from the N (control) condition. Three reasons were discussed in Study 1: 1) the stimuli reach consciousness, and thus AT picture stimuli did not elicit any *preconscious* complex emotions to induce anxiety discharge experience; 2) AT picture stimuli were presented above consciousness, the details featured in the presented pictures were too complex for individuals to detect thus did not elicit the desired feelings; 3) the N condition did not effectively use neutral pictures. Study 2 aimed to address the second issue. A conscious method was warranted to investigate whether complex emotions can be induced at all, and whether similar anxiety discharge experiences could be experienced.

Film induction procedure has been well researched, is used by many researchers, and seems to provide effective induction of a range of different emotions (Gilet, 2008). For instance, in a meta-analytic review of 11 different mood induction procedures, the film/story induction methods (i.e., where participants were likely to identify with certain protagonists) was a potent manipulator for inducing elated or depressed mood states and yielded large effect sizes (Westermann, Stahl, & Hesse, 1996). Furthermore, it was significantly more effective than other types of induction procedures (e.g., music with instructions, Velten statements, or imagination mood inductions).

Rottenberg, Ray, and Gross (2007) described seven dimensions to consider for an emotional elicitation procedure and suggested the film induction procedure in general satisfied

most of these domains. The first is the *intensity* of the stimuli. Film clips (dependent on the type of film used) were reported to elicit a range of emotional responses (mild to strong). The second is *complexity*. Film clips often allow for more complexity than other induction methods, and individuals can typically comprehend it. Third, *Attention capture*, film segments offer a dynamic display (involving visual and audio modalities) which can obtain a high attentional capture. Four is *demand characteristics*⁸. Rottenberg et al. (2007) argued that by using simple non-leading instructions such as “please watch the film carefully”, film segments can elicit desired emotions even with relatively low demands. The fifth dimension is *standardisation*. Films have a high degree of standardisation (testing conditions can be controlled in film induction procedures) over other less standardised methods like using confederates or hypnosis. Six is *temporal consideration*. For film induction, this may raise more of a disadvantage, where, within a film segment (especially when initialled studied), alternative emotions may be induced, or emotions may constantly change throughout the segment rather than eliciting one specific emotion. Thus, Rottenberg et al. (2007) suggested using short and validated film clips that have been well researched to elicit specific emotions. Lastly, *ecological validity*. In general, Films are believed to be more naturalistic (i.e., emotions induced appear to be real or robust) when compared to other mood induction procedures, such as facial expressions, imagery (i.e., picture stimuli) or hypnosis. Overall, the film procedure was favoured due to its user-friendliness for an online study, its effectiveness and appropriateness in inducing a range of emotions, and its use of audio and video stimulation, which is likely to capture and sustain participants' attention.

Current Study

Study 2 aimed to implement an online study to obtain a larger sample for more suitable ADQ analysis with an additional anxiety measure (STAI-Y-6) implemented to assess the

⁸ Participants may detect the purpose of the stimuli and then modify their behaviour which could alter results of the study

ADQ's convergent validity. Furthermore, besides the DSQ-40 implemented to investigate defenses styles and anxiety discharge experiences, more comprehensive dissociative measures (i.e., state and trait dissociation questionnaires) were included for a detailed analysis of the relationship between dissociation and anxiety discharge experiences. Finally, the study used film induction to induce similar emotions to Study 1: neutral emotions for N; general threatening such as anticipatory fear for GT; and attachment emotions by using film clips that elicit grief or loss featuring the death of a loved one for AT.

Aims and hypotheses. *Aim one:* To further investigate the ADQ measure (i.e., ADQ-20 for the current study) by using a conscious emotion elicitation method to induce anxiety discharge, a larger sample size, and comparing it with the STAI-Y-6 to assess for convergent validity. *Hypothesis one:* The PCA performed would reflect similar findings to Study 1 (i.e., ADQ-15 analysis). We would observe a PCA suggesting three latent factors (i.e., three main discharge pathways), and item loadings fall into their relevant factors.

Aim two: To use a film method to elicit desired emotions (leading to anxiety experiences). *Hypothesis two (a):* Each condition would yield different emotions, consistent with the film induction literature. *Hypothesis two (b):* Assuming hypothesis two (a) is supported, unpleasant film clips would induce anxiolytic experiences assessed by anxiety measures.

Aim three: To investigate the relationship between defense styles and anxiety discharge experiences within film conditions which (if hypothesis two (b) is supported) elicited anxiolytic experiences. Furthermore, Study 2 aimed to further investigate the relationship between dissociation and anxiety discharge experiences. *Hypothesis three:* If anxiolytic feelings were induced in film conditions like GT and AT, the severity of anxiety discharge experiences would be associated with different defense styles. For example, SM and CPD would positively correlate with neurotic and immature defense styles (more maladaptive). In contrast, STM (viewed as a “healthy” discharge of anxiety) would be free from any activation of maladaptive

defense styles. For dissociation, more severe forms of anxiety discharge (i.e., SM and CPD) were expected to be associated with higher dissociation scores (SDQ and overall DES-II), particularly for amnesia and depersonalisation/derealisation ratings. STM manifestations were predicted to be associated with absorption and imaginative involvement scores.

Method

Participants

Three hundred and fifty-nine participants were recruited through the crowdsourcing platform Amazon Mechanical Turk (MTurk), published on MTurk as a Human Intelligence Task (HIT)⁹. Initial selection requirements set up for the HIT (i.e., determines who could access the HIT) was that participants needed to have a HIT approval rate of more than 90% and were located in the United States (US). These requirements were later changed because 59.70% of HIT submissions were rejected and could not be used. The revised requirements were that participants needed to have an overall HIT approval rate of greater or equal to 99% and have had more than 1000 HITs approved. Before commencement, several conditions were explained to participants due to concerns with non-genuine effort with survey completion. For submission approval and compensation, participants needed to use a computer to access the survey; they must be available to watch the entirety of the film presentation; and complete the survey in an effective manner (i.e., legitimately answering questionnaires).

Of the 359 submitted work, 141 submissions were rejected, and 218 were approved. Reasons for rejection were due to incorrect responses to the bot question (used to detect non-human programmed submissions) or validation questions (imbedded within questionnaires), or responses on questionnaires deemed to lack a genuine effort (e.g., finishing a lengthy questionnaire in 10 seconds or watched less than 90% of the total video playtime). See

⁹ A HIT represents a single, self-contained task that MTurk workers can work on, submit an answer and then collect a reward for completion (Retrieved from <https://www.mturk.com/worker/help>).

Appendix Y for details of these validation checks. Three additional responses were removed after outlier analysis (participants had multiple extreme outliers across multiple measures). Thus, a sample of 215 was used for result analysis (see Table 14 for sample demographics).

Table 14.
Study 2 Demographics statistics (across sample)

	Mean	SD	Range	<i>n</i>	Percent
<i>Age</i>	36.69	10.49	19-66	215	
<i>Sex</i>					
Female				108	50.23
Male				107	49.77
<i>Relationship status</i>					
Single				74	34.40
Relationship				46	21.40
Married				82	38.10
Separated/Divorced/Widowed				13	6.10
<i>Information of participants' race</i>					
White				169	78.60
Hispanic, Latino or Spanish Origin				9	4.20
Black or African American				11	5.10
American Indian or Alaska Native				2	0.90
Asian				17	7.90
Other				4	2.00
<i>Mental health status</i>					
None				165	76.70
Depressive disorders				13	6.10
Anxiety disorders				8	3.70
Depressive and Anxiety disorders				11	5.20
Obsessive-Compulsive and Related disorders, or with depression				2	1.00
ADHD, or with anxiety and/or depression				3	1.40
Personality disorder with anxiety and/or depression				2	0.90
Bipolar and PTSD				1	0.50
Alcohol-Related disorders				1	0.50
Did not disclose				9	4.20
<i>Medication</i>					
None				193	89.80
Anti-depressants only				15	6.80
Anti-anxiety				1	0.50
Antidepressant and Stimulant				1	0.50
Atypical antipsychotics and Prazosin				1	0.50
Alprazolam				1	0.50
Did not disclose				3	1.40

Note. ADHD=Attention Deficient Hyperactivity Disorder. PTSD=Post-traumatic stress disorder.

Material

Film Segments. Three different types of film were used that represented the three manipulated conditions: grief/loss (an individual experiencing attachment loss, AT), fear or general threatening (GT), and neutral (N). For each condition, two short (60-180 second) film clips were shown consecutively (i.e., both clips were chosen to trigger the desired emotion while clips were short to not overload participants or elicit other non-desired emotions). Video playtime summed to 345 seconds, 286 seconds, and 332 seconds for N, GT, and AT conditions, respectively. For GT, film clips that induced anticipatory fear were selected (comparison condition). The AT condition featured film clips of grief and loss (i.e., death of a loved one). The N condition used slightly more pleasant neutral film clips. (Rottenberg et al., 2007) argued that there could be two types of neutral stimuli: plain or pleasant film segments. It was found that plain film clips (e.g., simple computer screensaver) can elicit feelings of annoyance and boredom when presented repeatedly or over long durations. Participants were also more likely to lose attention towards such plain film presentations. While a more pleasant neutral stimulus was reportedly well tolerated by participants, more relaxing and sustained attention towards the stimuli. Thus, a film segment that featured pleasant neutral material was preferred. The film clips were selected from well-validated databases (i.e., Rottenberg et al., 2007 and one from Schaefer, Nils, Sanchez, and Philippot, 2010). In addition, one weather report segment was extracted from YouTube for the N condition. Droit-Volet, Fayolle, and Gil (2011) used weather reports and found significant differences with their other emotion clips, such that the weather clip was rated as more neutral than other clips¹⁰.

¹⁰ N condition featured a weather (“Weather”) and documentary (“Denali”) segments. GT condition featured segments taken from the films *The Shining* (“Shining”) and *Silence of the Lambs* (“Silence”). AT featured segments taken from films *The Champ* (“Champ”) and *City of angels* (“Angels”). See Appendix W for film segment details.

Questionnaires.

Demographic Questionnaire. The demographic questionnaire assessed for age, sex, information about participants' race, marital status, mental health diagnosis and related medications (see Appendix U for form).

Anxiety Discharge Questionnaire - 20 items (ADQ-20). Additional questionnaire items were added. See Appendix X for new items. For the current study, the questionnaire was renamed ADQ-20. Here, items 1-6 assessed for STM, items 7-14 items assessed for SM, and 15-20 measured for CPD. This measure was used to assess for participants' anxiety discharge experiences at baseline (BS) and during different film presentations.

State and Trait Anxiety Inventory - Form Y - Six items (STAI-Y-6). The STAI-Y-6 is a brief, six-item measure of general state anxiety ideal for research purposes (Marteau & Bekker, 1992). This state anxiety measure was administered to assist in assessing the convergent validity of the ADQ-20. When compared to the STAI-20, the STAI-Y-6 was found to have excellent internal reliability ($\alpha=0.91$) and concurrent validity (Marteau & Bekker, 1992). The six items assessed for an individual's subjective experience of feeling calm, tense, upset, relaxed, content, and worried. Items are rated on a 4-point-Likert scale from 1 (Not at all) to 4 (Very much). Items 1, 4, and 5 (positive feeling items), are reversed scored in the scoring phase (e.g., score of 1 = 4, 2 = 3, 3 = 2 and 4 = 1). The total STAI-Y-6 score was calculated accordingly and higher scores were indicative of higher state anxiety experiences.

State Dissociation Questionnaire (SDQ). The SDQ (9 items) assesses for state dissociation via current experiences of derealisation, depersonalisation, detachment, altered time sense, emotional numbing and reduction of awareness in surroundings (Murray, Ehlers, & Mayou, 2002). This scale shows good reliability and validity in trauma survivors and student volunteer samples (Ehring, Ehlers, & Glucksman, 2008; Halligan, Michael, Clark, & Ehlers, 2003; Murray et al., 2002). It has high internal consistency (>0.70) and good convergent validity

with related measures (>0.50). Items are scored on a 5-point-Likert scale from 0 (Not at all) to 4 (Very strongly). The average score for the SDQ is representative of levels of an individual's state dissociation, with a higher score indicating higher levels of state dissociation (Kleim, Ehlers, & Glucksman, 2007; Suendermann, Hauschildt, & Ehlers, 2012).

Dissociation Experience Scale-II (DES-II). To assess trait dissociative experiences, the 28 items DES-II was administered (Carlson & Putnam, 1993). As well as producing a total score, items assess three different dissociative types: amnesia, depersonalisation/derealisation, and absorption and imaginative involvement. The DES has solid and well-tested psychometric properties (van Ijzendoorn & Schuengel, 1996), and the DES-II has high test-retest reliability and internal consistency ($r = 0.84$ and $\alpha = 0.95$, respectively) (Patihis & Lynn, 2017). Responses are made from 0 (Not at all) to 100 (Always) in 10-point increments and expressed as percentages. Average DES-II overall and subfactor scores were calculated.

Defense style questionnaire, DSQ-40. This questionnaire was administered similarly to Study 1 to assess different defense styles.

Post-Film Questionnaire (PFQ). The PFQ assessed whether participants attended to the film presentations and if target emotions were induced. The first part of the questionnaire contained forced-choice items that assessed 18 emotions, such as happiness, love, anger etc. Individuals were asked to score each emotion to what they experienced when watching the film clips. For this study, the question that allowed participants to report additional emotions was omitted. Each emotion was scored based on a 9-point-Likert rating scale from 0-8, with 0 being not at all/none, and 8 being extremely/great deal. The second part of the questionnaire included three questions which assessed levels of pleasantness (ratings of 0 being unpleasant to 8 being pleasant), if participants had seen the film segments (four selections: No, Yes – the first film clip, Yes – the second film clip or Yes – both film clips), and if participants looked away during the film presentation (Yes or No response).

Crowd Sourcing Platform – Amazon Mechanical Turk (MTurk). The online survey was published on MTurk. Participants who expressed interest were redirected to our online survey via a link (Qualtrics). To complete the HIT, participants needed to complete the survey within the time limit (one hour) and obtain a response ID at the end of the Qualtrics survey to submit onto the HIT submission page. Qualtrics response ID was used to match individuals' survey responses. Participants were compensated (i.e., following recommended MTurk standards) if they satisfied the validation checks and survey completion conditions.

Procedure

Study 2 was submitted to and approved by the University of Canterbury Human Ethics Committee (HEC 2018/57) (See Appendix Z). The study was a between-subjects design, and participants experienced one of three film conditions: N, GT, and AT. The study was administered as a Qualtrics¹¹ online survey through MTurk.

At the beginning of the survey, participants were provided with the information sheet and consent form (see Appendix S & T). Participants were briefed on the HIT page and the information sheet that the survey investigated emotion activation using film segments; and focused on measuring different emotions and bodily sensations experienced when different film clips were shown. Payment for participation was explained as based on participants needing to complete the survey in an effective manner and have legitimately answered questionnaires. Once participants provided informed consent, they were asked to complete the demographic questionnaire and baseline state measures (ADQ-20, STAI-Y-6, and SDQ). Next, a one-minute break with a game of Connect Four (played against a computer-generated player) was administered, followed by trait questionnaires (DES-II and DSQ-40). This procedure was to aid with sustained attention and reduce boredom in filling multiple questionnaires.

¹¹ Qualtrics (Copyright © 2018) and all other Qualtrics product or service names are registered trademarks or trademarks of Qualtrics, Provo, UT, USA. <https://www.qualtrics.com>

Participants were then provided with an information page with recommendations for better video viewing before the film presentation. Additionally, non-leading instructions were used to lessen demand effects, which stated, “simply watch the film clips and then answer the questionnaires as honest and precise as you can”. Participants were reminded that they “MUST complete this in one go and proceed to the questions as soon as the presentation finishes”. Participants were randomly assigned to one film condition: N, GT, and AT (evenly distributed). For each film condition, the clips were counterbalanced to eliminate order effects. Therefore, participants were randomly assigned to a specific film condition and a specific film presentation order (one of six choices, see Figure 6). Once participants viewed the films, they then proceeded to the post-film questionnaires: ADQ, STAI-Y-6, SDQ, and the PFQ administered. This concluded the experimental part of the survey.



Figure 6. Participant assignment to different conditions x film presentation orders.

Participants were then provided with the debrief form (see Appendix V). The debrief described the aim of the study in detail, which was to investigate whether there were differences in individuals’ emotions and bodily experiences (i.e., their anxiety levels and dissociative experiences) during different film presentations (neutral vs. unpleasant films). At the end of the survey, participants answered the bot question and provided feedback (i.e., to describe any issues encountered in this survey) before submitting the survey. Submitted responses whereby participants had completed the survey in an effective manner (passed the validation checks) were compensated with \$3 USD via MTurk (Table 15 for progression of the survey).

Table 15.

Study 2 – Progression of Qualtrics survey

1	Information and Consent forms.
2	Baseline – state measures (ADQ-20, STAI-Y-6, and SDQ).
3	One minute break game: Connect Four.
4	Administer DES-II and DSQ-40.
5	Video presentation (two 1-3minutes film segments) – randomised (N/AT/GT).
6	Re-administer state measures (ADQ-20, STAI-Y-6, and SDQ).
7	Administer the PFQ.
8	Written debrief.
9	Survey feedback.

Statistical Analysis

Extreme outlier scores identified within each variable were adjusted to the next closest data point. A total of three participants were excluded from further analysis due to extreme outliers found across multiple variables. Kolmogorov-Smirnov tests were conducted to test for normality. Variables with a sample size larger than 200; skewness, kurtosis values and Q-Q plots were considered. For non-normal data, relevant non-parametric tests were used (i.e., Repeated Measures ANOVAs to Friedman; One-way ANOVAs to Kruskal-Wallis; and Bivariate Pearson's r correlations to Spearman's rank correlations). Bonferroni correlations for critical value of significance were made for non-parametric t-test equivalents (i.e., Wilcoxon Signed Ranks tests and Mann-Whitney tests).

Testing hypotheses. To further investigate the ADQ-20, a PCA using parallel analysis from Jamovi was used to explore whether latent variables indicated similarities to the proposed measure for STM, SM and CPD discharge experiences. Parallel analysis was performed as it provides a better yet more complex way to determine the number of factors to retain rather than relying on visual examination of the scree plot or Kaiser's criterion of >1 eigenvalues (Field, 2009). Here, the observed factors' eigenvalue (i.e., representing the size of a factor) is compared to its corresponding eigenvalue generated from many randomly generated data sets (with similar characteristics as data being analysed). Essentially, if the observed factors eigenvalue is larger, it can indicate that the number of factors suggested to retain are not "randomly"

occurring factors (Field, 2009). Spearman's correlations were performed to test ADQ-20 convergent validity (i.e., state anxiety) with the STAI-Y-6.

Non-parametric tests were used to test the hypotheses of whether films induced the desired emotions (assessed by the PFQ) and whether film conditions induced anxiolytic experiences. For anxiety discharge scores, these were compared within and between film conditions. Semi-partial correlations were performed to examine the relationships between anxiety discharge scores with defense style factors (DSQ-40) and dissociative experiences (SDQ and DES-II). To utilise parametric procedures, transformations were applied to normalise the ADQ-13 scores using Templeton (2011) two-step transformation approach, the DES-II scores using logarithmic transformations, and SDQ scores using square root transformation.

Results

Differences Between Film Conditions

Chi-square analysis indicated no differences between conditions for sex, $\chi^2 (2, N = 215) = 2.24, p = .33$ and mental health status (i.e., Yes or No), $\chi^2 (2, N = 206) = 3.68, p = .16$ ¹². Chi-square analysis was not conducted for demographic information regarding participants' information of race and marital status due to low counts in several cell. One-way ANOVA for age indicated no significant difference between film conditions, $F (2, 212) = .60, p = .55, \eta^2 = .006$ (see Table 14 demographics in method). For trait measures, one-way ANOVA indicated no significant differences were in DES-II average scores, $F (2, 212) = .50, p = .61, \eta^2 = .005$, DSQ-40 mature factor score, $F (2, 212) = 1.90, p = .15, \eta^2 = .02$, DSQ-40 neurotic factor score, $F (2, 212) = .54, p = .58, \eta^2 = .005$, and DSQ-40 immature factor score, $F (2, 212) = .14, p = .87, \eta^2 = .001$, between film groups.

¹² Individuals (n=9) who did not disclose their mental health status were not included in analysis.

Hypothesis one: ADQ-20 Analysis

Differences in anxiety experiences between unpleasant film groups. A Mann-Whitney test showed no significant differences in ADQ-20 total scores in both GT and AT film groups (both $Mdn = 5$), $U = 2631.50$, $p = .92$. Therefore, a combined ADQ-20 (GT and AT) was used for item analysis.

PCA. Non-orthogonal oblique rotation (direct oblimin) was performed for PCA due to items likely to be related to one another (i.e., general anxiety). Good sampling adequacy for PCA to be performed was shown by the overall KMO value of .84 and significant Bartlett's test, $p < .001$. The parallel analysis identified three components in the PCA. These components seem to correspond to the three discharge experiences addressed in the ADQ-20 (see Appendix AA for Scree plot and initial eigenvalues). The three-component PCA model explained for 57.90% of variance. Component one seem to describe SM discharge experiences, component two CPD and component three STM. Appendix AB shows component loadings after factor rotation. Like Study 1, loadings above .40 (16% of variance explained by item) were considered. Poorly fitted items were removed from the ADQ-20 subscales as determined by low loadings on the desired component or high loadings that cannot be explained within that component.

ADQ-20 items 1-6 were to assess for STM anxiety discharge. Like Study 1, items 1-4 (muscular tension items) loaded highly in this factor. However, item 5 "...an increase in heart rate?" was removed as it did not load highly here but rather ($r > .4$) loaded on the component that represented SM. STM item 6 "...an increased urge to sigh?" did not load highly in any factors and was thus removed. ADQ-20 items 7-14 were to assess for SM anxiety discharge, and most of these items loaded well onto this component. However, item 12 "...an increased urge to burp?" loaded onto the component that represented CPD experiences and thus was removed. ADQ-20 items 15-20 were to measure CPD experiences, and most of these items loaded well onto this component. However, experiences of feeling faint such as items 16 "...any

feelings of light-headedness or being faint?” and 17 “...any dizziness?” loaded into the SM component and thus were removed.

To have relatively equal items within each subscale, two additional SM discharge items were removed. This included item 10 “...Any churning sensation in your stomach?”, due to concerns with item wording which can be confused with striated tension of abdominal muscles. When item 10 was removed, the factor loading for item 13 did not reach .40 significance and thus was also removed. Finally, seven items were removed and 13 retained (formed ADQ-13, see Appendix AD for form), with four items in both the STM and CPD subscale and five items in the SM subscale (see Table 16 for ADQ-13 descriptive statistics and inter-item reliability for each experimental condition).

Table 16.

Preliminary ADQ-13 descriptive statistics with item reliability (Cronbach’s alpha, α)

	ADQ-13				
	<i>n</i>	Median	Mean	SD	α
<i>Baseline Total</i>	215	2	4.69	6.92	.85
STM	215	1	2.30	2.90	.80
SM	215	0	1.20	2.88	.84
CPD	215	0	1.19	2.56	.87
<i>Neutral Total</i>	69	2	3.57	4.54	.78
STM	69	1	1.67	2.37	.75
SM	69	0	.48	.93	.27
CPD	69	0	1.42	2.60	.90
<i>General-Threatening Total</i>	69	5	7.22	6.85	.77
STM	69	4	4.39	3.28	.67
SM	69	1	1.77	2.88	.69
CPD	69	0	1.06	2.34	.90
<i>Attachment-related Total</i>	77	6	8.22	9.62	.90
STM	77	4	4.70	4.26	.85
SM	77	0	2.04	4.24	.91
CPD	77	0	1.48	2.48	.81

Note. Statistical data prior to ADQ-13 total or discharge scores outlier analysis

Inter-item reliability was performed for ADQ-13 scores, with most figures being close to or above acceptable α range of .70. However, for the N film group, the SM discharge score

showed low inter-item reliability. Each SM item score was examined between BS and after N film clips were presented (see Table 17 for difference in descriptive statistics). Most SM items showed a reduction in mean ratings from BS to after N film presentation. Two SM items showed approaching or statistical significance with ratings being lower in N than BS; "...feeling gassy?" ($Z = -1.93, p = .054, r = -.16$) and "...an upset stomach?" ($Z = -2.24, p = .03, r = -.19$). Only one SM item, "...urge to urinate?" showed a slight increase in mean ratings from BS to after N film presentation. It was found that if this item was removed, this would create better inter-item reliability of $\alpha = .56$ (vs. $.27$). SM items that showed a reduction in mean ratings suggest that participants felt less anxiety or discomfort in their stomach after watching N film clips.

Table 17.
Descriptive statistics SM items at BS and after N film clips

ADQ-13 SM items	At Baseline		After Film	
	M (SD)	Median	M (SD)	Median
"... feelings of nausea?"	0.04 (0.27)	0	0.01 (0.12)	0
"... feeling gassy?"	0.19 (0.60)	0	0.07 (0.26)	0
"... an urge to urinate?"	0.17 (0.42)	0	0.19 (0.49)	0
"... an upset stomach?"	0.07 (0.26)	0	0.00 (0.00)	0
"... any irritability in your bowels?"	0.04 (0.21)	0	0.03 (0.17)	0

Following the PCA and once poor-fitted items were removed, outlier analysis was conducted for ADQ-13 scores. Hence the difference in mean scores observed below.

Convergent validity for ADQ-13. Both GT and AT film conditions were merged and analysed together (both conditions induced fear/anxiety emotions, shown in the analysis below). STAI-Y-6 and ADQ-13 total scores revealed a medium positive correlation ($r = .45, p < .001$).

Hypothesis two (a): Did Film Conditions Induce the Desired Emotions? Relevant emotions from the PFQ were selected for analysis. The discrete emotion 'interest' was considered a control measure to examine whether individuals had paid attention to the films. One Sample Wilcoxon Signed Rank test for 'interest' showed significantly higher ratings than a median of zero in all film conditions: N ($Z = 7.19, p < .001, r = .61$), GT ($Z = 7.04, p < .001, r = .60$) and

AT ($Z = 7.24, p < .001, r = .58$). Thus, participants attended to and registered interest in watching the films. The dimensional measure pleasantness was examined to see where film conditions sat on that continuum. Kruskal-Wallis test revealed significant differences in film pleasantness across film conditions, $H(2) = 118, p < .001$. Mann-Whitney comparisons showed that N film clips were rated to be the most pleasant compared to film clips in GT ($U = 478, p < .001, r = -.70$) and AT ($U = 161.50, p < .001, r = -.82$). Comparisons revealed AT films was significantly more unpleasant than GT ($U = 1689, p < .001, r = -.32$).

Analysis was conducted examining induction of discrete emotions like love, sadness (composite of unhappiness and sadness), fear (composite of fear and anxiety) and anger (Table 18 for descriptive statistics). Sadness and fear emotions were combined with similar emotions as they did not differ significantly on ratings and correlated well with one another.

Table 18.

Descriptive statistics for interested PFQ emotion ratings

	N		GT		AT	
	M (SD)	Median	M (SD)	Median	M (SD)	Median
Interest	4.77 (1.92)	5	5.04 (2.20)	5	3.77 (2.32)	4
Pleasantness	7.10 (1.32)	7	4.17 (1.72)	4	3.05 (1.54)	3
Love	2.32 (2.59)	2	0.51 (1.63)	0	2.16 (2.52)	1
Sadness	0.12 (0.27)	0	1.25 (1.48)	0.50	4.73 (2.25)	5
Fear	0.18 (0.46)	0	3.31 (2.35)	3	1.75 (1.77)	1
Anger	0.01 (0.12)	0	0.57 (1.08)	0	0.88 (1.35)	0

Emotions induced within a film condition. Friedman tests revealed significant differences with induced emotions for each film condition, N: $\chi^2(3) = 79.33$; GT: $\chi^2(3) = 123.27$; and AT: $\chi^2(3) = 110.07$; all $p < .001$. For N film condition, participants rated feeling more love than other emotions like fear, $Z = -5.55, p < .001, r = -.47$, sadness, $Z = -5.61, p < .001, r = -.48$, and anger, $Z = -5.53, p < .001, r = -.47$. Mean ratings were near zero for the other three emotions. However, a small difference was found with anger being rated lower than fear, $Z = -2.97, p = .003, r = -.25$, and sadness, $Z = -2.70, p = .007, r = -.23$, in N. For GT, fear was found to be the highest emotion induced compared to sadness, $Z = -6.53, p < .001, r = -.56$,

love, $Z = -5.98, p < .001, r = -.51$, and anger, $Z = -6.86, p < .001, r = -.58$. With regards to the other three emotions, only sadness was found to be rated higher than love, $Z = -3.88, p < .001, r = -.33$, and anger, $Z = -3.38, p = .001, r = -.29$. In AT, sadness was rated to be the strongest emotion felt compared to other emotions like love, $Z = -5.97, p < .001, r = -.48$, fear, $Z = -7.00, p < .001, r = -.56$, and anger, $Z = -7.29, p < .001, r = -.59$. Love and fear were the next strongest emotions felt (no significant differences), and with anger being the lowest rated emotion (compared to love, $Z = -3.94, p < .001, r = -.32$; and fear, $Z = -4.65, p < .001, r = -.38$).

Differences in emotions induced between film conditions. Kruskal-Wallis tests indicate significant differences for each emotion when compared across film conditions; for anger, $H(2) = 28.71, p < .001$, love, $H(2) = 32.59, p < .001$, sadness, $H(2) = 136.31, p < .001$, and fear, $H(2) = 91.96, p < .001$. The emotion of love was induced in both N and AT film clips (no difference). Little love were reported in GT films when compared to N, $U = 1320, p < .001, r = -.44$, and AT, $U = 1513, p < .001, r = -.43$. For sadness, highest ratings were observed in AT films compared to GT, $U = 586, p < .001, r = -.68$, and N, $U = 101, p < .001, r = -.86$. Following which, GT had higher sadness ratings when compared to N, $U = 1228, p < .001, r = -.48$. For fear, GT film clips induced the highest amount of fear when compared to AT, $U = 1608, p < .001, r = -.34$, and N, $U = 376.50, p < .001, r = -.77$. AT also elicited some fear emotions which was significantly higher than N, $U = 1007.5, p < .001, r = -.58$. Mean anger ratings were low for all conditions, however, when compared to the N condition, significantly higher ratings for anger were observed for GT, $U = 1753.50, p < .001, r = -.37$, and AT, $U = 1684, p < .001, r = -.45$. No difference found in anger ratings between GT and AT films. In sum, dominant emotions elicited in each film conditions were love for N, fear for GT (with some sadness), and sadness followed by love for AT (with some fear).

Hypothesis two (b): Comparison of Anxiety Measures across Film Conditions Baseline vs Film conditions. Wilcoxon Signed ranks comparisons were performed to compare state measures at BS and after each film conditions (i.e., N, GT, and AT) (see Table 19 for descriptive statistics). As suggested otherwise with raw scores, ADQ-13 total scores did not differ significantly between BS and film conditions: N, $Z = -0.13$, $p = .89$, $r = -.01$; GT $Z = -1.24$, $p = .22$, $r = -.11$; and AT $Z = -1.41$, $p = .16$, $r = -.12$. For STAI-Y-6, comparisons showed significantly higher scores in GT and AT film condition compared to BS, $Z = -6.49$, $p < .001$, $r = -.55$, and $Z = -6.30$, $p < .001$, $r = -.52$, respectively. While lower STAI-Y-6 average scores were found in N compared to BS, $Z = -2.26$, $p = .02$, $r = -.19$.

Comparisons between film conditions. Kruskal-Wallis tests showed significant differences for ADQ-13 total, $H(2) = 6.388$, $p = .04$, and STAI-Y-6 scores, $H(2) = 57.50$, $p < .001$, across film conditions. Higher ADQ-13 ratings were observed in GT than N, $U = 1777.50$, $p = .009$, $r = -.22$. Raw data indicated that AT showed high ADQ-13 total mean ratings (raw scores) compared to N, and when compared to GT it was also somewhat higher. However, possibly due to large standard deviation (i.e., large variability within the data), no significant differences were found between ADQ-13 total scores in AT compared to GT, $U = 2576$, $p = .75$, $r = -.03$, or N, $U = 2217.50$, $p = .08$, $r = -.14$. For the STAI-Y-6, higher scores were observed in both GT and AT condition compared to N, $U = 867$, $p < .001$, $r = -.55$ and $U = 957$, $p < .001$, $r = -.55$, respectively. No difference in STAI-Y-6 scores were found between GT and AT.

Table 19.

Descriptive statistics for state measure comparisons between BS and Film conditions

		Administration of State Measures				
		At Baseline			After Film	
		<i>n</i>	M (SD)	Median	M (SD)	Median
<i>ADQ-13 Total</i>	N	69	2.71 (3.41)	1	2.81 (3.52)	1
	GT	69	4.04 (5.23)	2	4.29 (4.31)	3
	AT	77	4.25 (6.22)	1	5.17 (6.63)	3
<i>STAI-Y-6 Average</i>	N	69	32.03 (9.01)	30	30.34 (8.84)	30
	GT	69	31.30 (9.20)	30	44.69 (12.91)	46.67
	AT	77	34.63 (12.18)	33.33	46.54 (14.76)	46.67

ADQ-13 Discharge analysis. For between film condition comparisons (see Table 20. for descriptive statistics), Kruskal-Wallis tests indicated that only ADQ-13 STM total scores showed a significant difference ($H(2) = 16.97, p < .001$). Mann-Whitney tests showed higher STM discharge scores in both GT and AT when compared to N ($U = 1459, p < .001, r = -.35$; and $U = 1896, p = .002, r = -.27$, respectively). No difference was found between ADQ-13 STM scores for GT and AT.

The analysis of ADQ-13 anxiety discharge experiences within film conditions used average rather than total scores due to uneven items within each discharge subscale (see Table 20 for descriptive statistics and Appendix AC for descriptive for specific defenses). Friedman tests revealed significant differences in discharge scores within N ($\chi^2(2) = 22.83, p < .001$), GT ($\chi^2(2) = 45.87, p < .001$) and AT ($\chi^2(2) = 51.44, p < .001$) conditions. In N, SM discharge scores was significantly lower than STM ($Z = -4.44, r = -.38$) and CPD ($Z = -4.54, r = -.39$) (both $p < .001$). However, no significant differences were found between STM and CPD scores. For both GT and AT, STM discharge scores were significantly higher than SM (GT: $Z = -5.50, r = -.47, p < .001$; and AT: $Z = -5.34, r = -.44, p < .001$) and CPD (GT: $Z = -4.89, r = -.42, p < .001$; and AT: $Z = -4.23, r = -.35, p < .001$). No significant differences were found between SM and CPD discharge scores in both GT and AT conditions. In sum, ADQ-13 SM and CPD ratings were similar across all conditions, with scores being significantly lower

compared to STM within each condition (besides N with similar CPD ratings to STM). When compared to N, higher STM experiences were found in GT and AT (both statistically similar).

Table 20.

Descriptive statistics for ADQ-13 discharge scores for each film condition

		N (n=69)		GT (n=69)		AT (n=77)	
		M (SD)	Median	M (SD)	Median	M (SD)	Median
Averages	STM	0.29 (0.45)	0	0.67 (0.61)	0.5	0.72 (0.81)	0.5
	SM	0.06 (0.13)	0	0.17 (0.34)	0	0.22 (0.58)	0
	CPD	0.33 (0.57)	0	0.20 (0.46)	0	0.30 (0.48)	0
Totals	STM	0.74 (1.79)	0	2.67 (2.44)	2	2.14 (3.25)	2
	SM	0.30 (0.67)	0	0.83 (1.71)	0	1.09 (2.89)	0
	CPD	1.33 (2.29)	0	0.79 (1.86)	0	1.19 (1.93)	0

Hypothesis three: Anxiety Discharge Experiences and Defense styles and Dissociation

Semi-partial correlations were performed, which allowed for unique correlational relationships to be investigative for each ADQ-13 anxiety discharge score (while controlling for any effects of other two discharge scores) with defense styles or individuals' dissociative experiences. Combined ADQ-13 discharge scores from GT and AT conditions (i.e., induced anxiety) were used in the analysis (n=146). See Table 21 for correlations.

Defense style investigation. A small positive relationship was found between high ADQ-13 STM scores and high DSQ-40 mature and neurotic defense factors. In contrast, SM and CPD did not correlate with any defense factors. However, a small positive correlation with ADQ-13 CPD scores and DSQ-40 immature defense factor approached significance ($p = .053$).

Dissociation investigation. With regards to state dissociation (assessed by SDQ), positive correlations were found with ADQ-13 STM (small effect) and CPD (medium effect) scores. For trait dissociation (assessed using the DES-II), small positive correlations were found with all ADQ-13 discharge scores. Further breakdown of trait dissociation experiences showed small positive correlations between absorption and both STM and CPD scores. For depersonalisation/derealisation and SM scores the correlation approached significance ($p = .054$) for a weak positive association. CPD scores showing a medium positive correlation

with depersonalisation/derealisation. For amnesia, small positive correlations were found with SM and CPD scores.

Table 21.

Semi-partial correlation (r) between ADQ-13 discharge scores and DSQ-40, SDQ and DES-II scores

	<i>n</i>	ADQ-13 discharge scores		
		<i>STM</i>	<i>SM</i>	<i>CPD</i>
		<i>r</i>	<i>r</i>	<i>r</i>
DSQ-40: Mature	146	.18*	.04	-.09
Neurotic	146	.21**	.10	.09
Immature	146	.11	.09	.16
SDQ	146	.24***	.09	.36***
DES-II: Overall	146	.17*	.15*	.25***
Absorption	146	.20**	.07	.23**
Depersonalisation and Derealisation	146	-.04	.14	.39***
Amnesia	146	.09	.16*	.24***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$ (2-tailed). r strengths: $\pm .1$ = small effect, $\pm .3$ = medium effect and $\pm .5$ = large effect.

Discussion

Study 2 sought to improve the ADQ measure, implement an induction method to test the ability to prime complex emotions, and assess the relationship between anxiety discharge experiences with defense styles and dissociation. Findings from Study 2 supported our first hypothesis of better PCA outcomes for the ADQ measure, indicating three components consistent with the three anxiety discharge experiences. Findings from the film analysis supported hypothesis two (a), that all film conditions elicited its proposed emotions. Partial support was found for hypothesis two (b), general anxiolytic experiences were elicited in GT and AT. However, there were mixed findings for the ADQ-13 scores. For hypothesis 3, partial support was found in the investigation between anxiety discharge experiences with defenses styles and dissociation. STM correlated with both mature and neurotic defense styles but not immature. However, SM and CPD did not correlate with any defense styles. For dissociation, findings suggested STM experiences being related to normative dissociative experiences, and SM and CPD being related to pathological dissociative experiences.

Interpretation of Results

Hypothesis one: further ADQ development. PCA for the ADQ revealed three components, consistent with the three types of anxiety discharge experiences (STM, SM & CPD). Compared with the ADQ-15 (in Study 1), the ADQ-13 showed good inter-item reliability. Compared to Study 1, SM items in the ADQ-13 showed more coherent items focused mainly on smooth muscle discomfort in the stomach. Almost all inter-item reliability estimates were within the acceptable range, except the SM subscore in the N condition. Closer examination of SM items in N showed that "...an urge to urinate?" was responsible for poor inter-item reliability. Findings seem to also indicate that N condition had "alleviated" individuals' anxiety felt in their stomach, but not the "...urge to urinate...". This interpretation was further supported by the pleasant and positive emotions in N films induced (discussed below). Finally, convergent validity (assessing for state anxiety) for the ADQ-13 total was supported with a moderate association with the STAI-Y-6. Although correlational strength was not strong, this magnitude may be expected as the ADQ-13 total scores encapsulated a range of severity with anxiety discharge experiences, from the more *adaptive* STM to more *severe* forms of anxiety discharge.

Hypothesis two (a): did film conditions yield the desired emotions? Overall, all film conditions induced the proposed emotions. N films were rated as the most pleasant, with high feelings of love (comparable to AT) and minimal negative emotions induced. This finding was consistent with Rottenberg et al. (2007) recommendation of using a more positive N condition. However, different to expected was that due to the pleasant nature of N films, an "alleviating" effect was found with individuals' anxiety experiences. Significantly lower STAI-Y-6 scores and individual SM items, and lower mean ADQ-13 STM and SM ratings (raw data) were found between N and its BS measurements. The GT films predominantly induced fear with some sadness (higher than N but much lower than AT). Regarding the condition of primary interest, AT films (portraying loss of a significant other) induced high levels of sadness, love, and some

fear. As for anger, when compared to other emotions, it showed lower ratings in general. Participants felt more anger in AT films when compared to N, however this induced emotion was not specific to AT as GT also induced similar amounts. Overall, AT did induce a weak mimicking of conscious complex feelings (i.e., sadness, love, some fear, and a little bit of anger). Supporting Rottenberg et al. (2007) or Gilet (2008) claims that film induction offers more complexity of a range of emotions being induced and individuals' can quickly and easily comprehend. The emotions induced in AT could be interpreted and compared with respect to the "breakthrough" phase in ISTDP, where such complex feelings are brought into consciousness with resistance and severe forms of anxiety reduced.

Hypothesis two (b): did unpleasant films induce anxiolytic experiences? Partial support was found for the hypothesis that GT and AT conditions would elicit anxiolytic experiences. Higher STAI-Y-6 scores within film conditions were found when compared to BS. However, no statistical differences were found for ADQ-13 total scores in film conditions compared with their BS ratings (though raw scores were higher for AT and GT conditions). One argument for the high BS ADQ-13 totals may be due to participants' initial spike in anxiety at the start of the survey, as this questionnaire was administered first, and anxiety is often elevated at the start of a study. This may be due to general pre-performance anxiety associated with a novel task (Brooks, 2014). For example, similar to the BS results, O'Neil, Spielberg, and Hansen (1969) found heightened pre-task state anxiety on a computer-assisted learning programme than during their post-task period. Elevated state anxiety in the state of the study (e.g., during the BS period) might also be associated with participants being initially informed that survey responses would be checked for genuineness in order to receive monetary compensation.

For comparisons between film conditions, partial support for unpleasant films eliciting anxiolytic experiences were found for GT and AT. High STAI-Y-6 scores (GT and AT) were

exhibited than in the N condition, while only GT ADQ-13 totals showed higher ratings than N. AT ADQ-13 total was the highest across all film conditions (raw data), however due to large variability (i.e., SD) within its data, the statistical difference with GT or N was not evident. To test the true difference with ADQ-13 total scores between film conditions, one would need a larger sample to increase statistical power to counteract the effects of data variability. SM and CPD ratings remained statistically similar across film conditions in the discharge analysis, suggesting that conditions did not statistically alter SM or CPD ratings. While this claim may be valid for CPD mean scores, mean SM scores show some differences across conditions (however, the difference was not significant). Interestingly, high elevations of STM manifestations were found for GT and AT (compared to N). In general, significant changes seen for STM across film conditions and little SM or CPD might be expected given that 1) a non-clinical sample was used, which may increase the likelihood of participants who experience adaptive STM anxiety discharge; 2) film inductions are different from realistic experiences and may induce milder anxiolytic feelings leading to less severe forms of anxiety discharge experienced; and 3) lower severe discharge ratings overall can be argued to be consistent with the ISTDP literature, where the conscious induction method suggests a “breakthrough” (i.e., feeling a mixture of emotions with resistance lowered) in ISTDP is limited to individuals with less severe forms of anxiety. Perhaps using a clinical sample, along with a better induction that preconsciously induce these emotions, would be warranted to observe higher ADQ-13 SM and CPD scores. Furthermore, similarly high CPD and STM ratings were found in the N condition, while SM scores were low. Observed in the ADQ-13 descriptive statistics between BS and N was lower mean scores for STM and SM ratings. It may be that the “alleviating” effect found in N affected less severe forms of anxiety experiences. In contrast, individuals who experienced the CPD anxiolytic experience during N did not find the films to “alleviate” their anxiety.

Hypothesis three: relationship between anxiety discharge and defense styles and dissociation. Somewhat consistent with our hypothesis, individuals who experienced STM manifestations more likely endorsed both mature and neurotic defense styles, but not immature. While CPD manifestations showed an approaching correlational effect with the immature defense style. The data in our non-clinical sample showed more STM than SM or CPD experiences, which could impact the ability to find accurate correlational effects with defense styles for the more severe anxiety discharge pathways. Again, a clinical sample or a similar but preconscious induction method may remedy this issue.

For dissociation, the DES-II assesses trait dissociation more consistent with dissociation as a defense mechanism (i.e., dissociative experiences endorsed in everyday life). Somewhat different than expected was that both STM and SM showed similar correlational strengths with trait dissociation. At the same time, CPD showed a stronger association, consistent with expectations. Further investigation revealed more consistency with the hypothesis that both STM and CPD were associated with absorption factor. This finding supports both sides of the literature for absorption, with arguments that reflect a normative dissociative experience (i.e., Butler, 2006; or Waller et al, 1996), and at the more extreme level, a pathological experience (Levin & Spei, 2004; Aspinall, 2019). As expected, more severe forms of anxiety manifestations (SM and CPD) were associated with depersonalisation/derealisation and amnesia. For state dissociation, as expected, an association was found with CPD experiences. The more instantaneous dissociative experience has been cited in ISTDP literature (e.g., Davanloo, 1995; Frederickson, 2013; Johansson, Town, and Abbass, 2014). However, different from expected, a correlational effect was observed with the adaptive STM manifestation (but not SM) and state dissociation. Like the DES-II, the SDQ measures various *state* dissociative experiences, including altered time sense and reduction of awareness in surroundings (i.e., absorption). Thus, the correlation found with STM might reflect adherence to more normative

state dissociation experiences. It is likely that time alteration and absorption items would have higher ratings in individuals engrossed in the film clips, a common example of normative absorption experiences (Butler, 2006).

Methodological Considerations

Further methodological considerations include the genuineness of responding with online study. Multiple measures were created to facilitate genuine data collection, including checking every survey response and having multiple validation checks. Hence, a significant number of completed surveys were not used ($n = 141$). The N condition was more pleasant than expected, which may have played a part in the difference observed between anxiolytic measures that may not be evident if more neutral films were selected. Future work may have both films featuring weather reports. Droit-Volet et al. (2011) reported such content to be free from positive or negative emotions or dimensional affects like arousal. At the same time, this avoids the negative emotions associated with plain neutral films described in Rottenberg, Ray, and Gross (2007)'s review. Further methodological issue was that elevated anxiety scores were found in the BS for the ADQ. As previously noted, this may have resulted from this rating being taken at the start of the study. To control this, a small computer game at the beginning could help settle participants before BS ratings are made. Finally, conscious film induction was used to mimic ISTDP complex feelings and elicit anxiolytic experiences, which the ADQ-13 assessed. For future studies, it would be valuable to investigate another preconscious induction method that induces complex feelings and elicits anxiety. Therefore, allowing further testing of ADQ-13 under the ISTDP framework.

Conclusion

The three major goals for Study 2 were to improve the ADQ measure, induce desired emotions using films to induce anxiolytic experiences (assessed by the ADQ), and explore these anxiolytic experiences in relation to defense styles and dissociative experiences. The ADQ

measure (i.e., ADQ-13) showed good improvements from Study 1. There was more confidence that the tool assesses the three different types of anxiety discharge experiences. Whilst a conscious method, the film induction allowed for a complex range of emotions to be induced, yet individuals could easily comprehend. Overall, anxiolytic experiences were induced by unpleasant film conditions (GT and AT). The ADQ-13 showed promising results compared to Study 1 (i.e., increased STM or ADQ-13 total scores in GT and AT in general). The current study also allowed some more detailed exploration between anxiety discharge experiences, defense styles, and dissociation. The adaptive form of anxiety (STM) was related to mature but not immature defense styles and was associated with normative absorption dissociative experience. Furthermore, more severe forms of discharge were associated with more severe forms of trait dissociation and approached significance for immature defense styles.

General Discussion

This thesis attempted to replicate the ISTDP theoretical model within a laboratory setting. A major goal was first to create the ADQ measure to assess the three main anxiety discharge pathways. Study 1 constructed the initial ADQ, while Study 2 further refined the questionnaire. Two different induction methods were used to induce complex emotions, a preconscious method in Study 1 and a conscious method in Study 2 (to determine whether complex emotions could be induced in the laboratory at very least a conscious level). Finally, both studies examined relationships between anxiety experiences elicited within target conditions to defense styles and dissociative experiences.

Development of ADQ Measure

ADQ-15 (from Study 1) showed good inter-item reliability for all scores except for the SM factor. There was less certainty for a third factor (i.e., SM), and despite the removal of poorly fitted items, inter-item reliability was still below the acceptable range. Study 2 focused on addressing the lack of cohesiveness in ADQ-15 SM items (i.e., assessment covered an

extensive range of bodily sensations from shortness of breath to bowel sensations). Findings of the ADQ-13 (Study 2) showed sound improvements. A solid factor structure was found capturing confidently three factors corresponding to STM, SM and CPD manifestations. ADQ-13 showed good inter-item reliability overall and a more coherent SM subscale (i.e., focused on discomfort in the gut). The final ADQ-13 corresponds well with the three main anxiety discharge pathways described in the ISTDP literature (Davanloo, 2005). Both studies compared the ADQ measure with other assessments of anxiety. For Study 1, consistent with Yartz and Hawk (2002)'s argument, the self-reported ADQ-15 assesses for a different anxiety domain than physiological measures. However, some correspondences with subjective anxiety and objective cognitive tests were found, indicating that individuals could provide an accurate account of their cognitive functioning. For Study 2, the ADQ-13 showed good convergent validity with the STAI-Y-6, which both assessed for state anxiety.

Inducing Complex Emotions Leading to Rise in Anxiety Discharge Experiences

Findings from Study 1 AT condition (i.e., attempt to induce preconscious relational complex feelings) did not support for preconscious induction of complex feelings nor elicitation of overall anxiety discharge experiences (i.e., ADQ-15 total). Findings for individual discharge scores indicated higher CPD experiences in GT to BS, which was expected. However, elevations with other anxiety discharge types were linked to methodological limitations (e.g., high STM due to *tension* anxiety related to the cognitive tasks administered; or high CPD experiences relating to the patterned mask creating dizziness and visual discomfort). In Study 1, there was uncertainty about what AT induced, which made findings in AT unsuitable for interpreting. In Study 2, using a film induction, AT film condition induced some conscious complex emotions (sadness and love, with some fear and a little anger). Furthermore, findings partially supported that anxiety experiences (i.e., higher fear emotion rating, general state anxiety and STM experiences) were elicited in AT. Study 2 findings provided clarity for the

failure to induce preconscious complex emotions in Study 1. The reason may be more to do with either a non-neutral N (confirmed by similar anxiety experience elicited in GT and N in Study 1) or that AT pictures when presented rapidly contained too much detail to comprehend.

Considering a non-clinical sample in Study 2, induced conscious complex emotions eliciting anxiety discharge experiences provides a succinct account of individuals who fall to the extreme left of the spectrum of psychoneurotic disorders (Davanloo, 1987). Individuals who fall on this side of the spectrum have been reported to be more tolerable to anxiety (i.e., only STM manifestations) and are aware of their thoughts and feelings. Alternatively, the results also mimic the experience of a breakthrough” where complex emotions can be consciously experienced (hence only the less severe form of anxiety was elicited). Moreover, the conscious experience of complex emotions is an experience from within. The elicitation of anxiety supported the argument that anxiety is a signal for internal threats (i.e., difficult conscious emotions in this case) (Della Selva, 2004; Freud, 1926). Unfortunately, we could not demonstrate this effect where anxiety was elicited as a signal to the internal threat of *unconscious* feelings in study 1.

Anxiety and Relation to Defenses and Dissociation

Literature studying anxiety and defenses suggests that less mature defense styles being related to more severe anxiety manifestations (i.e., subjects diagnosed with clinical anxiety disorders in Andrews et al.’s (1989) study or trait anxiety assessment in Muris and Merckelbach (1994) research). Moreover, within the ISTDP literature, various authors, including Davanloo emphasised that individuals who can tolerate anxiety tend to use more mature defenses, while those who cannot use more primitive, i.e., immature defenses. More specific findings from Study 2 supported the literature where the more adaptive form of anxiety, STM, was associated with relatively more mature defense styles (mature and neurotic but not immature).

Previous findings are consistent with Study 1, where increases in anxiety experiences, in general, were associated with higher dissociative experiences (e.g., Tapp et al., 2018; Wilkinson & Ritchie, 2015). However, the comprehensive analysis in Study 2 provides more specific relationships between different anxiety experiences to different dissociative experiences. Findings for trait dissociation (i.e., a disposition to dissociative experiences) showed that pathological dissociative experiences were related to severe anxiety manifestations (SM and CPD). Alternatively, absorption dissociative experiences were related to both the adaptive and most severe anxiety discharge types. These findings also make sense compared to the ISTDP literature, where more severity of anxiety manifestations is related to more immature defenses (i.e., trait dissociation). State dissociation (i.e., dissociative experiences at or around the time of completing the questionnaire) was associated with STM, but more so with CPD. Regarding state dissociation findings, results were consistent with reports that at times dissociative symptoms are expressed as an extreme form of CPD (i.e., anxiety) manifestation within the ISTDP literature.

Future Implications/Research

The development of the ADQ-13 has potential implications in research and clinical settings. By using the ADQ-13 in research assists in investigating the metapsychology of ISTDP within an experimental setting. Moreover, using the ADQ-13 in future research helps with further refinements while building its psychometric properties by exploring its construct validity or assessing test-retest reliability with different populations (i.e., whether it can be usefully applied in a clinical sample). Within a clinical setting, ISTDP therapists need to notice non-verbal cues for any anxiety discharge manifestations. Individuals' anxiety must be minimal to allow better access for unconscious complex emotions to be experienced (Davanloo, 1995). Using the ADQ-13 may allow individuals to be active participants in the process of noticing their own anxiety discharge experiences early on in therapy sessions, attuning them for what to

look out for without being dependent on the therapist's observation. A measure like ADQ-13 allows the client to offer their experience voluntarily and describe the intensity of such experiences easily.

Findings from Study 2 offers some theoretical implications. Induction of some conscious complex emotions using films of attachment-related loss elicited mainly STM discharge experiences. These Anxiety discharge experiences were associated with specific types of defense styles or dissociative experiences. Findings provide some experimental support to the psychopathological dynamic forces described in ISTDP (or the connection in the ToC). Notably, the findings offered some support that complex feelings arise following a triggering event (i.e., trauma) that disrupts the attachment bond. The rise of some conscious complex emotions elicits anxiety discharge manifestations, mainly the adaptive form (i.e., STM). Furthermore, less severe forms of anxiety discharge manifestations are associated with less immature defense styles or more normative dissociative experiences (i.e., providing support for anxiety manifestation at STM being associated with less resistance – defense).

Methodological Limitations across Both Studies

Several limitations need to be considered. In Study 1, preconscious induction of these emotions were not successful likely due to pictures being too detailed to comprehend when shown rapidly. Study 2 induced some complex emotions; however, these were conscious and elicited little anger. In the form of murderous rage, anger is considered an important emotion in ISTDP that often conflicts with love within central attachment relationships to produce punishing guilt, followed by heightened anxiety and defenses to repress these conflicted emotions (Davanloo, 1995; Beeber, 2016). Hence, a better method to preconsciously induce complex emotions would be warranted. Second, both studies used non-clinical samples. Hence less condition-specific SM and CPD experiences were elicited. Particularly in Study 2, less reported SM and CPD experiences would have reduced the ability to determine significant

differences between conditions or their relationship with defenses/dissociation. Future studies should consider a clinical sample, allowing for more likelihood for SM and CPD experiences. Finally, our findings suggest that the N conditions in both studies were not entirely neutral. Therefore, when compared with N (i.e., differences in anxiolytic effects elicited), AT results would have been minimised in Study 1 while being exaggerated (anxiety alleviating effect) in Study 2. Future studies should administer an N condition well validated by literature and pilot and assess for pleasantness (a dimensional measure of emotion).

Conclusion

Overall, this thesis constructed the self-reported ADQ-13 as a measure that assesses the three main anxiety discharge pathways. Some conscious complex emotions induced in Study 2 elicited anxiety discharge experiences (at least at the level of STM manifestation) as assessed by the ADQ-13. In Study 2, correlational effects were found between increased severity of anxiety manifestation with more immature defenses styles and pathological dissociative experiences. These findings provide some experimental support for the metapsychology in ISTDP. Research using a better preconscious induction of complex emotions is needed to investigate the ISTDP theoretical model more confidently from an experimental perspective. Further studies using the ADQ-13 is also warranted for furthering its development

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Appendices

Appendix A: Ethics Approval Letter



HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2015/83

20 August 2015

Lisa Chen and Nikita Dow
Department of Psychology
UNIVERSITY OF CANTERBURY

Dear Lisa and Nikita

The Human Ethics Committee advises that your research proposal "Processing of information outside awareness" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 17 August 2015.

Best wishes for your project.

Yours sincerely

A handwritten signature in black ink, appearing to read 'L. MacDonald'.

Lindsey MacDonald
Chair
University of Canterbury Human Ethics Committee

Appendix B: Information Sheet

Department of Psychology

Telephone: +64 03 364 2902



Date:

“Processing of Information outside awareness”

Information Sheet

Thank you for your interest in this project. Please read this information sheet carefully before deciding whether or not to participate.

What is the Aim of the Project?

We want to investigate the relation between presenting stimuli (pictures) outside an individual's awareness and how they relate to an individual's experience of anxiety. We also want to investigate what kind of coping strategies individuals use in daily life.

What will you be asked to do?

This project will be video recorded for additional objective measures. Should you agree to take part in this project, we will ask you to watch different types of fast-moving pictures on a computer, where you will need to respond by pressing buttons on a keyboard. There will be three different types of pictures presented; some will show different emotions between two individuals, others will show general threat (e.g. a gun) and others neutral looking pictures (e.g., a book). At the start of the study you will fill out a questionnaire regarding your current experience of anxiety. Later, between each set of pictures you will fill out the same questionnaire regarding your experience of anxiety and then play a game of “connect-four”. Additionally, you will fill-out a questionnaire that looks at coping strategies. At the end of the study we will give you a debrief of your experience of being in the study and let you know more about the study.

Below is a schedule, and time estimates for each part of the experiment.

<i>Measure/Assessment</i>	<i>Approximate time taken</i>
• Questionnaire Block	3 minutes
• Present first set of pictures	1-2 minutes
• Questionnaire Block + Game	5 minutes
• Present second set of pictures	1-2 minutes
• Questionnaire Block + Game	5 minutes
• Present last set of pictures	1-2 minutes
• Questionnaire Block & debrief	6 minutes

The pictures shown will include representations of anger, fear and grief; and may cause distress in some people. Please let the researcher know if you feel uncomfortable at any time.

If you have any lingering negative feelings please don't hesitate to contact the support services, listed at the end of this document. You may receive a copy of the project results by contacting the researcher at the conclusion of the project (contact details below).

You may receive a copy of the project results by contacting the researcher at the conclusion of the project (contact details below).

Participation is voluntary and you are free to withdraw at any stage without penalty. If you withdraw, we will remove information relating to you. Please note however, that information cannot be withdrawn from the project once it has been entered on the computer, as all information will be anonymised. For your participation you will receive a \$10 Westfield voucher.

What will we do with the information collected?

The results of this project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public. To ensure anonymity and confidentiality no names will be used on the assessments or in the final report. Any and all information that has identifying features (such as the consent form) will be kept by xxxx, in his locked office. Only xxxxxx will have access to the data, which will be securely stored electronically by password protection. After the conclusion of the experiment xxxxx will keep a copy of the data for ten years, after which it will be destroyed. A thesis is a public document and will be available through the UC Library.

Further Information:

This project is being carried out as a requirement for a *PhD Thesis and Honour dissertation* by xxx and xxx respectively, under the supervision of xxx who can be contacted at the email addresses below. xxxxxxxxxxxx will be happy to address any concerns you have about participation in the project.

Contact details as follows:

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and complaints should be addressed to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)

- Human Ethics Committee: Postal: Okeover House, University of Canterbury, Ilam, 8041, Christchurch. Email: human-ethics@canterbury.ac.nz

Support Services

Samaritans: 0800 726 666

Lifeline: 0800 543 354

Counselling services

University of Canterbury Counselling service: (03) 364 2402

Petersgate Counselling Service: (03) 343 3391

Emergency services

Psychiatric Emergency Services: (03) 364 0482

Appendix C: Consent Form

College of Science

Department of Psychology



Date _____

“Processing of Information outside awareness”

Consent Form for _____

I have been given a full explanation of this project and I have had the opportunity to ask questions.

I understand that participation is voluntary and I may withdraw at any time prior to my data being merged with other data.

I understand that any information or opinions I provide will be kept confidential to the researcher and the supervisors and that any published or reported results will not identify me

I understand that a thesis is a public document and will be available through the UC Library.

I understand that information relating to general demographics (such as age and gender) will be gathered.

I understand that all data collected for the study will be kept in locked secure facilities and password protected electronic form, and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that for further information I can contact the researchers via email:

If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By signing below, I understand what is required of me and I agree to participate in this research.

Signature

Name

Date

Appendix D: Written debrief form for first year psychology students

DEBRIEFING FORM FOR FIRST YEAR PSYCHOLOGY STUDENTS

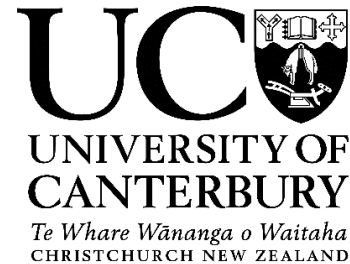
Thank-you for your participation. Featured below is a written debrief of what the study was about. Please read carefully to answer the questions below.

This study was interested in the effects of unconscious stimuli on the physical experience of anxiety. You were shown three sets of image blocks (**independent variable**). One third of these depicted emotion in an attachment related setting; grief, rage, fear and love were all shown. The second third depicted general threatening stimuli unrelated to attachment (e.g. a shark). The final third was comprised of neutral stimuli (e.g. a chair).

We recorded changes in your physiological reactions: heart-rate, respiratory changes and skeletal muscular tension to these different types of images as an **objective measure** of your state anxiety (how anxious you were at the time). The computerised task you took was aimed to measure changes in your cognitive function between each set of pictures. The questionnaires you took after each trial block aimed to **subjectively measure** your state anxiety. As for the paper scenario, this assessed your perception in terms of what type of anxiety an individual may feel when they encounter a difficult situation with a caregiver. The final questionnaire at the end aimed to measure your most commonly used psychological coping mechanisms against anxiety. The final set of images were positive images, these were irrelevant to the study but were used to counterbalance any lingering anxiety feelings. If you feel anxious, depressed or angry after the completion of this study please contact one of the support services noted on the second page. You can also talk to the researchers.

Appendix E: Written debrief form for participants other than first year psychology students

Department of Psychology



Debriefing form

This study was interested in the effects of unconscious stimuli on the physical experience of anxiety. You were shown three sets of image blocks. One third of these depicted emotion in an attachment related setting; grief, rage, fear and love were all shown. The second third depicted general threatening stimuli unrelated to attachment (e.g. a shark). The final third was comprised of neutral stimuli (e.g. a chair).

We recorded changes in your physiological reactions (heart-rate, respiratory changes and skeletal muscular tension) to these different types of images as an objective measure of your state anxiety (how anxious you were at the time). The computerised task you took was aimed to measure changes in your cognitive function between each set of pictures. The questionnaires you took after each trial block aimed to subjectively measure your state anxiety. As for the paper scenario, this assessed your perception in terms of what type of anxiety an individual may feel when they encounter a difficult situation with a caregiver. The final questionnaire at the end aimed to measure your most commonly used psychological coping mechanisms against anxiety. The final set of images were positive images, these were irrelevant to the study but were used to counterbalance any lingering anxiety feelings. If you feel anxious, depressed or angry after the completion of this study please contact one of the support services noted on the second page. You can also talk to the researcher.

If you have any further questions regarding this project, please feel free to contact us:

•

•

Support Services

Samaritans: 0800 726 666

Lifeline: 0800 543 354

Counselling services

University of Canterbury Counselling service: (03) 364 2402

Petersgate Counselling Service: (03) 343 3391

Emergency services

Psychiatric Emergency Services: (03) 364 0482

Appendix F: International Affective Picture System, IAPS – picture properties table
extracted from Lang et al. (2008)

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Snake	1019	3.95(1.96)	5.77(1.83)	4.23(2.08)		12	Parrots	1333	6.11(1.50)	3.17(1.97)	.	6.29(2.04)	13
Snake	1022	4.26(2.04)	6.02(1.97)	3.90(2.21)		12	Women	1340	7.13(1.57)	4.75(2.31)	6.13(1.78)		11
Snake	1026	4.09(1.91)	5.61(2.23)	.	4.43(2.39)	16	Pig	1350	5.25(1.96)	4.37(1.76)	5.60(1.74)		20
Snake	1030	4.30(2.35)	5.46(2.43)	4.56(2.43)		1	Bees	1390	4.50(1.56)	5.29(1.97)	4.75(1.84)		3
Snake	1033	3.87(1.94)	6.13(2.15)	3.73(2.16)		18	Ferret	1410	7.00(1.45)	4.17(2.02)	6.05(1.70)		18
Snake	1040	3.99(2.24)	6.25(2.13)	3.92(2.13)		1	Birds	1419	6.54(1.45)	3.48(1.95)	.	5.82(1.97)	13
Snake	1050	3.46(2.15)	6.87(1.68)	3.08(1.93)		6	Seal	1440	8.19(1.53)	4.61(2.54)	6.05(2.38)		6
Snake	1051	3.80(1.75)	5.95(1.98)	3.80(2.21)		12	PolarBears	1441	7.97(1.28)	3.94(2.38)	.	6.34(2.01)	15
Snake	1052	3.50(1.87)	6.52(2.23)	3.36(2.26)		11	Gannet	1450	6.37(1.62)	2.83(1.87)	6.75(1.87)		1
Snake	1070	3.96(2.30)	6.16(2.08)	3.71(2.08)		1	Kitten	1460	8.21(1.21)	4.31(2.63)	6.00(2.00)		5
Snake	1080	4.24(2.08)	5.69(2.28)	4.33(2.28)		1	Kittens	1463	7.45(1.76)	4.79(2.19)	6.43(1.92)		8
Snake	1090	3.70(1.90)	5.88(2.15)	3.82(2.27)		2	Dog	1500	7.24(1.88)	4.12(2.50)	6.97(2.50)		1
Snake	1101	4.10(1.85)	5.83(2.25)	4.13(2.30)		11	DogRace	1505	4.13(1.66)	4.73(1.83)	4.49(1.83)		17
Snake	1110	3.84(1.89)	5.96(2.16)	3.84(2.31)		2	Dog	1510	7.01(2.07)	4.28(2.47)	6.29(2.47)		1
Snakes	1111	3.25(1.64)	5.20(2.25)	4.80(2.41)	4.34(2.06)	7	AttackDog	1525	3.09(1.72)	6.51(2.25)	.	3.15(2.2)	13
Snake	1112	4.71(1.70)	4.60(2.44)	5.27(2.20)		8	Cat	1540	7.15(1.96)	4.54(2.35)	7.01(2.35)		1
Snake	1113	3.81(1.75)	6.06(2.12)	3.91(2.10)		8	Hawk	1560	5.97(2.32)	5.51(2.19)	5.18(2.19)		1
Snake	1114	4.03(2.16)	6.33(2.17)	.	4(2.49)	14	Horse	1590	7.18(1.64)	4.74(2.13)	5.62(1.82)		2
Snake	1120	3.79(1.93)	6.93(1.68)	3.87(2.31)		3	Horse	1590	7.24(1.45)	4.80(2.10)	5.54(1.88)		3
Lizard	1121	5.79(1.61)	4.83(1.98)	5.89(1.99)		11	Pony	1595	6.22(1.64)	4.79(2.09)	5.54(1.96)		19
Lizard	1122	5.15(1.71)	4.32(2.16)	5.55(1.95)		18	Horse	1600	7.37(1.56)	4.05(2.37)	6.75(2.37)		1
Spider	1200	3.95(2.22)	6.03(2.38)	4.33(2.38)		1	Giraffes	1601	6.86(1.51)	3.92(2.07)	6.24(1.86)		8
Spider	1201	3.55(1.88)	6.36(2.11)	3.87(2.30)	3.63(2.27)	7	Butterfly	1602	6.50(1.64)	3.43(1.96)	6.41(1.82)		8
Spider	1202	3.35(1.77)	5.94(2.17)	4.23(2.36)		20	Butterfly	1603	6.90(1.48)	3.37(2.20)	6.57(2.09)		10
Spider	1205	3.65(1.76)	5.79(2.18)	.	4.1(2.19)	14	Butterfly	1604	7.11(1.41)	3.30(2.17)	6.69(2.11)		9
Spider	1220	3.47(1.82)	5.57(2.34)	4.54(2.34)		1	Butterfly	1605	6.59(1.56)	3.43(2.02)	6.02(1.77)		19
Spider	1230	4.09(1.63)	4.85(2.25)	5.60(1.96)		1	Rabbit	1610	7.82(1.34)	3.08(2.19)	6.52(2.10)		1
Spider	1230	4.61(1.74)	4.03(2.41)	4.58(2.25)		2	Rabbit	1610	7.69(1.34)	3.98(2.40)	6.77(2.19)		2
Spider	1240	4.22(1.94)	4.92(2.17)	4.95(2.17)		1	Bird	1616	5.21(1.12)	3.95(1.95)	5.67(1.77)		11
Roach	1270	3.68(1.85)	4.77(2.44)	5.25(2.48)		4	Mole	1617	4.23(1.68)	5.34(2.41)	.	4.62(1.87)	16
Roaches	1271	3.19(1.64)	5.37(2.44)	4.20(2.13)		19	Antelope	1620	7.37(1.56)	3.54(2.34)	6.82(2.34)		1
Roaches	1274	3.17(1.53)	5.39(2.39)	5.03(2.38)		5	Fawn	1630	7.26(1.48)	4.45(2.45)	6.12(1.85)		20
Roaches	1275	3.30(1.65)	4.81(2.22)	5.11(2.23)		6	Coyote	1640	6.27(2.22)	5.13(2.20)	4.91(2.00)		1
Rat	1280	3.66(1.75)	4.93(2.01)	5.05(2.20)		4	Coyote	1640	6.16(1.88)	5.18(1.93)	5.22(2.20)		2
PitBull	1300	3.55(1.78)	6.79(1.84)	3.49(2.10)		3	Wolf	1645	4.99(1.64)	5.14(1.99)	4.74(1.91)		18
Dog	1301	3.70(1.66)	5.77(2.18)	3.96(1.98)		8	Jaguar	1650	6.65(2.25)	6.23(1.99)	4.29(1.99)		1
Dog	1302	4.21(1.78)	6.00(1.87)	4.04(2.11)	3.87(1.91)	7	Gorilla	1659	6.57(1.98)	4.89(1.97)	5.71(1.68)		20
Dog	1303	4.68(2.11)	5.70(2.04)	4.98(2.12)		11	Gorilla	1660	6.49(1.89)	4.57(2.39)	5.46(2.39)		1
Attackdog	1304	3.37(1.58)	6.37(1.93)	3.29(1.67)		17	Orangutan	1661	6.14(1.56)	4.05(2.05)	.	6(1.83)	14
Leopard	1310	4.60(1.62)	6.00(1.80)	4.37(1.97)		3	Cow	1670	6.81(1.76)	3.05(1.91)	5.63(1.80)		1
Frog	1313	5.65(1.47)	4.39(2.03)	5.91(1.91)		11	Cow	1670	5.82(1.63)	3.33(1.98)	6.53(1.91)		2
Bear	1321	4.32(1.87)	6.64(1.89)	3.51(2.12)		12	Buffalo	1675	5.24(1.48)	4.37(2.15)	.	4.63(2.1)	15

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Puppies	1710	8.34(1.12)	5.41(2.34)	6.55(1.98)		3	Woman	2039	3.65(1.44)	3.46(1.94)	5.06(1.85)		18
Lion	1720	6.79(1.56)	5.32(1.82)	4.63(2.28)		3	Baby	2040	8.17(1.60)	4.64(2.54)	7.33(2.54)		1
Lion	1721	7.30(1.39)	4.53(2.21)	5.57(2.07)		10	Baby	2045	7.87(1.19)	5.47(2.34)	6.10(2.01)		17
Jaguars	1722	7.04(2.02)	5.22(2.49)	6.12(2.29)		12	Baby	2050	8.20(1.31)	4.57(2.53)	7.71(2.53)		1
Tiger	1726	4.79(2.10)	6.23(2.19)	.	4(2.33)	14	Baby	2053	2.47(1.87)	5.25(2.46)	3.56(2.00)		8
Lion	1731	7.07(1.58)	4.56(2.50)	.	5.85(2.19)	14	ManInPool	2055.1	3.15(1.84)	4.95(2.11)	.	4.31(2.1)	14
Owl	1740	6.91(1.38)	4.27(2.03)	5.85(1.79)		3	ManInPool	2055.2	6.40(1.75)	4.45(2.18)	.	5.65(2.14)	13
Bunnies	1750	8.28(1.07)	4.10(2.31)	6.15(2.01)		3	Diving	2056	6.34(1.30)	4.63(1.90)	5.83(1.77)		18
Hippo	1810	6.52(1.49)	4.45(2.11)	4.55(1.81)		5	Father	2057	7.81(1.28)	4.54(2.41)	6.76(1.94)		10
Monkeys	1811	7.62(1.59)	5.12(2.25)	6.07(1.96)	5.99(1.95)	7	Baby	2058	7.91(1.26)	5.09(2.48)	6.67(1.96)		11
Elephants	1812	6.83(1.33)	3.60(2.11)	5.91(1.84)		9	Baby	2060	6.49(1.59)	3.80(2.02)	5.81(1.73)		18
Crocodile	1820	5.35(2.05)	5.67(2.09)	4.66(2.30)		19	Baby	2070	8.17(1.46)	4.51(2.74)	7.14(2.10)		4
Camels	1850	6.15(1.52)	4.06(2.14)	5.94(1.91)		12	Baby	2071	7.86(1.32)	5.00(2.34)	.	6.61(2.02)	14
Fish	1900	6.65(1.80)	3.46(2.32)	6.07(2.22)		4	Baby	2075	7.32(1.65)	5.27(2.27)	6.42(1.81)		20
Shrimp	1903	5.50(1.68)	4.25(1.95)	6.01(2.05)		17	Babies	2080	8.09(1.47)	4.70(2.59)	7.08(1.96)		4
Jellyfish	1908	5.28(1.53)	4.88(2.15)	4.75(1.60)		17	Girls	2091	7.68(1.43)	4.51(2.28)	6.79(2.04)	6.44(1.99)	7
Grouper	1910	6.71(1.80)	3.29(2.29)	6.44(2.13)		4	Clowns	2092	6.28(1.90)	4.32(2.29)	5.75(2.38)	5.94(2.15)	7
Porpoise	1920	7.90(1.48)	4.27(2.53)	6.50(2.18)		4	Toddler	2095	1.79(1.18)	5.25(2.34)	.	3.7(2.28)	14
Shark	1930	3.79(1.92)	6.42(2.07)	3.19(2.15)		4	AngryFace	2100	3.85(1.99)	4.53(2.57)	5.05(2.57)		1
Shark	1931	4.00(2.28)	6.80(2.02)	3.51(2.54)	2.74(1.84)	7	Man	2101	4.49(1.34)	3.46(1.86)	5.25(1.56)		17
Shark	1932	3.85(2.11)	6.47(2.20)	.	3.44(2.16)	13	NeuMan	2102	5.16(0.96)	3.03(1.87)	.	5.8(1.77)	16
HermitCrab	1935	4.88(1.44)	4.29(1.95)	.	5.5(2)	14	NeuWoman	2104	4.42(1.09)	3.11(1.84)	.	5.45(1.84)	15
Turtles	1942	6.26(1.76)	4.01(2.05)	5.95(2.13)		12	Male	2107	5.53(1.05)	3.72(2.12)	5.92(1.66)		20
Turtle	1945	4.59(1.68)	4.42(2.03)	5.57(2.07)		11	AngryFace	2110	3.71(1.82)	4.53(2.25)	4.66(2.25)		1
Octopus	1947	5.85(1.77)	4.35(2.37)	.	5.77(2.05)	13	BodyPierce	2115	3.83(1.70)	4.98(2.00)	4.87(2.02)		19
Mickey	1999	7.43(1.47)	4.77(2.40)	6.64(1.96)		8	AngryFace	2120	3.34(1.91)	5.18(2.52)	4.52(2.52)		1
Adult	2000	6.51(1.83)	3.32(2.07)	6.65(2.07)		1	TongueOut	2122	5.15(1.82)	4.59(1.91)	5.49(1.81)		19
Man	2002	4.95(1.36)	3.35(1.87)	5.89(1.65)		18	Woman	2130	4.08(1.33)	5.02(2.00)	5.10(2.00)		2
AttractiveMan	2005	6.00(1.82)	4.07(2.44)	.	5.84(1.88)	13	GrievingFem	2141	2.44(1.64)	5.00(2.03)	3.92(2.14)		11
Adult	2010	6.25(1.84)	3.32(2.07)	6.24(2.07)		1	Baby	2150	7.92(1.59)	5.00(2.63)	6.23(2.34)		2
VeiledWoman	2018	5.56(1.49)	4.92(2.15)	5.50(1.98)		20	Father/Child	2151	7.32(1.63)	4.37(2.13)	5.90(1.75)		19
AttractiveFem	2019	6.07(1.32)	4.31(2.28)	5.89(1.71)		18	Mother	2152	6.93(1.42)	4.50(2.25)	.	5.99(1.87)	16
Adult	2020	5.68(1.99)	3.34(1.89)	5.99(1.89)		1	Mother	2153	6.98(1.50)	4.40(2.24)	.	6.23(1.87)	15
Woman	2025	5.78(1.26)	4.30(2.16)	.	5.81(1.85)	14	Family	2154	8.03(1.13)	4.48(2.31)	.	6.38(1.9)	16
Woman	2026	4.82(0.95)	3.40(1.84)	5.09(1.62)		17	Pregnant	2155	6.78(1.97)	5.43(2.09)	5.81(2.08)		20
Woman	2030	6.71(1.73)	4.54(2.37)	5.60(1.67)		2	Family	2156	7.12(1.46)	4.34(2.11)	5.82(1.72)		17
Makeup	2032	5.58(1.24)	4.00(2.12)	6.14(1.70)		20	Children	2158	7.31(1.48)	5.00(2.20)	6.08(1.62)		20
Cheerleaders	2034	5.90(1.63)	4.93(2.21)	5.79(1.86)		20	Father	2160	7.58(1.69)	5.16(2.18)	6.12(2.06)		3
Kid	2035	7.52(1.33)	3.69(2.11)	6.20(1.79)		18	Father	2165	7.63(1.48)	4.55(2.55)	6.72(1.82)		9
Woman	2036	5.80(1.28)	3.24(1.88)	6.10(1.79)		18	Mother	2170	7.55(1.42)	4.08(2.48)	6.49(2.26)		4
Woman	2037	6.42(1.24)	3.35(2.04)	.	6.21(1.84)	15	Man	2190	4.83(1.28)	2.41(1.80)	5.92(2.01)		4
NeuWoman	2038	5.09(1.35)	2.94(1.93)	.	6.36(1.85)	16	Farmer	2191	5.30(1.62)	3.61(2.14)	.	5.8(2)	14

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
NeutFace	2200	4.79(1.38)	3.18(2.17)	5.44(2.17)		1	Mother	2312	3.71(1.64)	4.02(1.66)	4.72(1.86)		12
Hospital	2205	1.95(1.58)	4.53(2.23)	3.22(2.13)		6	Binoculars	2314	7.55(1.24)	4.00(2.01)	6.17(1.78)		18
Fingerprint	2206	4.06(1.40)	3.71(2.03)	4.46(2.36)		10	Girl	2320	6.17(1.51)	2.90(1.89)	6.66(1.81)		10
Bride	2208	7.35(1.68)	5.68(2.34)	6.21(1.74)		11	Chef	2331	7.24(1.72)	4.30(2.38)	6.37(2.13)		12
Bride	2209	7.64(1.46)	5.59(2.37)	6.53(1.78)		11	Family	2332	7.64(1.60)	4.30(2.29)	.	6.37(1.91)	15
NeutFace	2210	4.38(1.64)	3.56(2.21)	5.23(1.78)		1	Father	2339	6.72(1.34)	4.16(1.90)	.	6.03(1.66)	15
NeutFace	2210	4.70(0.93)	3.08(1.76)	5.03(2.21)		2	Family	2340	8.03(1.26)	4.90(2.20)	6.18(1.86)		3
Man	2211	5.19(1.69)	4.05(2.07)	5.25(1.68)		17	Children	2341	7.38(1.59)	4.11(2.31)	6.44(2.00)		9
NeutMan	2214	5.01(1.12)	3.46(1.97)	5.98(1.69)		11	Children	2342	6.20(1.55)	4.06(2.02)	5.76(1.64)		17
NeutMan	2215	4.63(1.24)	3.38(2.00)	5.68(1.96)		12	Children	2344	6.72(1.89)	4.71(2.04)	5.96(1.95)		12
Children	2216	7.57(1.31)	5.83(2.20)	6.41(1.90)		11	Children	2345	7.41(1.72)	5.42(2.47)	6.51(2.07)		12
Class	2217	6.24(1.52)	4.08(1.85)	5.80(1.76)		17	BlackEye	2345.1	2.26(1.46)	5.50(2.34)	3.96(2.02)		17
MaleFace	2220	5.03(1.39)	4.93(1.65)	5.32(1.77)		3	Kids	2346	7.05(1.53)	5.28(2.28)	.	6.14(1.9)	14
Judge	2221	4.39(1.21)	3.07(2.08)	4.97(2.26)		9	Children	2347	7.83(1.36)	5.56(2.34)	6.54(1.86)		20
BoysReading	2222	7.11(1.54)	4.08(2.15)	.	6.54(1.85)	14	NursingBaby	2351	5.49(2.04)	4.74(2.05)	5.41(1.81)		8
Boys	2224	7.24(1.58)	4.85(2.11)	.	6.39(1.89)	14	Kiss	2352	6.94(1.87)	4.99(1.98)	6.32(1.68)		8
SadFace	2230	4.53(1.22)	4.13(1.68)	4.80(1.54)		3	Kiss	2352.1	7.27(1.79)	5.16(2.17)	6.04(1.79)		11
Butcher	2235	5.64(1.27)	3.36(1.92)	.	5.83(1.91)	13	BloodyKiss	2352.2	2.09(1.50)	6.25(2.10)	3.45(1.94)		12
NeutChild	2240	6.53(1.48)	3.75(2.14)	6.23(1.96)		10	Man	2357	5.41(1.36)	3.33(2.07)	.	6.06(2.01)	14
NeutBaby	2250	6.64(2.26)	4.19(2.28)	6.85(2.28)		1	Family	2358	6.56(1.70)	3.73(2.04)	.	5.83(1.95)	15
NeutBaby	2260	8.06(1.42)	4.26(2.44)	7.47(2.44)		1	Mother/Child	2359	5.87(1.41)	3.94(1.73)	5.49(1.73)		17
NeutChild	2270	6.28(1.62)	3.15(2.03)	6.49(1.90)		9	Family	2360	7.70(1.76)	3.66(2.32)	6.92(2.08)		4
Woman	2271	4.20(1.26)	3.74(1.69)	5.66(1.86)		11	Girl&Dog	2362	6.74(1.34)	4.60(2.09)	.	6.01(1.72)	15
LonelyBoy	2272	4.50(1.78)	3.74(1.94)	.	5.24(2.07)	13	ThreeMen	2370	7.14(1.46)	2.90(2.14)	6.12(2.22)		4
Boy	2273	5.41(1.55)	3.52(1.81)	5.31(1.60)		17	Woman	2372	5.48(1.63)	4.09(1.99)	5.72(2.01)		11
Children	2274	7.47(1.51)	4.22(2.05)	6.35(1.69)		19	Band	2373	6.97(1.32)	4.50(2.08)	.	5.95(1.58)	16
Girl	2276	2.67(1.66)	4.63(1.93)	4.40(1.95)		12	Woman	2374	6.29(1.27)	3.86(2.18)	6.21(1.68)		17
Kids	2278	3.36(1.57)	4.55(2.02)	.	4.36(2.08)	14	Woman	2375.1	2.20(1.31)	4.88(2.21)	.	3.75(2.28)	14
Braces	2279	4.71(1.55)	3.74(1.83)	5.55(1.86)		18	AttractiveFem	2375.2	6.34(1.54)	4.30(2.29)	.	5.75(2)	13
Boy	2280	4.22(1.54)	3.77(1.89)	5.70(2.01)		12	Reading	2377	5.19(1.31)	3.50(1.95)	5.68(1.88)		19
Family	2299	7.27(1.53)	3.95(2.22)	.	6.18(1.93)	13	Girl	2381	5.25(1.22)	3.04(1.97)	6.28(1.92)		9
AttractiveFem	2300	7.04(1.35)	5.55(2.04)	5.89(1.76)		17	Artist	2382	5.67(1.19)	3.75(1.97)	5.97(1.57)		19
KidCry	2301	2.78(1.38)	4.57(1.96)	4.13(1.89)		17	Secretary	2383	4.72(1.36)	3.41(1.83)	5.75(1.89)		12
ChildCamera	2302	6.43(1.32)	3.64(1.94)	6.18(1.65)		19	Fisherman	2384	5.92(1.47)	3.41(2.04)	6.32(1.56)		20
Children	2303	6.83(2.07)	5.53(2.10)	5.81(2.11)		12	Girl	2385	5.20(1.32)	3.64(1.81)	5.86(1.73)		11
Girl	2304	7.22(1.31)	3.63(2.15)	6.35(1.82)		11	Kids	2387	7.12(1.58)	3.97(2.18)	.	6.33(2.1)	13
Woman	2305	5.41(1.12)	3.63(2.04)	.	5.53(1.49)	16	Kids	2388	7.44(1.44)	3.77(2.21)	.	6.62(1.92)	13
Boy	2306	7.08(1.37)	4.46(2.11)	.	6.02(1.8)	15	Teens	2389	6.61(1.69)	5.63(2.00)	5.90(1.99)		12
GirlMakeup	2308	5.22(1.62)	3.82(2.15)	5.50(1.87)		19	Couple	2390	5.40(1.18)	3.57(1.92)	5.89(1.75)		19
GirlCow	2309	4.89(1.71)	4.33(1.92)	5.39(1.64)		18	Boy	2391	7.11(1.77)	4.63(2.43)	6.11(2.01)		6
Mother	2310	7.06(1.52)	4.16(2.01)	5.89(1.87)		12	ManW/Fish	2392	6.15(1.49)	3.85(1.97)	6.03(1.81)		19
Mother	2311	7.54(1.37)	4.42(2.28)	6.16(1.79)		10	Factoryworker	2393	4.87(1.06)	2.93(1.88)	.	5.83(2.06)	13

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Medicalworker	2394	5.76(1.74)	3.89(2.26)	.	5.77(2.29)	13	ManW/Dog	2521	5.78(1.52)	4.10(1.85)	5.43(1.73)	.	20
Family	2395	7.49(1.69)	4.19(2.40)	.	6.31(2.09)	13	Women	2525	4.06(1.93)	3.93(2.16)	5.32(2.33)	.	19
Couple	2396	4.91(1.05)	3.34(1.83)	.	5.59(1.59)	16	Couple	2530	7.80(1.55)	3.99(2.11)	5.99(1.90)	.	3
Men	2397	4.98(1.11)	2.77(1.74)	.	5.64(1.92)	15	Mother	2540	7.63(1.51)	3.97(2.33)	5.96(2.22)	.	3
Boat	2398	7.48(1.32)	4.74(2.11)	.	6.18(1.89)	16	Couple	2550	7.77(1.43)	4.68(2.43)	6.22(1.94)	.	5
Woman	2399	3.69(1.40)	3.93(2.01)	.	4.85(2.15)	14	Picnic	2560	6.34(1.53)	3.49(2.07)	6.06(1.85)	.	10
Woman	2400	4.21(1.34)	4.20(2.10)	5.02(1.86)	.	20	Man	2570	4.78(1.24)	2.76(1.92)	5.72(1.91)	.	10
Boy	2410	4.62(1.72)	4.13(2.29)	5.00(2.29)	.	5	Propeller	2575	5.46(1.15)	4.16(2.10)	6.11(1.79)	.	11
Girl	2411	5.07(0.85)	2.86(1.84)	6.15(1.87)	.	18	Bakers	2579	5.53(1.35)	3.85(2.00)	.	5.86(1.82)	14
Mom/Son	2435	5.84(1.27)	3.94(1.93)	.	5.93(1.92)	14	Chess	2580	5.71(1.41)	2.79(1.78)	5.88(1.89)	.	9
NeutGirl	2440	4.49(1.03)	2.63(1.70)	5.97(1.89)	.	10	ElderlyWoman	2590	3.26(1.92)	3.93(1.94)	4.31(2.14)	.	5
NeutralGirl	2441	4.64(1.28)	3.62(1.96)	.	5.57(1.97)	13	Men	2593	5.80(1.34)	3.42(1.84)	.	5.91(1.69)	16
DryingHair	2442	6.17(1.40)	4.04(1.89)	.	6(1.8)	14	City	2594	6.05(1.31)	3.84(1.98)	.	5.78(1.85)	15
Feet	2445	5.39(1.39)	3.83(1.91)	.	5.68(1.67)	16	Women	2595	4.88(1.24)	3.71(1.88)	.	5.64(1.93)	14
Boots	2446	4.70(1.04)	3.79(1.88)	.	5.51(1.91)	15	Market	2597	5.61(1.26)	4.09(2.10)	.	5.18(1.83)	16
SadGirls	2455	2.96(1.79)	4.46(2.12)	.	4.11(2.22)	13	Family	2598	7.19(1.30)	3.73(1.84)	.	6.07(1.79)	15
CryingFamily	2456	2.84(1.27)	4.55(2.16)	4.15(1.90)	.	18	Beer	2600	5.84(1.85)	4.16(1.74)	5.84(1.63)	.	3
CryingBoy	2457	3.20(1.51)	4.94(2.01)	5.02(2.14)	.	19	Dance	2605	6.26(1.45)	5.03(2.16)	.	5.91(1.86)	16
CryingBaby	2458	4.69(1.88)	5.28(1.88)	5.06(1.84)	.	20	Dance	2606	5.92(1.58)	4.78(2.21)	.	6.12(1.79)	15
ElderlyMan	2480	4.77(1.64)	2.66(1.78)	5.33(2.09)	.	9	Dancer	2616	5.97(1.77)	4.96(2.05)	5.58(1.79)	.	12
Amerindian	2484	5.00(1.35)	3.75(1.90)	5.45(1.55)	.	18	Woman	2620	5.93(1.63)	2.72(2.16)	6.11(2.21)	.	4
Man	2485	5.69(1.36)	3.74(1.84)	6.12(1.66)	.	11	Male	2630	6.35(1.92)	3.92(2.53)	5.97(2.22)	.	4
Musician	2487	5.20(1.80)	4.05(1.92)	5.81(2.09)	.	12	Cowboy	2635	5.22(1.65)	4.42(1.98)	.	5.34(1.93)	14
Musician	2488	5.73(1.14)	3.91(1.87)	5.40(1.58)	.	17	Boy	2650	7.27(1.67)	4.28(2.41)	5.74(1.86)	.	6
Musician	2489	5.66(1.44)	3.80(1.93)	5.67(1.78)	.	19	Child	2655	6.88(2.09)	4.57(2.19)	6.14(2.33)	.	12
Man	2490	3.32(1.82)	3.95(2.00)	4.72(2.03)	.	5	Baby	2660	7.75(1.48)	4.44(2.41)	6.44(2.24)	.	5
SickMan	2491	4.14(1.29)	3.41(1.73)	.	4.97(1.98)	13	Baby	2661	3.90(2.49)	5.76(2.13)	4.48(2.37)	4.3(2.09)	7
NeutralMale	2493	4.82(1.27)	3.34(2.10)	.	5.47(2.05)	13	Police	2681	4.04(1.60)	4.97(2.26)	3.84(2.40)	.	10
Man	2495	5.22(1.10)	3.19(1.76)	5.77(1.93)	.	11	Police	2682	3.69(1.65)	4.48(2.10)	4.02(2.32)	.	9
NeutralMale	2499	5.34(1.43)	3.08(1.73)	.	5.74(1.91)	13	War	2683	2.62(1.78)	6.21(2.15)	.	3.43(2.4)	13
Man	2500	6.16(1.54)	3.61(1.91)	5.57(1.57)	.	2	Hunters	2688	2.73(2.07)	5.98(2.22)	.	3.99(2.42)	14
Couple	2501	6.89(1.78)	3.09(2.21)	5.63(2.10)	.	6	Terrorist	2690	4.78(1.43)	4.02(2.07)	4.91(2.18)	.	4
Woman	2506	5.67(1.23)	3.50(1.94)	.	5.8(1.82)	15	Riot	2691	3.04(1.73)	5.85(2.03)	4.39(2.53)	4.07(2.02)	7
ElderlyWoman	2510	6.91(1.91)	4.00(2.10)	5.46(2.08)	.	2	Bomb	2692	3.36(1.61)	5.35(2.19)	3.87(2.39)	.	10
OldLady	2511	6.21(1.62)	3.41(1.96)	5.81(1.69)	.	19	Police	2694	3.55(1.72)	5.05(2.16)	.	4.68(2.43)	13
Man	2512	4.86(0.84)	3.46(1.75)	.	5.47(1.53)	16	Refugees	2695	4.01(1.58)	4.47(1.92)	.	4.43(2.15)	13
Woman	2513	5.80(1.29)	3.29(1.67)	.	5.92(1.71)	15	Woman	2700	3.19(1.56)	4.77(1.97)	4.44(2.04)	.	4
Woman	2514	5.19(1.09)	3.50(1.81)	5.85(1.83)	.	11	BingeEating	2702	5.21(1.61)	3.92(2.34)	5.70(2.30)	.	9
Harvest	2515	6.09(1.54)	3.80(2.12)	6.52(1.73)	.	11	SadChildren	2703	1.91(1.26)	5.78(2.25)	.	3.15(1.95)	16
ElderlyWoman	2516	4.90(1.43)	3.50(1.88)	5.54(2.04)	.	12	Soldiers	2704	4.85(1.89)	5.30(2.16)	.	4.86(1.96)	15
Quilting	2518	5.67(1.66)	3.31(1.88)	5.80(1.95)	.	11	DrugAddict	2710	2.52(1.69)	5.46(2.29)	4.63(2.56)	.	4
ElderlyMan	2520	4.13(1.90)	4.22(1.69)	4.44(2.33)	.	3	Smoking	2715	3.28(1.95)	4.35(2.27)	.	5.17(2.54)	13

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Pipe	2716	3.54(1.79)	4.97(2.24)	.	4.7(2.29)	16	Organs	3019	2.99(1.74)	6.30(2.14)	4.25(2.29)	.	19
DrugAddict	2717	2.58(1.32)	5.70(2.16)	.	3.91(2.39)	16	Scream	3022	3.70(1.91)	5.88(2.08)	3.84(2.05)	.	12
DrugAddict	2718	3.65(1.58)	4.46(2.03)	.	5.21(2.21)	15	Mutilation	3030	1.91(1.56)	6.76(2.10)	3.69(2.10)	.	1
Urinating	2720	5.43(1.59)	3.43(1.91)	5.92(2.28)	.	4	Mutilation	3051	2.30(1.86)	5.62(2.45)	3.92(2.28)	.	8
Jail	2722	3.47(1.65)	3.52(2.05)	5.34(2.34)	.	9	BurnVictim	3053	1.31(0.97)	6.91(2.57)	2.33(1.94)	2.17(1.59)	7
NativeBoy	2730	2.45(2.25)	6.80(2.21)	3.94(2.55)	.	4	Mutilation	3059	1.81(1.24)	6.48(2.32)	2.88(2.10)	.	20
Shopping	2745.1	5.31(1.08)	3.26(1.96)	.	6.29(1.96)	14	Mutilation	3060	1.79(1.56)	7.12(2.09)	2.97(2.11)	.	5
Shoplifter	2745.2	3.91(2.00)	5.17(2.14)	.	5.44(2.12)	13	Mutilation	3061	2.32(1.61)	5.28(2.60)	3.82(2.23)	.	9
Smoking	2749	5.04(1.39)	3.76(2.03)	5.35(1.94)	.	12	Mutilation	3062	1.87(1.31)	5.78(2.57)	3.73(2.50)	.	9
Bum	2750	2.56(1.32)	4.31(1.81)	4.48(2.16)	.	6	Mutilation	3063	1.49(0.96)	6.35(2.60)	2.70(2.02)	.	10
DrunkDriving	2751	2.67(1.87)	5.18(2.39)	4.01(2.33)	.	9	Mutilation	3064	1.45(0.97)	6.41(2.62)	2.63(2.04)	.	10
Alcoholic	2752	4.07(1.84)	4.30(1.94)	4.84(2.15)	.	10	Mutilation	3068	1.80(1.56)	6.77(2.49)	.	2.51(2.22)	13
Alcoholic	2753	3.17(1.75)	4.29(2.22)	4.48(2.38)	.	10	Mutilation	3069	1.70(1.41)	7.03(2.41)	.	2.62(2.3)	13
Mask	2770	4.37(1.69)	5.11(2.05)	.	4.82(1.95)	15	Mutilation	3071	1.88(1.39)	6.86(2.05)	3.28(2.15)	.	6
Actor	2780	4.77(1.76)	4.86(2.05)	.	5.15(2)	13	Mutilation	3080	1.48(0.95)	7.22(1.97)	2.85(2.10)	.	6
Balloons	2791	6.64(1.70)	3.83(2.09)	6.25(1.74)	.	8	BurnVictim	3100	1.60(1.07)	6.49(2.23)	3.00(2.16)	.	2
Boy	2795	3.92(1.77)	4.70(2.00)	.	4.83(2.04)	14	BurntFace	3101	1.91(1.19)	5.60(2.46)	.	3.48(2.11)	14
Funeral	2799	2.42(1.41)	5.02(1.99)	.	3.56(2.06)	15	BurnVictim	3102	1.40(1.14)	6.58(2.69)	2.18(1.90)	2.42(1.56)	7
SadChild	2800	1.78(1.14)	5.49(2.11)	3.40(2.32)	.	4	Injury	3103	2.07(1.27)	6.06(2.30)	3.37(2.00)	.	18
Boy	2810	4.31(1.65)	4.47(1.92)	5.69(2.29)	.	4	BurnVictim	3110	1.79(1.30)	6.70(2.16)	3.04(1.97)	.	6
Gun	2811	2.17(1.38)	6.90(2.22)	.	2.55(2.21)	15	DeadBody	3120	1.56(1.09)	6.84(2.36)	3.32(2.36)	.	1
Woman	2830	4.73(1.60)	3.64(2.23)	5.33(2.15)	.	9	Mutilation	3130	1.58(1.24)	6.97(2.07)	3.46(2.07)	.	1
Chess	2840	4.91(1.52)	2.43(1.82)	5.56(1.93)	.	6	Mutilation	3131	1.51(0.97)	6.61(2.34)	2.73(1.93)	.	17
Tourist	2850	5.22(1.39)	3.00(1.94)	5.87(1.97)	.	10	DeadBody	3140	1.83(1.17)	6.36(1.97)	3.20(2.17)	.	2
Teenager	2870	5.31(1.41)	3.01(1.72)	6.17(2.09)	.	9	Mutilation	3150	2.26(1.57)	6.55(2.20)	3.39(2.15)	.	2
Shadow	2880	5.18(1.44)	2.96(1.94)	6.01(2.05)	.	9	EyeDisease	3160	2.63(1.23)	5.35(1.79)	4.08(1.88)	.	3
Twins	2890	4.95(1.09)	2.95(1.87)	5.99(1.93)	.	9	Mutilation	3168	1.56(1.06)	6.00(2.46)	3.24(2.31)	.	11
CryingBoy	2900	2.45(1.42)	5.09(2.15)	3.64(1.70)	.	5	BabyTumor	3170	1.46(1.01)	7.21(1.99)	2.70(1.89)	.	3
CryingBoy	2900.1	2.56(1.41)	4.61(2.07)	4.83(2.26)	.	11	BatteredFem	3180	1.92(1.13)	5.77(2.21)	4.05(2.42)	.	4
SmilingGirl	2900.2	6.62(1.97)	4.52(1.92)	5.73(1.95)	.	12	BatteredFem	3181	2.30(1.43)	5.06(2.11)	4.31(2.32)	.	11
FoodBasket	2980	5.61(1.50)	3.09(1.91)	.	6.3(2.06)	13	Stitches	3185	2.81(1.52)	5.48(2.18)	4.24(1.96)	.	18
DeerHead	2981	2.76(1.94)	5.97(2.12)	.	4.16(2.4)	14	Scar	3190	3.69(1.67)	5.01(1.95)	4.53(2.05)	.	4
Mutilation	3000	1.45(1.20)	7.26(2.10)	2.99(2.10)	.	1	BatteredFem	3191	1.95(1.22)	5.95(2.17)	.	3.19(2.08)	15
Mutilation	3000	1.59(1.35)	7.34(2.27)	2.73(2.17)	.	4	Stitches	3195	2.06(1.23)	6.36(2.25)	3.55(2.15)	.	20
HeadlessBody	3001	1.62(1.14)	6.64(2.54)	2.66(2.00)	.	18	Surgery	3210	4.49(1.91)	5.39(1.91)	4.30(2.18)	.	2
OpenGrave	3005.1	1.63(1.19)	6.20(2.54)	.	2.77(2.24)	14	Surgery	3211	4.15(1.91)	5.72(1.94)	4.40(2.26)	.	17
Gold	3005.2	5.98(1.90)	4.84(2.18)	.	5.97(1.97)	13	Surgery	3212	2.79(1.67)	6.57(1.99)	4.07(2.25)	.	19
Mutilation	3010	1.71(1.19)	7.16(2.24)	2.88(2.14)	.	2	Surgery	3213	2.96(1.94)	6.82(2.00)	3.92(2.44)	.	20
Mutilation	3010	1.79(1.28)	7.26(1.86)	2.88(2.41)	.	3	BurnVictim	3215	2.51(1.32)	5.44(2.16)	.	3.89(1.92)	16
Accident	3015	1.52(0.95)	5.90(2.82)	2.84(2.13)	.	11	MedicalAssist	3216	3.28(1.64)	5.37(2.00)	.	4.31(2.04)	15
Mutilation	3016	1.90(1.31)	5.82(2.44)	.	3.07(2.09)	16	Hospital	3220	2.49(1.29)	5.52(1.86)	3.53(1.75)	.	3
Mutilation	3017	2.45(1.35)	5.34(2.39)	.	3.65(2.03)	15	Mutilation	3225	1.82(1.22)	5.95(2.46)	.	3.08(2.15)	15

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
DyingMan	3230	2.02(1.30)	5.41(2.21)	2.93(2.18)		3	EroticFemale	4235	5.39(2.50)	5.29(2.75)	4.99(2.65)		10
OpenChest	3250	3.78(1.72)	6.29(1.63)	4.45(1.99)		3	EroticFemale	4240	5.34(2.44)	4.88(2.75)	5.44(2.60)		9
Tumor	3261	1.82(1.34)	5.75(2.64)	3.57(2.38)		9	AttractiveFem	4250	6.79(2.05)	5.16(2.76)	5.57(1.96)		6
Injury	3266	1.56(0.98)	6.79(2.09)	2.83(2.04)		12	EroticFemale	4255	6.06(1.92)	5.11(2.64)		5.59(2.21)	13
DentalExam	3280	3.72(1.89)	5.39(2.38)	4.06(1.99)		5	AttractiveFem	4274	5.42(1.83)	4.18(2.39)	5.47(2.06)		10
DisabledChild	3300	2.74(1.56)	4.55(2.06)	4.64(1.97)		6	AttractiveFem	4275	5.70(2.01)	4.41(2.45)	5.67(2.44)		9
InjuredChild	3301	1.80(1.28)	5.21(2.26)	3.71(2.13)		11	EroticFemale	4279	5.47(2.04)	4.38(2.61)	5.69(2.42)		9
SickBaby	3302	4.50(2.48)	5.70(2.27)		4.67(2.28)	16	EroticFemale	4290	7.61(2.56)	7.20(2.63)	5.00(2.36)		2
Incubator	3310	4.37(2.54)	5.43(2.00)	4.32(2.17)		19	EroticFemale	4300	5.70(2.36)	5.99(2.34)	5.55(2.10)		3
Infant	3350	1.88(1.67)	5.72(2.23)	3.38(2.36)		5	EroticFemale	4302	4.99(2.64)	5.68(2.69)	4.95(2.38)		10
Fetus	3360	3.78(2.09)	5.39(2.12)	4.18(2.03)		17	EroticFemale	4310	6.04(1.94)	5.42(2.24)	5.77(1.82)		3
SeveredHand	3400	2.35(1.90)	6.91(2.22)	3.65(2.21)		5	EroticFemale	4311	6.66(1.76)	6.67(2.19)		5.69(2.25)	16
Attack	3500	2.21(1.34)	6.99(2.19)	2.40(1.88)		5	EroticFemale	4320	6.01(2.12)	5.11(2.34)	5.24(2.10)		5
Attack	3530	1.80(1.32)	6.82(2.09)	2.81(1.97)		6	AttractiveFem	4325	5.96(1.65)	5.18(2.19)	5.58(1.78)		17
Injury	3550	2.54(1.60)	5.92(2.13)	3.64(1.87)		6	EroticMale	4460	5.60(1.61)	4.94(2.09)	5.34(1.79)		3
PlaneCrash	3550.1	2.35(1.39)	6.29(1.96)	3.47(2.10)		12	EroticMale	4470	5.87(1.63)	4.81(2.31)	5.45(1.61)		3
Coach	3550.2	4.92(1.62)	5.13(2.24)	5.38(2.02)		11	EroticMale	4490	6.27(1.95)	6.06(2.42)	5.03(1.91)		2
Artist	4000	4.82(1.66)	3.97(2.15)	5.35(1.96)		10	AttractiveMan	4500	5.70(2.12)	3.68(2.42)	5.72(2.42)		1
EroticFemale	4001	5.24(2.45)	5.24(2.49)	5.74(2.40)	5.46(2.02)	7	EroticMale	4503	6.00(1.52)	4.93(2.35)		5.55(2.31)	14
EroticFemale	4002	5.78(2.43)	5.32(2.69)	5.47(2.33)	5.73(2.21)	7	AttractiveMale	4505	6.21(1.89)	5.52(2.26)	5.76(1.86)		20
EroticFemale	4003	5.48(2.05)	5.09(2.07)	5.59(2.24)		8	AttractiveMan	4510	5.51(2.50)	3.89(2.86)	5.76(2.86)		1
EroticFemale	4004	5.14(1.85)	4.44(2.14)	5.75(2.13)	5.45(1.97)	7	EroticMale	4520	7.04(1.64)	5.48(2.27)	5.73(1.44)		2
EroticFemale	4005	5.43(2.08)	5.02(2.00)	5.39(2.11)		8	EroticMale	4520	6.16(1.54)	4.80(2.25)	5.48(1.58)		3
EroticFemale	4006	6.05(1.70)	5.27(2.27)		5.54(1.97)	15	AttractiveMale	4525	6.51(1.91)	5.17(2.63)	5.63(1.80)		19
AttractiveFem	4007	6.26(1.78)	5.63(2.26)	5.57(1.95)		17	EroticMale	4530	6.19(1.82)	5.31(2.40)	5.19(2.07)		2
EroticFemale	4008	5.91(2.24)	5.66(2.32)	5.34(2.07)		19	EroticMale	4531	5.81(1.94)	4.28(2.76)	5.87(1.96)		8
AttractiveFem	4071	5.97(1.82)	5.14(2.39)	5.31(2.05)		20	AttractiveMan	4532	6.40(1.78)	4.15(2.44)	6.16(1.84)		8
EroticFemale	4085	5.71(2.37)	5.77(2.52)	5.43(2.20)		18	AttractiveMan	4533	6.22(2.24)	5.01(2.47)	5.91(1.95)		8
Bikini	4090	6.17(1.79)	5.39(2.31)	5.37(1.97)		17	MaleDancer	4534	5.70(1.68)	4.16(2.37)	6.08(1.93)	5.66(2.16)	7
MaleDancers	4100	6.11(1.66)	4.39(1.75)	5.93(1.71)		3	Weightlifter	4535	6.27(1.70)	4.95(2.32)	6.20(2.08)	6.31(1.91)	7
EroticFemales	4130	5.36(2.17)	5.15(2.29)	5.57(1.93)		18	AttractiveMan	4536	6.01(1.49)	3.95(2.30)	6.09(2.02)		9
EroticFemale	4141	5.59(2.46)	5.25(2.48)		5.39(2.44)	14	AttractiveMan	4537	5.64(1.78)	4.49(2.44)		5.71(1.9)	13
EroticFemale	4142	5.45(2.82)	5.60(2.61)		4.95(2.53)	13	EroticMale	4538	5.91(2.03)	4.65(2.63)		5.54(2.06)	14
AttractiveFem	4150	6.53(1.86)	4.86(2.55)	5.45(1.81)		5	BeachBoys	4542	6.33(1.92)	5.08(2.41)		5.66(1.84)	16
EroticFemale	4180	6.21(2.57)	5.54(2.89)	5.44(2.89)		1	EroticMale	4550	4.95(2.31)	5.00(2.66)	5.50(2.35)		9
EroticFemale	4210	5.72(2.97)	6.08(2.81)	5.54(2.81)		1	EroticMale	4559	5.53(1.80)	4.83(2.29)		5.62(1.8)	15
EroticFemale	4220	8.02(1.93)	7.17(2.69)	5.90(1.63)		2	EroticMale	4561	5.02(2.28)	4.35(2.67)	5.16(1.94)		10
EroticFemale	4220	6.60(1.72)	5.18(2.33)	5.33(2.12)		3	AttractiveMan	4571	5.49(1.52)	3.54(2.31)	6.13(1.83)		10
EroticFemale	4225	6.09(1.82)	5.39(2.38)		5.49(1.94)	15	AttractiveMan	4572	6.15(2.06)	4.80(2.57)	5.94(2.34)		9
Prostitute	4230	4.86(2.34)	4.70(2.21)	5.38(2.42)		4	AttractiveMale	4573	5.49(1.60)	3.96(1.94)	5.54(1.69)		17
EroticFemale	4232	5.95(2.53)	6.28(2.31)	5.69(2.52)		8	AttractiveMan	4574	6.62(1.62)	4.25(2.29)		5.7(1.68)	16
Prostitute	4233	4.56(1.86)	3.96(2.15)	5.61(2.13)		9	AttractiveMale	4575	6.49(1.96)	4.82(2.43)	5.66(1.81)		18

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Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Romantic Couple	4597	6.95(1.65)	5.91(1.86)	5.64(1.81)		20	EroticCouple	4660	7.40(1.36)	6.58(1.88)	5.96(1.64)		3
Romance	4598	6.33(2.76)	5.53(2.39)	5.23(2.20)		10	EroticCouple	4664	6.61(2.23)	6.72(2.08)	5.96(2.19)	5.24(2.41)	7
Romance	4599	7.12(1.48)	5.69(1.94)	6.49(1.79)		8	EroticCouple	4664.1	5.63(2.61)	6.63(1.87)	5.23(2.37)		12
Romance	4600	6.41(1.75)	4.83(2.10)	5.33(1.77)		17	Attack	4664.2	2.79(1.77)	6.13(2.29)	3.33(2.40)		11
Romance	4601	6.82(1.22)	5.08(2.01)	6.37(1.72)		8	EroticCouple	4666	6.24(1.78)	6.10(2.20)	5.55(2.10)		11
Romance	4603	7.10(1.58)	4.89(2.26)	6.20(2.04)	6.29(1.79)	7	EroticCouple	4668	6.67(1.69)	7.13(1.62)	5.73(2.34)		20
EroticCouple	4604	5.98(1.76)	6.09(1.87)	5.21(1.92)		18	EroticCouple	4669	5.97(2.13)	6.11(2.42)	5.34(2.21)		10
Couple	4605	5.59(1.52)	3.84(2.12)	5.83(2.09)		10	EroticCouple	4670	6.99(1.73)	6.74(2.03)	5.85(2.47)		9
Romance	4606	6.55(1.62)	5.11(2.15)	6.09(1.74)		8	EroticCouple	4672	6.00(2.04)	6.29(2.37)	5.38(2.28)		10
EroticCouple	4607	7.03(1.84)	6.34(2.16)	6.14(2.20)	6(2.08)	7	EroticCouple	4676	6.81(1.67)	6.07(2.22)	.	5.95(2.09)	13
EroticCouple	4608	7.07(1.66)	6.47(1.96)	6.25(1.87)	5.79(2.16)	7	EroticCouple	4677	6.58(1.65)	6.19(2.08)	.	5.76(1.98)	14
Couple	4609	6.71(1.67)	5.54(2.05)	6.00(1.79)	6.05(1.92)	7	EroticCouple	4680	7.25(1.83)	6.02(2.27)	6.27(2.29)		4
Romance	4610	7.29(1.74)	5.10(2.29)	5.54(1.95)		2	EroticCouple	4681	6.69(1.82)	6.68(1.70)	5.50(2.11)		12
EroticCouple	4611	6.62(1.82)	6.04(2.11)	5.99(1.97)		8	EroticCouple	4683	6.17(2.07)	6.62(1.79)	5.39(2.04)		12
Couple	4612	6.82(1.67)	5.06(1.98)	5.30(1.84)		17	EroticCouple	4687	6.87(1.51)	6.51(2.10)	6.04(1.96)		11
Condom	4613	5.34(1.77)	4.66(2.20)	6.16(2.08)		10	EroticCouple	4689	6.90(1.55)	6.21(1.74)	5.60(2.01)		12
Romance	4614	7.15(1.44)	4.67(2.47)	6.62(1.84)		9	EroticCouple	4690	6.83(1.94)	6.06(2.21)	6.12(2.18)		4
Romance	4616	6.86(1.52)	4.43(2.07)	5.66(1.75)		19	EroticCouple	4692	5.87(2.14)	6.39(2.19)	5.15(2.38)		19
EroticFemale	4617	6.60(1.57)	5.19(2.10)	6.13(1.63)		11	EroticCouple	4693	6.16(1.91)	6.57(1.90)	5.46(2.02)		19
Romance	4619	6.46(1.61)	5.09(1.97)	5.62(1.84)		18	EroticCouple	4694	6.69(1.70)	6.42(2.08)	.	5.85(2.09)	15
Harassment	4621	3.19(1.59)	4.92(2.24)	4.37(2.41)		9	EroticCouple	4695	6.84(1.53)	6.61(1.88)	.	5.95(2.05)	16
Romance	4622	7.46(1.61)	4.11(2.30)	.	6.46(2.05)	13	EroticCouple	4697	6.22(1.76)	6.62(1.69)	5.21(1.83)		17
Romance	4623	7.13(1.80)	5.44(2.23)	.	6.04(2.02)	13	EroticCouple	4698	6.50(1.67)	6.72(1.72)	5.70(2.10)		20
Couple	4624	6.84(1.60)	5.02(2.05)	.	5.87(1.95)	14	Couple	4700	6.91(1.94)	4.05(1.90)	5.35(2.05)		6
Couple	4625	6.40(1.71)	5.05(2.02)	.	5.88(1.82)	14	NudeFemale	4750	5.57(1.92)	4.90(2.15)	5.48(1.90)		3
Wedding	4626	7.60(1.66)	5.78(2.42)	.	6.14(2.08)	14	FemaleKiss	4770	4.91(2.61)	5.85(2.22)	5.35(1.98)		3
Wedding	4628	7.23(1.72)	5.19(2.11)	5.57(1.92)		19	EroticCouple	4800	6.44(2.22)	7.07(1.78)	5.51(2.11)		6
BikerCouple	4631	5.36(1.86)	5.19(2.04)	4.87(1.61)		6	EroticCouple	4810	6.56(2.09)	6.66(2.14)	5.41(2.22)		5
Prostitute	4635	3.86(1.85)	4.23(2.35)	4.70(2.21)		10	Flower	5000	7.08(1.77)	2.67(1.99)	7.08(1.99)		1
Romance	4640	7.18(1.97)	5.52(2.28)	6.03(1.86)		5	Sunflower	5001	7.16(1.56)	3.79(2.34)	6.49(2.12)	6.36(2.12)	7
Romance	4641	7.20(1.59)	5.43(2.10)	6.01(1.88)	6.24(1.96)	7	Flower	5010	7.14(1.50)	3.00(2.25)	7.40(2.25)		1
EroticCouple	4643	6.84(1.54)	6.01(2.00)	.	5.64(2.1)	16	Flower	5020	6.32(1.68)	2.63(2.10)	6.67(2.10)		1
EroticCouple	4645	6.73(1.59)	5.69(2.16)	.	6.09(1.98)	16	Flower	5030	6.51(1.73)	2.74(2.13)	7.03(2.13)		1
EroticCouple	4647	5.89(1.95)	6.21(2.26)	.	5.52(2.17)	15	Venusflytrap	5040	5.39(1.11)	3.75(1.89)	5.77(1.71)		18
EroticCouple	4649	5.77(2.01)	5.99(2.25)	.	5.13(1.98)	16	PineNeedles	5120	4.39(1.34)	3.07(2.12)	5.69(2.07)		9
EroticCouple	4650	6.96(1.54)	5.67(2.14)	5.56(1.99)		2	Rocks	5130	4.45(1.13)	2.51(1.72)	5.84(1.98)		10
EroticCouple	4651	6.32(2.18)	6.34(2.05)	5.80(2.15)		8	Garden	5199	6.93(1.91)	4.70(2.52)	5.99(2.00)		20
EroticCouple	4652	6.79(2.02)	6.62(2.04)	6.10(2.22)		8	Flowers	5200	7.36(1.52)	3.20(2.16)	6.21(1.88)		3
EroticCouple	4653	6.56(1.65)	5.83(2.07)	6.07(1.93)		8	Nature	5201	7.06(1.71)	3.83(2.49)	6.73(2.04)	6.34(1.94)	7
EroticCouple	4656	6.73(1.94)	6.41(2.19)	6.10(2.05)		11	Garden	5202	7.25(1.44)	3.73(2.22)	6.31(1.89)		18
EroticCouple	4658	6.62(1.89)	6.47(2.14)	5.86(2.35)		9	Seaside	5210	8.03(1.09)	4.60(2.48)	6.19(2.08)		18
EroticCouple	4659	6.87(1.99)	6.93(2.07)	5.67(2.52)	5.96(2.08)	7	Harbor	5215	6.83(1.70)	5.40(2.15)	5.92(1.91)		20

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(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Nature	5220	7.01(1.50)	3.91(2.27)	5.53(2.01)		3	Farmland	5720	6.31(1.60)	2.79(2.20)	5.58(2.15)		5
Nature	5250	6.08(2.01)	3.64(2.27)	5.50(2.46)		4	Field	5725	7.09(1.41)	3.55(2.32)	6.23(2.31)		18
Waterfall	5260	7.34(1.74)	5.71(2.53)	4.54(2.56)		6	Grain	5726	6.23(1.60)	2.84(2.04)	6.15(1.83)		19
Nature	5270	7.26(1.57)	5.49(2.54)	4.28(2.56)		5	Flowers	5731	5.39(1.58)	2.74(1.95)	6.13(1.77)		8
Galaxy	5300	6.91(1.80)	4.36(2.62)	4.14(2.70)		4	Plant	5740	5.21(1.38)	2.59(1.99)	6.27(2.21)		10
Galaxy	5301	6.54(1.68)	5.21(2.42)	4.06(2.42)		20	Nature	5750	6.60(1.84)	3.14(2.25)	6.82(2.25)		1
Boat	5390	5.59(1.54)	2.88(1.97)	6.33(2.02)		10	Nature	5760	8.05(1.23)	3.22(2.39)	7.49(2.39)		1
Boat	5395	5.34(1.21)	4.23(2.03)	5.23(2.01)		12	Field	5764	6.74(1.64)	3.55(2.32)		6.09(1.81)	16
Violinist	5410	6.11(1.58)	3.29(2.09)	6.28(1.72)		10	Courtyard	5779	7.33(1.42)	3.57(2.30)	6.96(1.77)		11
Liftoff	5450	7.01(1.60)	5.84(2.40)	4.98(2.69)		5	Nature	5780	7.52(1.45)	3.75(2.54)	6.05(2.30)		5
Cockpit	5455	5.79(1.37)	4.56(2.17)	5.63(2.11)		11	Lake	5781	7.13(1.49)	3.82(2.37)		6.28(1.9)	15
Astronaut	5460	7.33(1.51)	5.87(2.50)	4.99(2.59)		5	Leaves	5800	6.36(1.70)	2.51(2.01)	5.72(2.03)		6
Astronaut	5470	7.35(1.62)	6.02(2.26)	4.96(2.47)		6	Flowers	5811	7.23(1.60)	3.30(2.33)		6.58(2.23)	13
Satellite	5471	5.21(1.18)	3.26(2.05)		5.63(1.82)	16	Mountain	5814	7.15(1.54)	4.82(2.40)		5.86(2.05)	15
Fireworks	5480	7.53(1.63)	5.48(2.35)	5.80(1.97)		6	Mountains	5820	7.33(1.73)	4.61(2.59)	5.69(2.17)		2
Mushroom	5500	5.42(1.58)	3.00(2.42)	6.45(2.42)		1	Sea	5825	8.03(1.18)	5.46(2.72)	6.61(2.11)		17
Mushroom	5510	5.15(1.43)	2.82(2.18)	6.68(2.18)		1	Sunset	5829	7.65(1.42)	4.68(2.45)	6.06(1.98)		19
Mushroom	5520	5.33(1.49)	2.95(2.42)	6.43(2.42)		1	Sunset	5830	8.00(1.48)	4.92(2.65)	6.07(1.91)		2
Mushroom	5530	5.38(1.60)	2.87(2.29)	6.42(2.29)		1	Seagulls	5831	7.63(1.15)	4.43(2.49)	6.46(2.12)		9
Mushroom	5531	5.15(1.45)	3.69(2.11)	6.00(1.95)	5.96(1.99)	7	Beach	5833	8.22(1.08)	5.71(2.66)		6.97(1.93)	16
Mushrooms	5532	5.19(1.69)	3.79(2.20)	6.01(2.14)	5.81(2.19)	7	Beach	5836	7.25(1.39)	4.28(2.41)		5.92(2.02)	15
Mushrooms	5533	5.31(1.17)	3.12(1.92)	6.09(1.79)		8	Flowers	5849	6.65(1.93)	4.89(2.43)	5.90(2.00)		12
Mushrooms	5534	4.84(1.44)	3.14(2.03)	5.83(1.93)		8	Clouds	5870	6.78(1.76)	3.10(2.22)	5.20(2.13)		3
Stilllife	5535	4.81(1.52)	4.11(2.31)	5.61(2.25)		12	Bicyclist	5875	6.03(1.43)	3.29(2.12)	6.19(1.91)		12
Clouds	5551	7.31(1.63)	3.26(2.47)		6.48(2.21)	13	Earth	5890	6.67(1.75)	4.60(2.30)	4.15(2.78)		3
Sky	5593	6.47(1.57)	3.98(2.31)	5.89(2.38)		10	Clouds	5891	7.22(1.46)	3.29(2.57)	5.20(2.57)		5
Sky	5594	7.39(1.45)	4.15(2.76)	6.54(2.46)		9	Desert	5900	5.93(1.64)	4.38(2.10)	5.16(2.06)		3
Mountains	5600	7.57(1.48)	5.19(2.70)	4.93(2.27)		2	Fireworks	5910	7.80(1.23)	5.59(2.55)	5.56(2.37)		5
Mountains	5611	7.05(1.58)	3.99(2.56)		6.04(2.28)	13	Volcano	5920	5.16(1.92)	6.23(2.08)	3.95(2.31)		3
SkyDivers	5621	7.57(1.42)	6.99(1.95)	5.81(2.38)	5.5(2.34)	7	Lava	5940	4.23(1.68)	6.29(1.85)	3.70(2.17)		3
Shark	5622	6.33(1.78)	5.34(1.96)	5.94(2.07)		8	Lightning	5950	5.99(2.07)	6.79(1.98)	3.56(2.44)		3
Windsurfers	5623	7.19(1.44)	5.67(2.32)	6.45(1.72)		8	Tomado	5961	3.52(1.86)	5.80(2.37)		3.21(2.24)	15
HangGlider	5626	6.71(2.06)	6.10(2.19)	6.00(2.24)		8	Tomado	5970	4.14(1.77)	4.88(2.59)	3.73(2.34)		4
Mountains	5628	6.51(1.95)	5.46(2.09)	6.28(2.33)		8	Tomado	5971	3.49(1.87)	6.65(2.02)	3.30(2.42)		11
Hiker	5629	7.03(1.55)	6.55(2.11)	5.68(2.55)	5.76(2.18)	7	Tomado	5972	3.85(2.33)	6.34(2.20)	3.49(2.42)		12
Mountains	5631	7.29(1.34)	3.86(2.64)		6.23(2.15)	16	Tomado	5973	3.51(1.83)	5.78(2.27)		2.94(2.01)	16
WinterStreet	5635	6.25(1.56)	3.97(2.03)		5.69(1.98)	15	Sky	5982	7.61(1.48)	4.51(2.85)	5.00(2.74)		6
Mountains	5660	7.27(1.59)	5.07(2.62)	5.03(2.46)		6	Sky	5990	6.54(1.78)	4.44(2.43)	4.70(2.27)		5
Cave	5661	5.96(1.41)	4.15(2.30)		5.45(2.02)	14	Sky	5991	6.55(2.09)	4.01(2.44)	4.78(2.17)		6
Building	5665	6.15(1.44)	4.02(1.97)	5.78(1.80)		17	Skyline	5994	6.80(1.75)	4.61(2.31)	6.56(2.20)		9
Mountains	5700	7.61(1.46)	5.68(2.33)	4.59(2.68)		5	Prison	6000	4.04(1.74)	4.91(2.17)	3.77(2.22)		3
Field	5711	6.62(1.65)	3.03(1.96)		6.35(1.97)	13	Jail	6010	3.73(1.98)	3.95(1.87)	5.08(2.53)		4

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Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
ElectricChair	6020	3.41(1.98)	5.58(2.01)	4.07(2.43)		4	Attack	6561	3.16(1.46)	4.99(2.19)	4.58(2.23)		10
Assault	6021	2.21(1.51)	6.06(2.38)	.	3.39(2.31)	15	Attack	6562	3.19(1.34)	5.08(2.39)	.	3.99(2.03)	16
Assault	6022	2.14(1.55)	6.09(2.47)	.	3.23(2.14)	16	Attack	6563	1.77(1.23)	6.85(2.18)	2.93(2.12)		20
Outlet	6150	5.08(1.17)	3.22(2.02)	5.54(1.69)		3	Suicide	6570	2.19(1.72)	6.24(2.16)	4.03(2.52)		6
AimedGun	6190	3.57(1.84)	5.64(2.03)	3.77(2.42)		4	Suicide	6570.1	2.54(1.76)	6.12(2.17)	3.46(2.36)		12
AimedGun	6200	2.71(1.58)	6.21(2.28)	3.49(2.19)		1	BlowDry	6570.2	4.86(0.95)	3.85(1.93)	5.66(1.77)		11
AimedGun	6200	3.20(1.62)	5.82(1.99)	3.35(2.28)		2	CarTheft	6571	2.85(2.05)	5.59(2.50)	3.56(2.38)		9
AimedGun	6210	2.95(1.83)	6.34(2.14)	3.46(2.14)		1	Gun	6610	3.60(1.79)	5.06(2.39)	4.97(2.39)		1
Attack	6211	3.62(2.07)	5.90(2.22)	4.03(2.22)		8	Gun	6800	4.01(2.06)	4.87(2.57)	4.81(2.57)		1
Soldier	6212	2.19(1.49)	6.01(2.44)	3.45(2.10)		8	Gang	6821	2.38(1.72)	6.29(2.02)	3.29(2.36)		10
Terrorist	6213	2.91(1.52)	5.86(2.06)	3.62(2.36)		11	Military	6825	2.81(1.19)	5.36(2.19)	.	3.8(1.98)	15
BoysW/Guns	6220	3.10(1.91)	5.89(2.43)	3.92(2.20)		18	Guns	6830	2.82(1.81)	6.21(2.23)	3.67(2.50)	2.92(1.86)	7
AimedGun	6230	2.37(1.57)	7.35(2.01)	2.15(2.09)		2	Police	6831	2.59(1.50)	5.55(2.16)	3.99(1.93)		8
AimedGun	6231	2.49(1.54)	6.82(2.11)	2.42(1.72)		17	Police	6832	4.02(1.64)	5.51(1.73)	4.16(2.02)		17
Gun	6240	3.79(1.80)	5.27(2.20)	4.90(2.51)		20	Police	6834	2.91(1.73)	6.28(1.90)	3.90(2.28)		12
Gun	6241	3.42(1.52)	4.54(2.35)	4.44(2.53)		9	Police	6836	3.46(1.61)	5.47(1.91)	4.39(2.24)		11
Gang	6242	2.69(1.59)	5.43(2.36)	3.49(2.19)		9	Police	6837	4.25(1.53)	4.50(2.06)	4.43(2.37)		19
AimedGun	6243	2.33(1.49)	5.99(2.23)	3.23(2.26)		10	Police	6838	2.45(1.44)	5.80(2.09)	3.79(2.08)		11
AimedGun	6244	3.09(1.78)	5.68(2.51)	3.43(2.30)		9	Police	6840	3.63(2.04)	5.95(1.90)	4.72(2.21)		12
AimedGun	6250	2.83(1.79)	6.54(2.61)	2.40(1.88)		5	Aircraft	6900	4.76(2.06)	5.64(2.22)	4.27(2.66)		2
AimedGun	6250.1	2.63(1.74)	6.92(1.92)	2.60(2.02)		12	Bomber	6910	5.31(2.28)	5.62(2.46)	5.10(2.46)		1
IceCream	6250.2	6.32(1.70)	5.13(2.06)	5.63(2.10)		11	Missiles	6930	4.39(1.82)	4.88(2.20)	4.00(2.39)		2
AimedGun	6260	2.44(1.54)	6.93(1.93)	2.87(2.16)		6	Tank	6940	3.53(2.07)	5.35(2.02)	4.05(2.63)		4
AimedGun	6263	2.48(1.53)	6.62(2.23)	2.85(2.24)		18	RollingPin	7000	5.00(0.84)	2.42(1.79)	6.14(2.14)		2
Knife	6300	2.59(1.66)	6.61(1.97)	2.78(1.99)		5	Buttons	7001	5.32(1.19)	3.20(2.15)	5.82(2.02)		17
DistressedFem	6311	2.58(1.56)	4.95(2.27)	.	4.74(2.36)	13	Towel	7002	4.97(0.97)	3.16(2.00)	6.25(1.93)	6.48(1.94)	7
Abduction	6312	2.48(1.52)	6.37(2.30)	3.83(2.25)		8	Disk	7003	5.00(1.22)	3.07(1.98)	6.02(1.87)		17
Attack	6313	1.98(1.38)	6.94(2.23)	3.26(2.74)	2.98(2.17)	7	Spoon	7004	5.04(0.60)	2.00(1.66)	6.74(1.99)		9
Attack	6314	4.09(1.51)	4.60(2.31)	4.58(2.40)		10	Bowl	7006	4.88(0.99)	2.33(1.67)	6.18(1.96)		8
BeatenFem	6315	2.31(1.69)	6.38(2.39)	.	3.79(2.69)	13	Mug	7009	4.93(1.00)	3.01(1.97)	6.33(1.93)	6.23(2.03)	7
Attack	6350	1.90(1.29)	7.29(1.87)	2.73(2.16)		5	Basket	7010	4.94(1.07)	1.76(1.48)	6.70(1.48)		1
Attack	6360	2.23(1.73)	6.33(2.51)	3.97(2.33)		5	GasCan	7011	4.52(1.16)	3.81(1.67)	4.99(1.78)		17
Attack	6370	2.70(1.52)	6.44(2.19)	3.00(1.87)		5	Rubberbands	7012	4.98(1.05)	3.00(1.94)	6.06(1.77)		17
AimedGun	6410	3.49(2.07)	5.89(2.28)	4.29(2.28)		1	Lightbulb	7013	4.20(1.35)	4.11(2.02)	5.03(1.86)		19
DeadTiger	6415	2.21(1.51)	6.20(2.31)	.	3.79(2.47)	13	Scissors	7014	5.15(0.97)	3.25(2.03)	6.21(1.86)		18
Attack	6510	2.46(1.58)	6.96(2.09)	2.81(2.12)		6	Razor	7016	4.76(1.08)	3.40(1.71)	5.74(1.98)		17
Attack	6520	1.94(1.27)	6.59(2.08)	2.88(2.16)		19	Video	7017	5.18(1.07)	3.12(1.97)	5.93(1.94)		18
Attack	6530	2.76(1.86)	6.18(2.02)	4.01(2.29)		6	Screw	7018	4.81(0.88)	3.91(1.97)	5.71(1.62)		20
Attack	6540	2.19(1.56)	6.83(2.14)	3.02(2.17)		6	Tools	7019	5.20(1.17)	3.36(1.87)	6.19(1.82)		18
Attack	6550	2.73(2.38)	7.09(1.98)	3.01(2.41)		6	Fan	7020	4.97(1.04)	2.17(1.71)	6.16(2.15)		9
Knife	6555	3.33(1.59)	5.69(2.21)	.	4.17(2.17)	13	Whistle	7021	5.21(1.22)	4.17(2.22)	6.22(1.95)		20
Attack	6560	2.16(1.41)	6.53(2.42)	3.11(2.41)		5	Garbage	7023	3.80(1.71)	4.17(2.13)	5.16(2.40)		20

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(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Stool	7025	4.63(1.17)	2.71(2.20)	6.10(2.20)		8	Truck	7130	4.77(1.03)	3.35(1.90)	5.08(1.82)		3
PicnicTable	7026	5.38(1.26)	2.63(1.93)	6.19(1.76)		19	CarDamage	7135	3.17(1.57)	5.36(2.14)	3.76(2.19)		19
Iron	7030	4.69(1.04)	2.99(2.09)	5.73(2.00)		6	CarBoot	7136	3.47(1.70)	5.01(2.17)	3.98(2.23)		20
Shoes	7031	4.52(1.11)	2.03(1.51)	6.14(2.12)		10	CarDamage	7137	4.30(1.44)	4.81(1.95)	4.50(1.92)		20
Shoes	7032	4.82(1.46)	3.18(1.88)	5.90(1.75)		19	Bus	7140	5.50(1.42)	2.92(2.38)	5.45(1.78)		6
Train	7033	5.40(1.57)	3.99(2.14)	5.32(1.95)		19	Umbrella	7150	4.72(1.00)	2.61(1.76)	5.55(2.01)		2
Hammer	7034	4.95(0.87)	3.06(1.95)	6.48(1.86)		8	Fabric	7160	5.02(1.10)	3.07(2.07)	5.80(1.97)		9
Mug	7035	4.98(0.96)	2.66(1.82)	6.39(1.94)		8	Pole	7161	4.98(1.02)	2.98(1.99)		5.68(2.13)	13
Shipyard	7036	4.88(1.08)	3.32(2.04)	.	5.41(2.11)	14	BathRoom	7165	6.09(1.54)	3.50(2.22)	6.30(1.75)		19
Trains	7037	4.81(1.12)	3.71(2.08)	.	5.24(2.1)	14	LightBulb	7170	5.14(1.28)	3.21(2.05)	5.89(1.98)		2
Shoes	7038	4.82(1.20)	3.01(1.96)	.	5.67(2)	13	Lamp	7175	4.87(1.00)	1.72(1.26)	6.47(2.04)		10
Train	7039	5.93(1.58)	3.29(2.15)	.	5.94(1.93)	13	Rug	7179	5.06(1.05)	2.88(1.97)		6.1(2.07)	14
DustPan	7040	4.69(1.09)	2.69(1.93)	5.46(1.64)		5	NeonBuilding	7180	4.73(1.31)	3.43(1.95)	5.61(1.98)		10
Baskets	7041	4.99(1.12)	2.60(1.78)	.	6.35(2.14)	14	Checkerboard	7182	5.16(1.31)	4.02(2.12)	5.51(2.10)		9
Barbells	7042	5.55(1.23)	4.02(2.26)	.	6.4(2.06)	15	Checkerboard	7183	5.58(1.39)	3.78(2.19)	5.71(2.16)		10
Drill	7043	5.17(1.26)	3.68(2.09)	.	6.38(1.93)	16	AbstractArt	7184	4.84(1.02)	3.66(1.89)	5.46(1.80)		11
Scale	7044	4.69(1.40)	3.94(2.17)	.	5.16(2.28)	15	AbstractArt	7185	4.97(0.87)	2.64(2.04)	6.13(2.02)		10
Zipper	7045	4.97(0.76)	3.32(1.96)	6.28(1.72)		20	AbstractArt	7186	4.63(1.60)	3.60(2.36)	5.88(2.50)		12
Pill	7046	4.18(1.38)	4.14(2.04)	.	5.22(2.11)	16	AbstractArt	7187	5.07(1.02)	2.30(1.75)	6.10(2.04)		10
HairDryer	7050	4.93(0.81)	2.75(1.80)	5.82(1.93)		2	AbstractArt	7188	5.50(1.12)	4.28(2.16)		5.61(1.94)	16
Clothespins	7052	5.33(1.32)	3.01(2.02)	.	6.19(1.86)	16	Clock	7190	5.55(1.34)	3.84(2.06)	5.30(2.04)		3
Candlestick	7053	5.22(0.75)	2.95(1.91)	.	5.87(1.99)	15	Vase	7192	5.77(1.33)	3.58(2.01)		5.76(1.83)	15
Glass	7054	4.14(1.09)	4.08(2.13)	.	4.78(1.91)	16	Teeth	7195	6.02(1.65)	4.54(2.03)	5.78(2.00)		12
Lightbulb	7055	4.90(0.64)	3.02(1.83)	.	5.73(1.86)	15	Brownie	7200	7.63(1.74)	4.87(2.59)	6.90(2.59)		1
Tool	7056	5.07(1.02)	3.07(1.92)	.	6.38(2.1)	15	Scarves	7205	5.56(1.39)	2.93(2.16)	6.39(1.95)		10
Coffeecup	7057	5.35(1.37)	3.39(2.01)	.	6.04(2.06)	16	Beads	7207	5.15(1.46)	3.57(2.25)	6.00(2.00)		8
Dice	7058	5.29(1.38)	3.98(2.17)	.	5.66(2.31)	15	Clock	7211	4.81(1.78)	4.20(2.40)	4.99(2.32)		12
Keyring	7059	4.93(0.81)	2.73(1.88)	.	6.22(1.98)	16	ClothesRack	7217	4.82(0.99)	2.43(1.64)	6.25(1.86)		8
TrashCan	7060	4.43(1.16)	2.55(1.77)	5.85(2.10)		2	Pastry	7220	6.91(1.74)	5.30(2.35)	5.80(2.24)		11
Puzzle	7061	5.40(1.40)	3.66(1.92)	5.92(1.85)		17	FileCabinets	7224	4.45(1.36)	2.81(1.94)	6.26(2.23)	6.08(2.17)	7
Sewing	7062	5.27(1.06)	3.40(1.94)	5.91(1.71)		18	Turkey	7230	7.38(1.65)	5.52(2.32)	6.21(1.97)		2
Stove	7077	5.12(1.46)	4.61(2.06)	5.60(1.85)		19	Plate	7233	5.09(1.46)	2.77(1.92)	6.23(2.06)	6.42(2.01)	7
Bucket	7078	3.79(1.45)	3.69(1.86)	5.41(1.73)		20	IroningBoard	7234	4.23(1.58)	2.96(1.90)	5.73(2.18)	5.26(2.16)	7
Waste	7079	3.81(1.43)	4.47(1.89)	4.19(1.84)		17	Chair	7235	4.96(1.18)	2.83(2.00)	6.53(2.09)	6.25(2.04)	7
Fork	7080	5.27(1.09)	2.32(1.84)	7.04(1.84)		1	Lightbulb	7236	5.64(1.31)	3.79(2.24)		6.34(1.96)	14
Luggage	7081	5.36(1.30)	3.96(2.24)	5.76(1.88)		17	AbstractArt	7237	5.43(1.36)	3.88(2.18)	5.84(1.79)		9
Book	7090	5.19(1.46)	2.61(2.03)	6.65(2.03)		1	AbstractArt	7238	6.43(1.42)	4.17(2.38)	6.06(1.99)		9
Scale	7092	4.05(1.46)	4.38(2.05)	4.99(2.48)		20	Gym	7240	6.02(1.93)	5.51(2.12)	6.37(2.42)		20
Headlight	7095	5.99(1.40)	4.21(2.20)	6.17(1.95)		12	Building	7242	5.28(1.45)	3.83(2.06)		5.72(1.85)	16
Car	7096	5.54(1.26)	3.98(1.87)	5.81(1.78)		11	AbstractArt	7247	5.05(1.00)	4.14(2.23)		5.05(1.99)	15
FireHydrant	7100	5.24(1.20)	2.89(1.70)	5.92(1.73)		3	AbstractArt	7248	5.22(1.07)	4.22(2.11)		5.07(1.87)	16
Hammer	7110	4.55(0.93)	2.27(1.70)	6.07(1.86)		10	AbstractArt	7249	5.24(1.04)	3.97(2.08)		5.5(1.8)	15

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Cake	7250	6.62(1.56)	4.67(2.15)	.	6.24(1.89)	14	Grapes	7472	6.25(1.84)	4.00(2.37)	.	6.31(2.12)	14
Cracker	7255	5.07(1.18)	3.36(1.99)	5.92(1.83)		19	Shrimp	7475	6.33(1.66)	4.17(2.49)	6.34(1.98)		10
Torte	7260	7.21(1.66)	5.11(2.19)	6.03(2.30)		2	Ramen	7476	4.99(2.24)	4.63(2.02)	5.45(1.99)		17
IceCream	7270	7.53(1.73)	5.76(2.21)	5.88(2.40)		2	Sushi	7477	6.12(2.03)	4.82(2.32)	6.25(1.84)		18
Alcohol	7279	6.22(1.92)	5.19(2.09)	5.97(1.96)		17	Pasta	7480	7.08(1.62)	4.55(2.42)	5.88(1.87)		6
Wines	7280	7.20(1.80)	4.46(2.38)	6.10(2.08)		2	Food	7481	6.53(1.78)	4.92(2.13)	5.97(2.21)		12
Food	7281	6.40(1.52)	4.41(2.26)	6.46(1.71)		8	Lamb	7482	6.36(1.77)	4.81(2.24)	.	6.29(2.13)	15
Cake	7282	6.72(1.48)	4.77(2.08)	6.16(1.79)		8	Fish	7484	4.99(1.97)	4.24(2.23)	.	6.06(1.79)	16
Fruit	7283	5.50(1.84)	3.81(2.01)	6.05(1.99)		8	Pastry	7487	4.92(1.57)	4.08(2.00)	.	5.3(1.89)	15
Fruit	7284	6.21(1.66)	4.06(2.20)	6.45(2.23)	6.44(1.92)	7	Chicken	7488	6.19(1.98)	4.96(2.36)	.	6.22(1.95)	16
Tomatoes	7285	5.67(1.60)	3.83(2.11)	6.29(2.27)	6.44(1.97)	7	Ferry	7489	6.54(1.61)	4.49(2.22)	5.85(1.78)		17
Pancakes	7286	6.36(1.72)	4.44(2.44)	5.97(2.52)	6.27(2.18)	7	Window	7490	5.52(1.41)	2.42(2.23)	5.81(2.10)		4
Tomato	7287	4.77(1.48)	3.57(1.98)	5.68(1.83)		19	Building	7491	4.82(1.03)	2.39(1.90)	5.93(1.96)		9
Food	7289	6.32(2.00)	5.14(2.51)	6.02(2.20)		11	Ferry	7492	7.41(1.68)	4.91(2.46)	5.55(2.13)		19
Fish	7290	4.37(1.54)	3.87(2.07)	5.85(1.65)		18	Man	7493	5.35(1.34)	3.39(2.08)	.	5.75(1.92)	13
Chicken	7291	6.35(1.91)	4.81(2.38)	.	6.1(2.18)	13	Store	7495	5.90(1.60)	3.82(2.33)	6.04(2.11)		12
Peanuts	7300	5.64(1.22)	3.25(1.97)	6.20(1.84)		18	Street	7496	5.92(1.66)	4.84(1.99)	5.55(1.72)		12
Desserts	7320	6.54(1.63)	4.44(2.12)	6.22(1.95)		3	Crowd	7497	5.19(1.55)	4.97(2.16)	4.26(2.10)		18
Watermelon	7325	7.06(1.65)	3.55(2.07)	6.56(1.93)		9	Concert	7499	6.47(1.57)	5.58(2.16)	5.37(2.03)		18
IceCream	7330	7.69(1.84)	5.14(2.58)	6.58(2.51)		4	Building	7500	5.33(1.44)	3.26(2.18)	5.17(2.05)		2
IceCream	7340	6.68(1.63)	3.69(2.58)	6.32(2.33)		4	City	7501	6.85(1.70)	5.63(2.27)	5.82(2.07)		6
Pizza	7350	7.10(1.98)	4.97(2.44)	6.72(2.12)		4	Castle	7502	7.75(1.40)	5.91(2.31)	6.64(2.19)	6.58(2.08)	7
Pizza	7351	5.82(1.67)	4.25(2.28)	6.00(1.67)		5	CardDealer	7503	5.77(1.39)	4.21(2.39)	5.59(1.92)		10
Pizza	7352	6.20(2.20)	4.58(2.45)	5.58(2.07)		6	Stairs	7504	5.67(1.46)	4.25(2.27)	.	5.8(2.09)	14
Garlic	7354	5.51(1.67)	3.73(2.19)	6.27(1.93)		19	Cards	7505	6.10(1.53)	4.72(2.06)	5.95(1.68)		17
PieW/bug	7359	2.92(1.70)	5.36(2.19)	.	4.73(2.38)	14	Casino	7506	5.34(1.46)	4.25(1.95)	.	5.37(1.97)	15
FliesOnPie	7360	3.59(1.95)	5.11(2.25)	5.21(2.26)		4	Painting	7507	6.25(1.37)	3.54(1.95)	5.98(1.69)		18
MeatSlicer	7361	3.10(1.73)	5.09(2.48)	4.38(2.09)		8	FerrisWheel	7508	7.02(1.46)	5.09(2.11)	.	5.22(1.96)	16
Meat	7365	5.20(1.57)	4.13(1.93)	5.83(1.66)		18	Paintbrush	7509	6.03(1.35)	3.43(2.02)	6.31(1.69)		19
RoachOnPizza	7380	2.46(1.42)	5.88(2.44)	4.49(2.18)		6	Skyscraper	7510	6.05(1.60)	4.52(2.35)	4.96(2.18)		2
IceCream	7390	6.84(1.73)	4.56(2.28)	6.02(2.03)		6	Chess	7512	5.38(1.22)	3.72(2.07)	5.84(1.96)		20
Candy	7400	7.00(1.64)	5.06(2.23)	6.07(2.01)		5	Crochet	7513	5.45(1.40)	3.47(2.02)	5.82(1.77)		20
Pastry	7402	5.98(2.04)	5.05(2.12)	5.75(2.37)		12	Crowd	7515	6.19(1.33)	5.48(1.98)	5.30(1.75)		20
Cupcakes	7405	7.38(1.73)	6.28(2.16)	5.67(2.40)		20	Hospital	7520	3.83(1.56)	4.57(1.85)	4.42(1.82)		17
Candy	7410	6.91(1.56)	4.55(2.24)	5.92(2.10)		5	Hospital	7521	3.92(1.61)	4.38(2.10)	4.85(2.14)		18
Candy	7430	7.11(1.78)	4.72(2.29)	5.86(2.02)		6	House	7530	6.71(1.36)	4.00(2.14)	6.09(1.69)		19
Cookout	7440	6.32(1.61)	4.70(1.96)	5.98(1.72)		19	Ocean	7545	6.84(1.72)	3.28(2.34)	6.75(1.93)		11
Cheeseburger	7450	6.40(2.01)	5.05(2.22)	5.81(2.20)		5	Bridge	7546	5.40(1.13)	3.72(2.16)	.	5.48(2)	15
Hamburger	7451	6.68(2.11)	5.84(2.03)	5.85(2.24)		17	Bridge	7547	5.21(0.96)	3.18(2.01)	.	5.76(2)	16
FrenchFries	7460	6.81(2.08)	5.12(2.49)	5.78(2.26)		6	Office	7550	5.27(1.40)	3.95(1.91)	5.22(2.26)		3
FrenchFries	7461	5.80(2.28)	5.20(2.27)	5.88(2.35)		20	Freeway	7560	4.47(1.65)	5.24(2.03)	4.63(2.09)		3
Pancakes	7470	7.08(1.60)	4.64(2.26)	5.96(1.95)		5	Skyline	7570	6.97(1.69)	5.54(2.34)	5.33(2.25)		3

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Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Desert	7580	7.51(1.60)	4.59(2.72)	5.12(2.56)		3	Parachute	8163	7.14(1.61)	6.53(2.21)	5.69(2.28)		20
Traffic	7590	4.75(1.55)	3.80(2.13)	5.05(2.35)		9	Sailboat	8170	7.63(1.34)	6.12(2.30)	5.72(2.15)		6
Traffic	7595	4.55(1.46)	3.77(2.22)	5.28(2.28)		11	Cliffdiver	8178	6.50(2.00)	6.82(2.33)	.	4.68(2.61)	13
Dragon	7600	5.90(1.76)	5.50(1.92)	5.22(2.01)		12	Bungee	8179	6.48(2.18)	6.99(2.35)	.	4.73(2.68)	13
Jet	7620	5.78(1.72)	4.92(2.11)	5.07(1.99)		3	CliffDivers	8180	7.12(1.88)	6.59(2.12)	4.97(2.52)		4
Airplane	7632	5.22(1.69)	4.78(2.36)	4.40(2.09)		18	Skydivers	8185	7.57(1.52)	7.27(2.08)	5.47(2.42)		12
Skyscraper	7640	5.00(1.31)	6.03(2.46)	3.82(2.27)		6	Skysurfer	8186	7.01(1.57)	6.84(2.01)	.	5.15(2.36)	14
City	7650	6.62(1.91)	6.15(2.24)	5.79(1.98)		20	Skier	8190	8.10(1.39)	6.28(2.57)	6.14(2.74)		5
Crowd	7660	6.61(1.70)	5.59(2.23)	5.42(2.02)		19	IceClimber	8191	6.07(1.73)	6.19(2.17)	.	4.88(2.31)	14
Office	7700	4.25(1.45)	2.95(2.17)	5.13(2.45)		4	VolcanoSkier	8192	5.52(1.53)	6.03(1.97)	.	5.17(2)	14
Cabinet	7705	4.77(1.02)	2.65(1.88)	6.39(2.09)		11	Skier	8193	6.73(1.58)	6.04(2.19)	.	5.82(2.08)	13
Bed	7710	5.42(1.58)	3.44(2.21)	5.96(2.09)		4	WaterSkier	8200	7.54(1.37)	6.35(1.98)	6.17(1.61)		3
Agate	7820	5.39(1.41)	4.21(2.05)	5.30(1.96)		3	Waterskiing	8205	6.62(1.42)	4.17(1.93)	.	5.86(1.79)	15
Agate	7830	5.26(1.38)	4.08(2.11)	5.36(1.81)		3	Surfers	8206	6.43(1.75)	6.41(2.19)	5.19(2.04)		19
Violin	7900	6.50(1.72)	2.60(2.08)	6.48(2.22)		4	Surfer	8208	6.79(1.48)	5.17(2.23)	5.85(1.78)		19
CarCrash	7920	4.51(1.40)	3.87(2.15)	5.20(1.78)		8	Boat	8210	7.53(1.31)	5.94(2.07)	5.82(1.94)		5
Tissue	7950	4.94(1.21)	2.28(1.81)	6.30(2.11)		9	Sailboat	8211	5.76(1.89)	5.36(2.35)	.	5.13(2.29)	13
Basketball	8001	6.50(1.84)	5.60(2.31)	5.57(1.81)		17	Runners	8220	6.50(1.73)	5.19(2.17)	6.28(2.20)		4
Runner	8010	4.38(1.86)	4.12(2.08)	5.17(2.08)		4	Boxer	8230	2.95(1.88)	5.91(2.15)	4.05(2.36)		4
Skier	8021	6.79(1.44)	5.67(2.37)	5.85(2.06)		10	Boxer	8231	3.77(1.83)	5.24(1.84)	4.68(2.20)		12
Skier	8030	7.33(1.76)	7.35(2.02)	4.70(2.66)		2	Boxer	8232	5.07(1.80)	5.10(2.21)	5.57(2.07)		11
Skier	8031	6.76(1.39)	5.58(2.24)	6.36(1.66)		8	Rowing	8241	5.76(1.31)	4.06(1.96)	.	6.18(1.72)	16
IceSkater	8032	6.38(1.57)	4.19(2.08)	6.10(1.64)		8	Motorcyclist	8250	6.19(1.62)	5.04(2.49)	5.63(2.07)		5
IceSkater	8033	6.66(1.52)	5.01(2.15)	6.12(1.91)	5.74(1.77)	7	Motorcycle	8251	6.16(1.68)	6.05(2.12)	.	5.87(2.24)	14
Skier	8034	7.06(1.53)	6.30(2.16)	6.26(2.02)	5.81(2.12)	7	Motorcyclist	8260	6.18(1.80)	5.85(2.18)	5.29(1.96)		6
Diver	8040	6.64(1.56)	5.61(2.01)	5.31(2.32)		4	Diver	8280	6.38(1.46)	5.05(2.18)	5.85(1.95)		6
Diver	8041	6.65(1.67)	5.49(2.29)	6.05(1.99)	5.54(2.13)	7	Pilot	8300	7.02(1.60)	6.14(2.21)	5.31(2.31)		5
Rower	8050	6.24(1.49)	4.31(2.12)	6.67(1.92)		4	Golfer	8311	5.88(1.67)	3.57(2.35)	5.80(1.74)		6
Boxer	8060	5.36(2.23)	5.31(1.99)	5.92(2.43)		4	Golf	8312	5.37(1.41)	3.32(2.06)	5.88(1.70)		19
Kickboxing	8065	5.25(1.78)	5.71(2.09)	5.52(2.05)		20	CarRacer	8320	6.24(1.78)	4.27(2.21)	5.51(1.79)		6
Sailing	8080	7.73(1.34)	6.65(2.20)	5.91(2.10)		2	RaceCars	8325	5.63(1.50)	4.47(2.19)	5.53(1.82)		18
Gymnast	8090	7.02(1.33)	5.71(2.10)	5.25(2.01)		2	Winner	8330	6.65(1.39)	4.06(2.28)	5.56(1.59)		5
Football	8116	6.82(1.77)	5.97(2.29)	6.06(1.70)		11	Plane	8340	6.85(1.69)	5.80(2.36)	5.77(2.23)		6
Hockey	8117	6.02(1.68)	5.30(2.44)	6.07(2.21)		9	Wingwalker	8341	6.25(1.86)	6.40(2.27)	.	4.66(2.31)	13
Rugby	8118	6.14(1.51)	4.90(1.98)	5.77(1.76)		18	TennisPlayer	8350	7.18(1.56)	5.18(2.28)	5.78(1.76)		5
Athlete	8120	7.09(1.36)	4.85(2.13)	6.23(1.61)		2	Rafting	8370	7.77(1.29)	6.73(2.24)	5.37(2.02)		5
Athlete	8121	4.63(1.54)	4.14(2.10)	5.30(2.00)		19	Rafting	8371	6.82(1.45)	5.12(2.30)	.	5.59(1.87)	16
PoleVault	8130	6.58(1.34)	5.49(2.07)	5.43(1.80)		2	Athletes	8380	7.56(1.55)	5.74(2.32)	5.80(2.02)		6
Hiker	8158	6.53(1.66)	6.49(2.05)	5.41(2.32)		20	Rafters	8400	7.09(1.52)	6.61(1.86)	4.63(2.14)		6
RockClimber	8160	5.07(1.97)	6.97(1.62)	4.05(2.24)		3	Tubing	8420	7.76(1.55)	5.56(2.38)	6.05(2.19)		6
HangGlider	8161	6.71(1.64)	6.09(2.24)	5.89(2.15)	5.68(2.18)	7	Runner	8460	6.40(1.58)	4.55(2.57)	5.76(1.70)		5
HotAirBalloon	8162	6.97(1.55)	4.98(2.25)	6.37(1.89)	5.69(1.86)	7	HappyTeens	8461	7.22(1.53)	4.69(2.20)	6.36(1.67)		10

International Affective Picture System: All subjects
(2008, Picture sets 1-20)

Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Runner	8465	5.96(1.49)	3.93(2.34)	5.97(1.63)		10	Cocaine	9101	3.62(1.96)	4.02(2.33)	5.35(2.47)		9
Nudists	8466	4.86(1.77)	4.92(2.09)	.	5.11(2.06)	15	Heroin	9102	3.34(1.76)	4.84(2.50)	4.64(2.42)		9
Runners	8467	6.35(1.44)	5.12(2.36)	.	5.79(2.07)	16	Puddle	9110	3.76(1.41)	3.98(2.23)	4.88(1.68)		2
Gymnast	8470	7.74(1.53)	6.14(2.19)	6.17(2.09)		6	OilFires	9120	3.20(1.75)	5.77(1.94)	3.79(2.01)		6
Biking/train	8475	4.85(1.85)	6.52(1.91)	.	4.55(2.19)	14	Cow	9140	2.19(1.37)	5.38(2.19)	3.85(1.95)		2
BikerOnFire	8480	3.70(2.03)	6.28(2.10)	4.00(2.19)		4	Cow	9145	3.20(1.39)	5.05(2.26)	4.73(2.12)		18
Fire	8485	2.73(1.62)	6.46(2.10)	.	3.25(2.2)	14	Matador	9150	4.54(1.82)	5.31(2.12)	4.48(2.06)		18
RollerCoaster	8490	7.20(2.35)	6.68(1.97)	5.37(2.46)		4	Plane	9156	6.43(1.59)	5.79(2.30)	6.04(2.05)		11
Rollercoaster	8492	7.21(2.26)	7.31(1.64)	4.63(2.41)		17	Soldier	9160	3.23(1.64)	5.87(1.93)	3.80(2.08)		2
WaterSlide	8496	7.58(1.63)	5.79(2.26)	6.33(2.18)		9	Soldiers	9163	2.10(1.36)	6.53(2.21)	3.04(2.24)		19
CarnivalRide	8497	7.26(1.44)	4.19(2.18)	6.22(1.87)		10	Fisher	9171	4.01(1.94)	4.72(2.17)	.	5.17(2.23)	13
Rollercoaster	8499	7.63(1.41)	6.07(2.31)	.	5.51(2.1)	16	Seal	9180	2.99(1.61)	5.02(2.09)	4.52(2.09)		2
Gold	8500	6.96(1.64)	5.60(2.40)	5.87(2.14)		3	DeadCows	9181	2.26(1.85)	5.39(2.41)	4.04(2.27)		8
Money	8501	7.91(1.66)	6.44(2.29)	6.05(2.52)		6	Horses	9182	3.52(2.04)	4.98(2.07)	4.97(2.32)	4.45(1.8)	7
Money	8502	7.51(1.72)	5.78(2.49)	6.40(2.54)		9	HurtDog	9183	1.69(1.10)	6.58(2.12)	2.96(1.85)		17
Money	8503	7.02(1.71)	5.22(2.59)	6.33(2.20)		10	InjuredDog	9184	2.47(1.52)	5.75(2.43)	3.86(2.32)		18
SportCar	8510	7.32(1.72)	4.93(2.56)	6.54(2.26)		4	DeadDog	9185	1.97(1.16)	5.65(2.35)	3.62(2.31)		19
SportCar	8531	7.03(1.50)	5.41(2.15)	6.77(1.69)		8	Vultures	9186	3.43(1.54)	4.88(1.87)	4.23(1.83)		17
Athletes	8540	7.48(1.51)	5.16(2.37)	5.88(1.91)		5	InjuredDog	9187	1.81(1.36)	6.45(2.30)	3.17(2.11)		20
Mascot	8600	6.38(1.61)	4.26(2.24)	5.54(1.93)		6	Woman	9190	3.90(1.44)	3.91(1.73)	4.89(1.81)		2
Woman	8620	6.04(1.43)	4.60(2.08)	.	5.83(1.84)	14	Rain	9210	4.53(1.82)	3.08(2.13)	4.55(1.90)		5
Cemetery	9000	2.55(1.55)	4.06(2.25)	3.25(2.13)		2	Cemetery	9220	2.06(1.54)	4.00(2.09)	3.13(1.97)		6
Cemetery	9001	3.10(2.02)	3.67(2.30)	3.47(1.90)		5	OilFire	9230	3.89(1.58)	5.77(2.36)	3.73(1.88)		5
Memorial	9002	3.39(1.84)	4.55(1.94)	4.03(1.82)		17	WarVictim	9250	2.57(1.39)	6.60(1.87)	3.73(1.94)		3
HIVTattoo	9005	3.69(2.23)	5.18(2.11)	4.30(2.31)		8	DeadBody	9252	1.98(1.59)	6.64(2.33)	2.92(2.28)	2.77(1.82)	7
HIVTattoo	9006	2.34(1.59)	5.76(2.46)	3.33(2.42)	3.08(2.22)	7	Mutilation	9253	2.00(1.19)	5.53(2.40)	3.77(2.17)		9
Needles	9007	2.49(1.41)	5.03(2.32)	4.18(2.27)		8	Assault	9254	2.03(1.35)	6.04(2.35)	.	3.08(1.95)	15
Needle	9008	3.47(1.85)	4.45(2.10)	5.30(2.21)	4.75(1.86)	7	Hands	9260	4.63(1.76)	3.45(1.98)	4.98(2.24)		19
BarbedWire	9010	3.94(1.70)	4.14(2.05)	4.06(1.96)		2	HungMan	9265	2.60(1.52)	4.34(2.09)	4.60(2.37)		9
Mud	9031	3.01(1.59)	4.82(1.92)	4.68(1.91)		17	ToxicWaste	9270	3.72(1.51)	5.24(2.15)	4.04(2.05)		3
StarvingChild	9040	1.67(1.07)	5.82(2.15)	3.10(2.00)		2	Smoke	9280	2.80(1.54)	4.26(2.44)	4.10(2.54)		9
ScaredChild	9041	2.98(1.58)	4.64(2.26)	4.38(2.34)		9	Garbage	9290	2.88(1.52)	4.40(2.11)	4.90(2.18)		4
StickThruLip	9042	3.15(1.89)	5.78(2.48)	4.37(2.16)		10	Garbage	9291	2.93(1.19)	4.38(2.05)	4.75(1.75)		18
Teeth	9043	2.52(1.42)	5.50(2.41)	4.29(2.03)		18	Garbage	9295	2.39(1.30)	5.11(2.05)	3.74(2.08)		17
NativeFem	9045	3.75(1.67)	3.89(2.16)	5.03(2.18)		9	Dirty	9300	2.26(1.76)	6.00(2.41)	4.12(2.57)		4
Family	9046	3.32(1.49)	4.31(1.99)	4.61(2.05)		12	Toilet	9301	2.26(1.56)	5.28(2.46)	.	4.11(2.32)	14
PlaneCrash	9050	2.43(1.61)	6.36(1.97)	3.27(2.06)		2	Toilet	9302	2.32(1.41)	5.58(2.43)	3.90(2.08)		18
Boy	9070	5.01(1.89)	3.63(2.03)	5.67(1.98)		2	Vomit	9320	2.65(1.92)	4.93(2.70)	4.44(2.09)		5
StarvingChild	9075	1.66(1.10)	6.04(2.40)	2.86(2.11)		18	Vomit	9321	2.81(2.14)	6.24(2.23)	3.90(2.35)		19
Wires	9080	4.07(1.45)	4.36(2.17)	4.05(1.98)		2	Vomit	9322	2.24(1.24)	5.73(2.28)	3.87(2.23)		20
Exhaust	9090	3.56(1.50)	3.97(2.12)	4.51(1.91)		2	Vomit	9325	1.89(1.23)	6.01(2.54)	3.22(1.96)		17
Exhaust	9090	3.69(1.92)	4.80(2.23)	4.72(2.14)		3	Vomit	9326	2.21(1.30)	5.89(2.35)	4.05(1.91)		18

International Affective Picture System: All subjects
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Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
Garbage	9330	2.89(1.74)	4.35(2.07)	4.33(1.93)		5	Graffiti	9468	4.67(1.80)	4.68(1.89)	4.58(2.09)		19
HomelessMan	9331	2.87(1.28)	3.85(2.00)	4.72(2.15)		10	Building	9469	4.00(1.50)	4.08(1.85)	4.92(2.05)		18
CryingWoman	9332	2.25(1.33)	5.34(2.00)	3.63(1.79)		20	Ruins	9470	3.05(1.51)	5.05(1.98)	4.11(2.06)	3.57(1.8)	7
Garbage	9340	2.41(1.48)	5.16(2.35)	4.24(2.17)		6	BurntBldg	9471	3.16(1.35)	4.48(2.02)	.	4.22(2.13)	14
Pollution	9341	3.38(1.89)	4.50(2.10)	.	4.39(2.06)	13	Bridge	9472	4.07(1.34)	4.16(2.00)	.	4.79(2.09)	14
Pollution	9342	2.85(1.41)	4.49(1.88)	.	4.22(2.16)	14	Skull	9480	3.51(2.08)	5.57(1.87)	4.56(2.12)		12
EmptyPool	9360	4.03(1.38)	2.63(1.75)	5.34(2.08)		10	Corpse	9490	3.60(1.72)	5.57(2.13)	4.12(1.78)		5
Garbage	9373	3.38(1.48)	5.01(2.16)	4.86(2.22)	4.73(1.84)	7	DeadBody	9491	2.78(1.71)	5.69(2.22)	3.64(2.31)		20
Dishes	9390	3.67(1.58)	4.14(2.52)	5.22(1.97)		5	Fire	9495	3.34(1.75)	5.57(2.00)	.	4.16(2.29)	14
Dishes	9395	3.21(1.32)	4.22(2.04)	5.08(2.01)		17	Porpoises	9500	2.42(1.73)	5.82(2.29)	3.42(2.31)		4
Soldier	9400	2.50(1.61)	5.99(2.15)	3.78(2.15)		4	Kids	9520	2.46(1.61)	5.41(2.27)	4.01(2.06)		6
Knives	9401	4.53(1.31)	3.88(1.98)	5.29(1.88)		8	Boys	9530	2.93(1.84)	5.20(2.26)	4.32(2.14)		5
Mob	9402	4.48(2.12)	5.07(2.15)	4.85(2.12)		8	DuckInOil	9560	2.12(1.93)	5.50(2.52)	3.62(2.33)		5
Soldiers	9403	3.51(1.69)	5.62(1.87)	3.49(2.00)		17	SickKitty	9561	2.68(1.92)	4.79(2.29)	4.53(2.36)		10
Soldiers	9404	3.71(1.67)	4.67(2.26)	4.48(2.19)		8	Dog	9570	1.68(1.23)	6.14(2.31)	3.37(2.23)		6
SlicedHand	9405	1.83(1.17)	6.08(2.40)	3.40(2.33)		10	Cat	9571	1.96(1.50)	5.64(2.50)	4.17(2.46)	3.44(2.03)	7
MenW/guns	9409	3.34(1.76)	5.61(2.15)	.	4.07(2.33)	14	DentalExam	9582	4.18(2.28)	5.29(2.21)	4.33(2.29)		12
Soldier	9410	1.51(1.15)	7.07(2.06)	2.81(1.99)		4	DentalExam	9584	3.34(1.57)	4.96(2.15)	3.94(2.41)		11
Boy	9411	4.63(1.58)	5.37(1.97)	4.91(2.05)	4.92(2.08)	7	Injecting	9590	3.08(1.63)	5.41(2.23)	4.00(2.13)		17
DeadMan	9412	1.83(1.37)	6.72(2.07)	3.00(2.32)		19	Injection	9592	3.34(1.75)	5.23(2.09)	4.14(2.28)		12
Hanging	9413	1.76(1.08)	6.81(2.09)	2.75(2.21)		19	Injection	9594	3.76(1.70)	5.17(2.17)	4.43(2.25)		11
Execution	9414	2.06(1.48)	6.49(2.26)	3.11(2.23)		17	Injection	9596	3.65(1.68)	5.13(2.32)	4.31(2.27)		18
Handicapped	9415	2.82(2.00)	4.91(2.35)	4.22(2.24)		8	Injection	9599	3.16(1.51)	5.43(2.04)	4.22(2.17)		20
Ticket	9417	3.16(1.48)	4.83(2.24)	3.70(2.42)		10	Ship	9600	2.48(1.62)	6.46(2.31)	2.27(1.64)		5
Assault	9419	2.55(1.33)	5.19(2.08)	.	3.94(2.05)	16	Accident	9610	2.89(1.43)	5.23(2.14)	3.82(2.05)		18
Soldier	9420	2.31(1.59)	5.69(2.28)	3.27(2.19)		4	PlaneCrash	9611	2.71(1.95)	5.75(2.44)	3.67(2.23)		8
Soldier	9421	2.21(1.45)	5.04(2.15)	3.32(2.09)		6	Shipwreck	9620	2.70(1.64)	6.11(2.10)	3.29(1.95)		8
Battleship	9422	4.95(1.72)	5.09(1.92)	4.89(2.25)		20	Ship	9621	3.22(1.76)	5.76(2.05)	3.55(2.40)	3.23(1.81)	7
Assault	9423	2.61(1.51)	5.66(2.15)	.	3.43(2.13)	16	Jet	9622	3.10(1.90)	6.26(1.98)	3.66(2.31)	3.32(1.98)	7
Bomb	9424	2.87(1.62)	5.78(2.12)	.	3.78(2.17)	16	Fire	9623	3.04(1.51)	6.05(1.88)	3.26(1.88)		17
Assault	9425	2.67(1.44)	5.92(2.13)	.	3.22(2.12)	15	Bomb	9630	2.96(1.72)	6.06(2.22)	2.98(2.13)		6
Assault	9426	3.08(1.51)	5.28(2.02)	.	3.5(1.95)	15	ManOnFire	9635.1	1.90(1.31)	6.54(2.27)	.	3.21(2.24)	14
Assault	9427	2.89(1.47)	5.50(2.09)	.	3.72(2.11)	15	Fire	9635.2	4.38(1.65)	4.62(2.23)	.	5.12(2.04)	13
Assault	9428	2.31(1.31)	5.66(2.41)	.	3.77(2.16)	15	Trash	9700	4.77(1.24)	3.21(1.92)	5.47(2.08)		9
Assault	9429	2.68(1.26)	5.63(2.04)	.	3.68(1.96)	16	Skinhead	9800	2.04(1.57)	6.05(2.71)	4.92(2.52)		5
Burial	9430	2.63(1.59)	5.26(2.55)	4.14(2.44)		4	KKKally	9810	2.09(1.78)	6.62(2.26)	3.95(2.50)		6
Mastectomy	9432	2.56(1.66)	4.92(2.28)	3.83(2.13)	3.24(1.72)	7	Cigarettes	9830	2.54(1.75)	4.86(2.63)	4.96(2.38)		6
DeadMan	9433	1.84(1.19)	5.89(2.60)	3.37(2.16)		10	Cigarette	9831	2.95(1.72)	4.61(2.34)	6.04(2.16)		18
Accident	9435	2.27(1.47)	5.00(2.03)	.	3.64(2.15)	13	Cigarettes	9832	2.94(1.58)	4.46(2.06)	5.53(2.51)		19
Skulls	9440	3.67(1.86)	4.55(2.02)	4.69(2.27)		4	CarAccident	9900	2.46(1.39)	5.58(2.13)	.	3.63(2.05)	15
Skeleton	9445	3.87(1.57)	4.49(2.01)	4.51(1.99)		20	CarAccident	9901	2.27(1.25)	5.70(2.22)	.	3.4(2.12)	15
Gun	9452	3.19(1.98)	5.14(2.30)	4.09(2.34)	3.18(2.07)	7	CarAccident	9902	2.33(1.38)	6.00(2.15)	.	3.08(2.1)	16

International Affective Picture System: All subjects
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Table 1

Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set	Description	Slide No.	Valence Mean(SD)	Arousal Mean(SD)	Dominance1 Mean (SD)	Dominance2 Mean (SD)	Pict. Set
CarAccident	9903	2.36(1.35)	5.71(2.28)	.	3.58(2.24)	16							
CarAccident	9904	2.39(1.36)	6.08(2.06)	3.40(2.21)		19							
CarAccident	9905	2.55(1.42)	5.93(2.10)	3.33(2.18)		20							
CarAccident	9908	2.34(1.49)	6.63(2.13)	2.79(2.12)		20							
BurningCar	9909	2.78(1.45)	5.98(2.04)	3.67(1.96)		18							
CarAccident	9910	2.06(1.26)	6.20(2.16)	3.02(1.89)		5							
CarAccident	9911	2.30(1.37)	5.76(2.10)	3.54(2.13)	2.99(1.59)	7							
Firefighter	9912	3.46(1.76)	4.68(2.31)	4.62(2.12)		8							
Truck	9913	4.38(1.89)	4.42(2.14)	.	4.74(2.27)	13							
CarAccident	9920	2.50(1.52)	5.76(1.96)	3.09(2.13)		6							
Fire	9921	2.04(1.47)	6.52(1.94)	3.57(2.41)	2.94(1.72)	7							
Fire	9922	2.78(1.32)	5.21(2.03)	3.72(2.13)		20							
Fire	9925	2.84(1.35)	5.59(2.23)	.	3.5(2.08)	16							
Flood	9926	3.85(1.59)	4.83(1.95)	.	4.37(2)	16							
Flood	9927	2.71(1.56)	5.29(1.91)	3.60(2.08)		20							
ShipWave	9930	3.12(1.53)	5.71(1.88)	2.97(1.81)		17							
Explosion	9940	1.62(1.20)	7.15(2.24)	2.45(2.22)		20							
Fire	9941	2.91(1.54)	5.83(2.14)	3.28(2.16)		18							

Appendix G: Free recall task – form

Please recall as many pictures as you remember during the last block of trials. Please give a brief description of the pictures that you saw. You are not expected to remember all the pictures just as many as you can recall.

Picture 1:

Picture 2:

Picture 3:

Picture 4:

Picture 5:

Picture 6:

Picture 7:

Picture 8:

Picture 9:

Picture 10:

Picture 11:

Picture 12:

Appendix H: Study one - 3AFC form

Which of these did you see in the last block of trials? (Please circle)

- 1) Three garbage men working?
Yes No
- 2) A metal bowl?
Yes No
- 3) A hand holding a gun?
Yes No
- 4) Wind blowing through a forest?
Yes No
- 5) A piece of green lettuce?
Yes No
- 6) An eraser?
Yes No
- 7) A man strangling women?
Yes No
- 8) A kitten meowing?
Yes No
- 9) Some rubber bands?
Yes No
- 10) A hand holding an ice-cream?
Yes No
- 11) A man praying?
Yes No
- 12) Some paperclips?
Yes No
- 13) A metal pipe?
Yes No
- 14) A red ballpoint pen?
Yes No
- 15) A grizzly bear?

- | | |
|-----|----|
| Yes | No |
|-----|----|
- 16) A man and a women dancing?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 17) Three girls celebrating?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 18) A roaring lion?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 19) A wolf?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 20) Two empty boats?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 21) A large corn field?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 22) A hand holding a video camera?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 23) A brown leaf?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 24) Some loose strings?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 25) A man caressing a women's neck?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 26) Two ducks in pond?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 27) A father kissing his baby?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 28) A whistle?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 29) A green leaf?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 30) A monkey?
- | | |
|-----|----|
| Yes | No |
|-----|----|
- 31) A red pencil?

Yes No

32) Three girls comforting each other?

Yes No

33) A pair of shoes?

Yes No

34) A roaring tiger?

Yes No

35) Wind blowing through a grassy field?

Yes No

36) A man kissing his wife?

Yes No

Appendix I: Demographic questions

Participant number:

Age:

Sex: M F (please circle one)

Marital status (e.g., single, in relationship, married, separated)_____

Have you ever been diagnosed with a mental health problem? Yes No Don't want to answer

If yes, please state which one/s_____

Are you currently on any medication for psychological difficulties? Yes No Don't want to answer

If yes, please state which one/s_____

If yes, what are the most common side effects of these medications for you?

Appendix J: ADQ form for study one

Since the start of the last block have you noticed...?

	None	Little	some	Quite a bit	Alot
Any muscle tension in your hands or forearms?	0	1	2	3	4
Any muscle tension in your shoulders or neck?	0	1	2	3	4
Any muscle tension in your chest?	0	1	2	3	4
Any muscle tension in your lower back?	0	1	2	3	4
A tension headache?	0	1	2	3	4
An increase in heart rate?	0	1	2	3	4
Feelings of nausea?	0	1	2	3	4
A dry throat?	0	1	2	3	4
Feeling Bloated?	0	1	2	3	4
Feeling gassy?	0	1	2	3	4
An urge to urinate?	0	1	2	3	4
Cold hands and/or fingers	0	1	2	3	4
Any irritability in your bowels?	0	1	2	3	4
A twitch in your body?	0	1	2	3	4
Any stiffness in your arms?	0	1	2	3	4
Any difficulties in focusing?	0	1	2	3	4
Any feelings of light-headedness or being faint?	0	1	2	3	4
Yourself feeling dizzy?	0	1	2	3	4
Yourself losing track of your thoughts?	0	1	2	3	4
Yourself having difficulty concentrating?	0	1	2	3	4
Feeling spaced out?	0	1	2	3	4
Any distortions in your vision?	0	1	2	3	4
Any ringing in your ears?	0	1	2	3	4

Note. This form was administered at the end of each experimental condition. The statement at the start of the form was different for the ADQ administered at baseline, "Since coming in here today have you noticed...?".

Appendix K: DES-T form used in study one

DES - T

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%.

Date _____ Age _____ Sex: M F

1. 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)

2. 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)

3. 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)

4. 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)

5. 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)

6. 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)

7. 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)

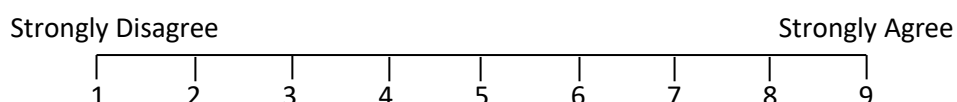
8. Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing.

(NEVER) 0% 10 20 30 40 50 60 70 80 90 100 (ALWAYS)

Appendix L: DSQ-40 form administered in study one

D.S.Q. 40

INSTRUCTIONS: This questionnaire consists of a number of statements about personal attitudes. *There are no right or wrong answers.* Using the 9-point scale shown below, please indicate how much you agree or disagree with each statement by *circling* one of the numbers on the scale beside the statement. For example, a score of **5** would indicate that you neither agree nor disagree with the statement, a score of **3** that you moderately disagree, a score of **9** that you strongly agree.



1.	I get satisfaction from helping others and if this were taken away from me I would get depressed	1	2	3	4	5	6	7	8	9
2.	I'm able to keep a problem out of my mind until I have time to deal with it	1	2	3	4	5	6	7	8	9
3.	I work out my anxiety through doing something constructive and creative like painting or woodwork	1	2	3	4	5	6	7	8	9
4.	I am able to find good reasons for everything I do	1	2	3	4	5	6	7	8	9
5.	I'm able to laugh at myself pretty easily	1	2	3	4	5	6	7	8	9
6.	People tend to mistreat me	1	2	3	4	5	6	7	8	9
7.	If someone mugged me and stole my money, I'd rather they be helped than punished	1	2	3	4	5	6	7	8	9
8.	People say I tend to ignore unpleasant facts as if they didn't exist	1	2	3	4	5	6	7	8	9
9.	I ignore danger as if I was Superman	1	2	3	4	5	6	7	8	9
10.	I pride myself on my ability to cut people down to size	1	2	3	4	5	6	7	8	9
11.	I often act impulsively when something is bothering me	1	2	3	4	5	6	7	8	9
12.	I get physically ill when things aren't going well for me	1	2	3	4	5	6	7	8	9
13.	I'm a very inhibited person	1	2	3	4	5	6	7	8	9
14.	I get more satisfaction from my fantasies than from my real life	1	2	3	4	5	6	7	8	9
15.	I've special talents that allow me to go through life with no problems	1	2	3	4	5	6	7	8	9
16.	There are always good reasons when things don't work out for me	1	2	3	4	5	6	7	8	9
17.	I work more things out in my daydreams than in my real life	1	2	3	4	5	6	7	8	9

18.	I fear nothing	1	2	3	4	5	6	7	8	9
19.	Sometimes I think I'm an angel and other times I think I'm a devil	1	2	3	4	5	6	7	8	9
20.	I get openly aggressive when I feel hurt	1	2	3	4	5	6	7	8	9
21.	I always feel like someone I know is like a guardian angel	1	2	3	4	5	6	7	8	9
22.	As far as I am concerned, people are either good or bad	1	2	3	4	5	6	7	8	9
23.	If my boss bugged me, I might make a mistake in my work or work more slowly so as to get back at him	1	2	3	4	5	6	7	8	9
24.	There is someone I know who can do anything and who is absolutely fair and just	1	2	3	4	5	6	7	8	9
25.	I can keep a lid on my feelings if letting them out would interfere with what I am doing	1	2	3	4	5	6	7	8	9
26.	I'm usually able to see the funny side of an otherwise painful predicament	1	2	3	4	5	6	7	8	9
27.	I get a headache when I have to do something I don't like	1	2	3	4	5	6	7	8	9
28.	I often find myself being very nice to people who by all rights I should be angry at	1	2	3	4	5	6	7	8	9
29.	I am sure I get a raw deal from life	1	2	3	4	5	6	7	8	9
30.	When I have to face a difficult situation I try to imagine what it will be like and plan ways to cope with it	1	2	3	4	5	6	7	8	9
31.	Doctors never really understand what is wrong with me	1	2	3	4	5	6	7	8	9
32.	After I fight for my rights, I tend to apologize for my assertiveness	1	2	3	4	5	6	7	8	9
33.	When I'm depressed or anxious, eating makes me feel better	1	2	3	4	5	6	7	8	9
34.	I'm often told that I don't show my feelings	1	2	3	4	5	6	7	8	9
35.	If I can predict that I'm going to be sad ahead of time, I can cope better	1	2	3	4	5	6	7	8	9
36.	No matter how much I complain, I never get a satisfactory response	1	2	3	4	5	6	7	8	9
37.	Often I find that I don't feel anything when the situation would seem to warrant strong emotions	1	2	3	4	5	6	7	8	9
38.	Sticking to the task at hand keeps me from feeling depressed or anxious	1	2	3	4	5	6	7	8	9
39.	If I were in a crisis, I would seek out another person who had the same problem	1	2	3	4	5	6	7	8	9
40.	If I have an aggressive thought, I feel the need to do something to compensate for it	1	2	3	4	5	6	7	8	9

Appendix M: Descriptives for DSQ-40 factor and individual defense mechanism scores

Table 1.
Descriptive Statistics for full DSQ-40

	Mean	SD	α
<i>DSQ-40, n=72</i>			
Mature Factor	5.46	1.07	.65
Sublimation	4.83	1.74	
Humour	6.75	1.60	
Anticipation	5.48	1.45	
Suppression	4.74	1.70	
Neurotic Factor	4.79	0.97	.42
Undoing	4.75	1.72	
Pseudo-altruism	5.95	1.34	
Idealisation	3.53	1.89	
Reaction Formation	4.92	1.68	
Immature Factor	3.98	0.88	.78
Projection	3.66	1.70	
Passive aggression	3.32	1.44	
Acting out	4.58	1.88	
Isolation	4.57	2.11	
Devaluation	3.57	1.34	
Autistic Fantasy	4.59	1.92	
Denial	2.99	1.34	
Displacement	4.09	1.78	
Dissociation	3.31	1.59	
Splitting	3.30	1.74	
Rationalisation	5.21	1.36	
Somatisation	4.51	2.08	

Note. An acceptable Cronbach's alpha (α) range from .70-.95 (Tavakol & Dennick, 2011).

Appendix N: Physiological equipment and LabChart channel set up

Diagram of equipment set up:

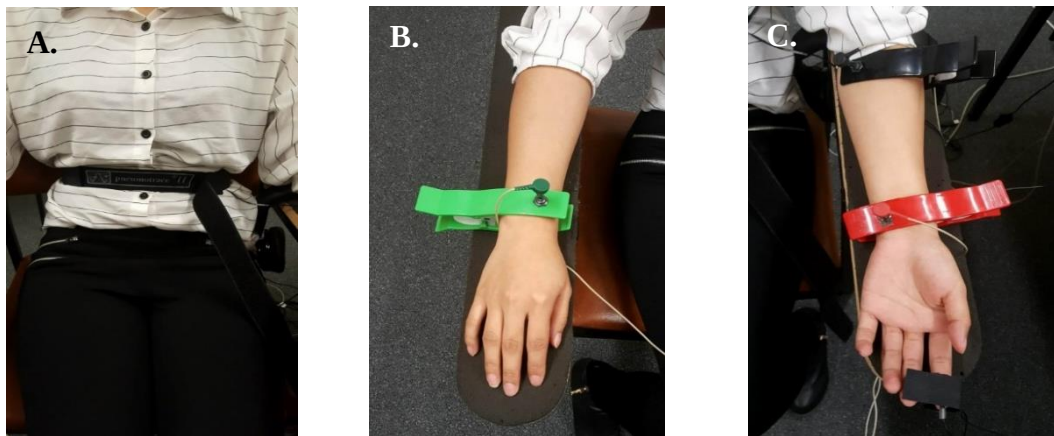
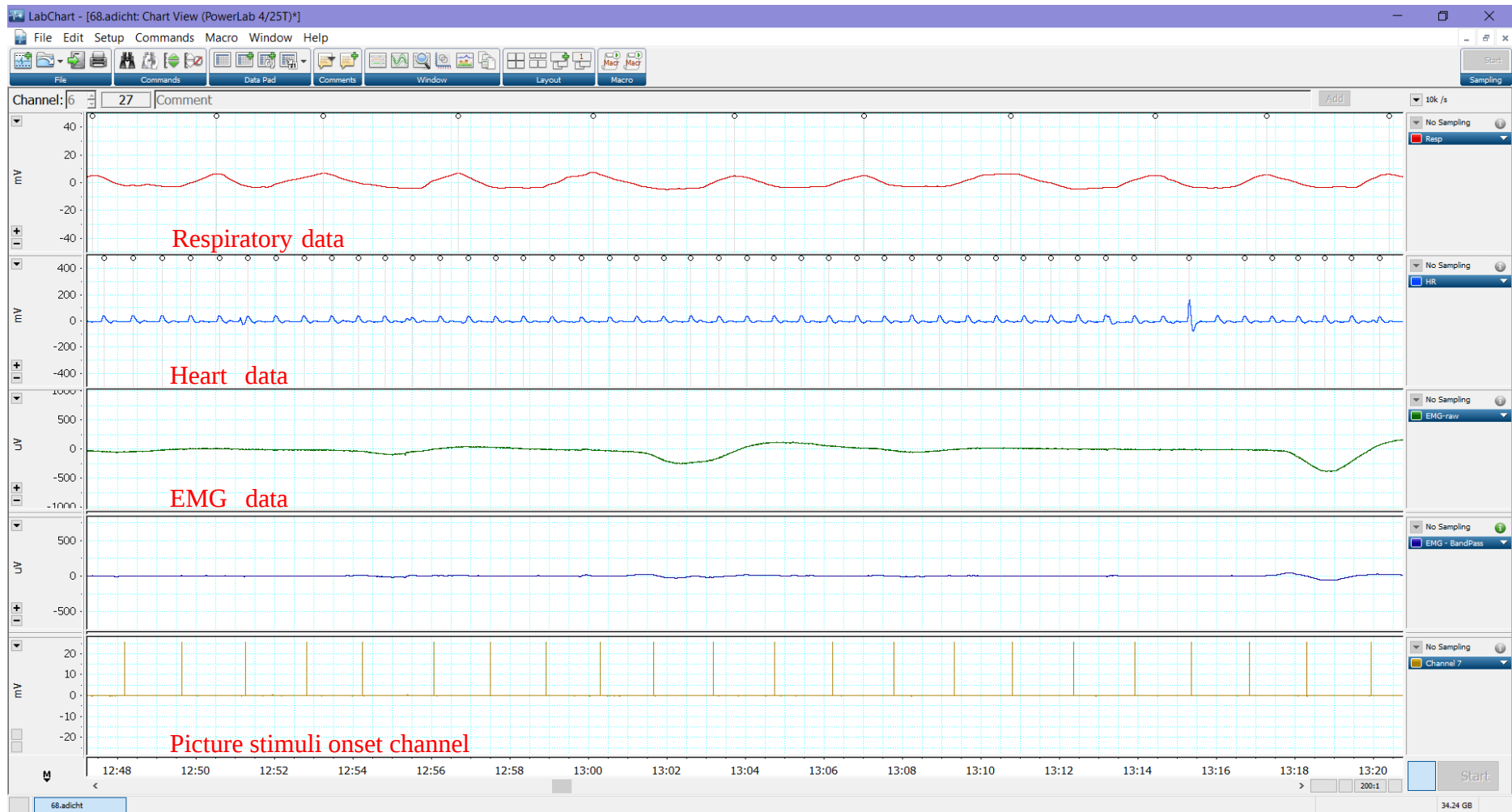


Figure 1. Physiological equipment placements. A) Respiration belt. B) EMG earth clip. C) EMG positive and negative clip and finger pulse monitor.

LabChart channel set up:

Adjustments to the amplification range (range selected for incoming data to be recorded, which directly effects data resolution) for the incoming data on LabChart were made. Respiratory data range was set to $\pm 20\text{mV}$ or $\pm 50\text{mV}$; heart rate at $\pm 500\text{mV}$; and EMG at $\pm 250\mu\text{V}$, $\pm 500\mu\text{V}$, or $\pm 1000\mu\text{V}$. The sampling rate (the interval that a data value is collected) was unchanged and set at 10K/s (10,000 data values collected per second). Mains filter was applied for all incoming data to remove interference from mains frequency ($\sim 50\text{-}60\text{Hz}$, electrical noise from equipment). EMG data collected were subtle movements detected using metal electrodes (covered a large surface recording area) i.e., recorded large summations of the electrical signal with a lower resolution. As a result, EMG signals recorded showed less deviation from zero and a slower frequency range compared to voluntary movements (in the delta wave range). Activity detected needed to be vacant of noise signals, thus additional notch (50Hz) and band-pass filters (low pass: 10 Hz and high pass: 0.3Hz, obtained frequencies between 10Hz and 0.3Hz) were applied. Unrelated movements observed during stimuli presentations (e.g., coughing) were noted on LabChart during the session and later removed.

LabChart channel display:



Appendix O: Stroop answer form

Practise1: YELLOW, GREEN, RED, YELLOW, GREEN, YELLOW, BLUE, RED, BLUE, YELLOW

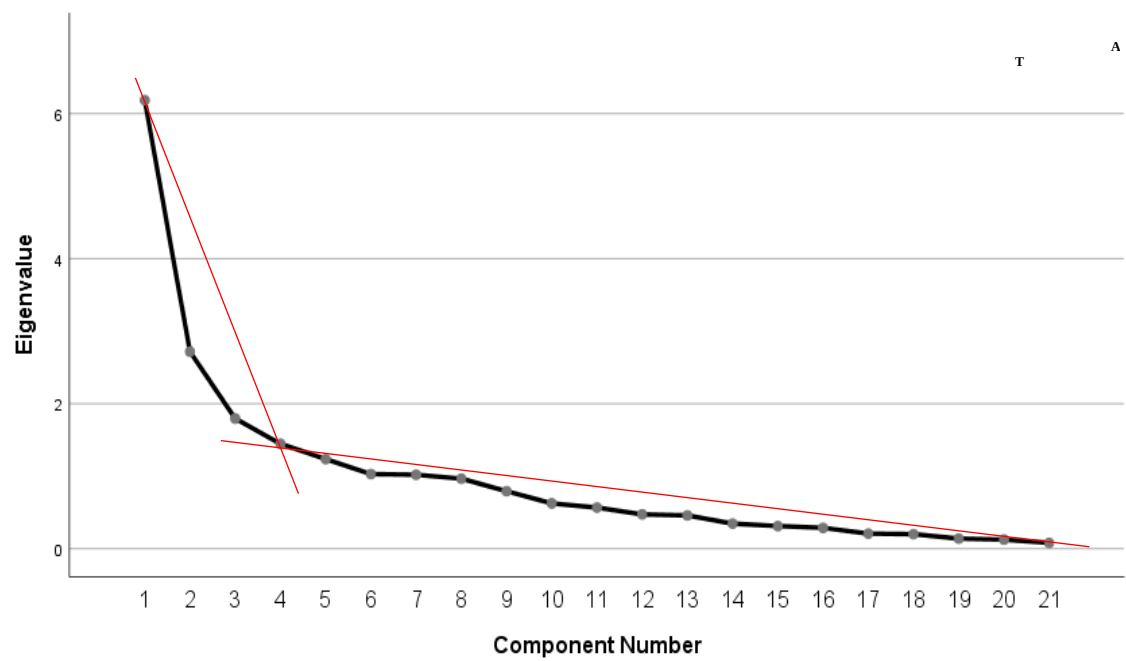
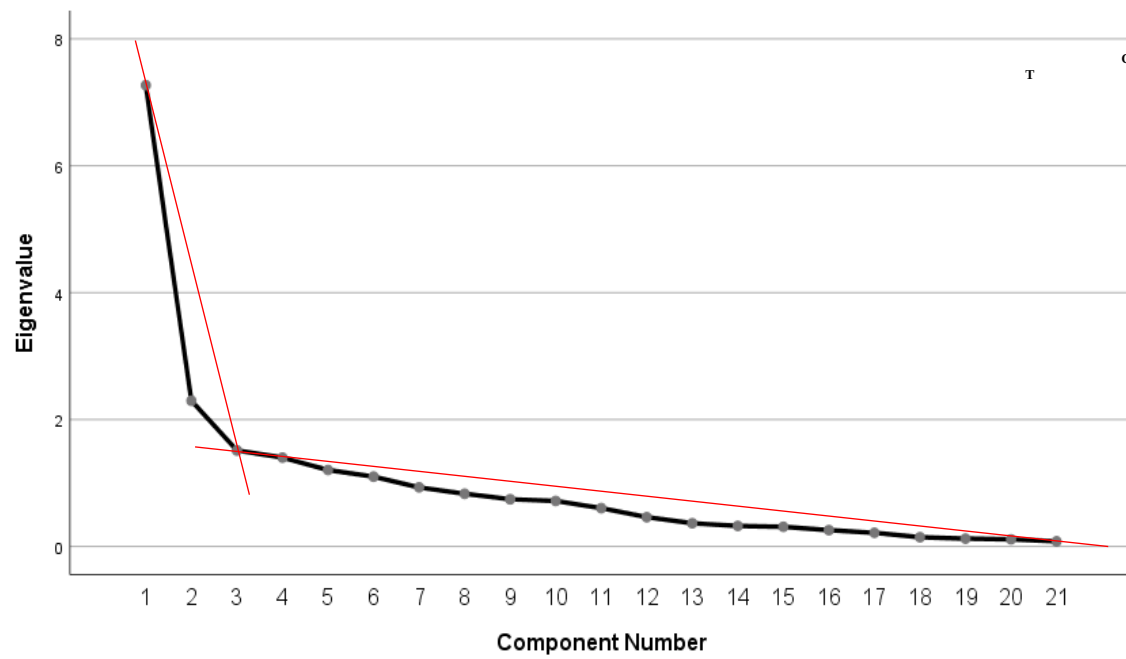
Practise2: BLUE, RED, GREEN, RED, GREEN, BLUE, YELLOW, RED, BLUE, GREEN

Option1	Colour
	GREEN
	YELLOW
	GREEN
	BLUE
	RED
	YELLOW
	BLUE
	YELLOW
	GREEN
	RED
	BLUE
	YELLOW
	GREEN
	RED
	BLUE
	YELLOW
	RED
	YELLOW
	GREEN
	BLUE
	YELLOW
	RED
	BLUE
	GREEN
	RED
	GREEN
	RED
	GREEN
	RED
	BLUE
	RED
	BLUE
	RED
	GREEN
	YELLOW
	BLUE
	RED
	GREEN
	BLUE
	YELLOW
	GREEN
	YELLOW

Option2	Colour
	YELLOW
	RED
	BLUE
	YELLOW
	RED
	YELLOW
	RED
	GREEN
	RED
	YELLOW
	GREEN
	BLUE
	GREEN
	BLUE
	RED
	BLUE
	RED
	BLUE
	RED
	YELLOW
	BLUE
	RED
	GREEN
	BLUE
	GREEN
	YELLOW
	BLUE
	GREEN
	RED
	GREEN
	BLUE
	GREEN
	YELLOW
	RED
	GREEN
	BLUE
	GREEN
	YELLOW
	BLUE
	YELLOW

Option3	Colour
	BLUE
	YELLOW
	RED
	GREEN
	RED
	BLUE
	YELLOW
	RED
	BLUE
	RED
	YELLOW
	GREEN
	YELLOW
	BLUE
	RED
	GREEN
	YELLOW
	GREEN
	RED
	BLUE
	RED
	YELLOW
	GREEN
	BLUE
	GREEN
	GREEN
	BLUE
	YELLOW
	GREEN
	RED
	GREEN
	RED
	YELLOW
	BLUE

Appendix P: PCA Scree plots for ADQ in GT and AT condition



Appendix Q: PCAs - Pattern matrix for three component fixed extraction

Table 1.

General Threat ADQ Pattern Matrix

General Threat ADQ Items	Pattern Matrix			Structure Matrix		
	Components			Components		
	STM	CPD	3	STM	CPD	3
STM - Item 1: Any muscle tension in your hands or forearms?	.63	.16	.33	.69	.41	.43
STM - Item 2: Any muscle tension in your shoulders or neck?	.62	.36	-.21	.69	.44	-.05
STM - Item 3: Any muscle tension in your chest?	.72	-.02	.26	.73	.23	.31
STM - Item 4: Any muscle tension in your lower back?	.76	-.04	.15	.77	.19	.19
STM - Item 5: A tension headache?	.28	.61	-.27	.40	.59	-.06
STM - Item 6: An increase in heart rate?	.07	.02	.77	.13	.28	.78
SM - Item 7: Feelings of nausea?	.26	.46	.30	.39	.61	.46
SM - Item 8: A dry throat?	.15	.08	.44	.20	.26	.48
SM - Item 9: Feeling Bloated?	-.07	.69	.17	.11	.73	.38
SM - Item 10: Feeling gassy?	.14	-.10	.72	.17	.16	.69
SM - Item 11: An urge to urinate?	.58	.09	.02	.61	.23	.09
SM - Item 12: Cold hands and/or fingers	.50	-.08	-.10	.48	.01	-.09
SM - Item 13: Any irritability in your bowels?	-.08	.09	.15	-.05	.12	.17
CPD - Item 16: Any difficulties in focusing?	.11	.75	.24	.30	.85	.49
CPD - Item 17: Any feelings of light-headedness or being faint?	-.15	.92	.01	.06	.88	.29
CPD - Item 18: Yourself feeling dizzy?	-.17	.87	-.03	.03	.82	.23
CPD - Item 19: Yourself losing track of your thoughts?	.01	.78	.18	.21	.84	.43
CPD - Item 20: Yourself having difficulty concentrating?	.16	.71	.29	.35	.84	.52
CPD - Item 21: Feeling spaced out?	.03	.86	-.03	.23	.86	.24
CPD - Item 22: Any distortions in your vision?	-.16	.35	.46	-.04	.46	.56
CPD - Item 23: Any ringing in your ears?	.05	.17	-.05	.09	.17	.01

Extraction method: principal component analysis. Rotation method: Oblimin with Kaiser Normalisation. Rotation converged in 7 iterations. Correlation coefficient above .4 is in **bold**

Table 2.

Attachment-Related ADQ Pattern Matrix

	Pattern Matrix			Structure Matrix		
	Components			Components		
<i>Attachment-Related ADQ Items</i>	<i>STM</i>	<i>SM</i>	<i>CPD</i>	<i>STM</i>	<i>SM</i>	<i>CPD</i>
STM - Item 1: Any muscle tension in your hands or forearms?	.82	.03	-.04	.82	.16	.18
STM - Item 2: Any muscle tension in your shoulders or neck?	.83	.00	.06	.84	.16	.28
STM - Item 3: Any muscle tension in your chest?	.82	.23	-.15	.81	.34	.11
STM - Item 4: Any muscle tension in your lower back?	.74	-.08	.01	.73	.05	.19
STM - Item 5: A tension headache?	.24	-.07	.42	.34	.06	.47
STM - Item 6: An increase in heart rate?	.64	.06	.07	.67	.19	.26
SM - Item 7: Feelings of nausea?	-.06	.46	.27	.09	.51	.35
SM - Item 8: A dry throat?	.16	-.21	.54	.26	-.07	.54
SM - Item 9: Feeling Bloated?	.06	.22	.61	.26	.36	.68
SM - Item 10: Feeling gassy?	.08	.81	-.07	.20	.81	.12
SM - Item 11: An urge to urinate?	.05	.73	-.15	.14	.70	.01
SM - Item 12: Cold hands and/or fingers	.17	-.01	.02	.17	.03	.07
SM - Item 13: Any irritability in your bowels?	.16	.73	.04	.29	.76	.23
CPD - Item 16: Any difficulties in focusing?	.13	.16	.76	.36	.34	.82
CPD - Item 17: Any feelings of light-headedness or being faint?	.11	-.01	.79	.32	.17	.81
CPD - Item 18: Yourself feeling dizzy?	.01	-.06	.79	.21	.10	.78
CPD - Item 19: Yourself losing track of your thoughts?	-.14	.16	.82	.11	.31	.82
CPD - Item 20: Yourself having difficulty concentrating?	.06	.17	.76	.29	.34	.81
CPD - Item 21: Feeling spaced out?	-.08	-.05	.84	.13	.11	.80
CPD - Item 22: Any distortions in your vision?	-.09	.01	.47	.03	.09	.44
CPD - Item 23: Any ringing in your ears?	-.01	.17	.07	.03	.18	.10

Extraction method: principal component analysis. Rotation method: Oblimin with Kaiser Normalisation. Rotation converged in 5 iterations. Correlation coefficient above .4 is in **bold**

**Appendix R: PCAs - three component Pattern and Structure matrix with items
removed tables with total variance explained tables**

GT PCA - three component Pattern and Structure matrix with items removed

Table 1.

General Threat ADQ Pattern and Structure matrix with items removed

General Threat ADQ Items	Pattern Matrix Components			Structure Matrix Components		
	STM	CPD	3?	STM	CPD	3?
STM - Item 1: Any muscle tension in your hands or forearms?	.74			.80		.42
STM - Item 2: Any muscle tension in your shoulders or neck?	.66			.68		
STM - Item 3: Any muscle tension in your chest?	.76			.76		
STM - Item 4: Any muscle tension in your lower back?	.87			.82		
STM - Item 6: An increase in heart rate?					.47	
SM - Item 8: Feelings of nausea?		.42		.52	.44	.60
SM - Item 11: Feeling gassy?			.86		.87	
SM - Item 12: An urge to urinate?	.54			.56		
SM - Item 14: Any irritability in your bowels?			.42		.41	
CPD - Item 17: Any difficulties in focusing?		.77		.40	.42	.86
CPD - Item 18: Any feelings of light-headedness or being faint?		.97				.91
CPD - Item 19: Yourself feeling dizzy?		.93				.86
CPD - Item 20: Yourself losing track of your thoughts?		.84				.87
CPD - Item 21: Yourself having difficulty concentrating?		.74		.48	.43	.85
CPD - Item 22: Feeling spaced out?		.85				.85

Extraction method: principal component analysis. Rotation method: Oblimin with Kaiser Normalisation. Rotation converged in 7 iterations.

AT PCA - three component Pattern and Structure matrix with items removed

Table 2.

Attachment-Related ADQ Pattern matrix with items removed

Attachment-Related ADQ Items	Pattern Matrix Components			Structure Matrix Components		
	STM	SM	CPD	STM	SM	CPD
STM - Item 1: Any muscle tension in your hands or forearms?	.85			.84		
STM - Item 2: Any muscle tension in your shoulders or neck?	.82			.83		
STM - Item 3: Any muscle tension in your chest?	.81			.83		
STM - Item 4: Any muscle tension in your lower back?	.75			.74		
STM - Item 6: An increase in heart rate?	.64			.68		
SM - Item 8: Feelings of nausea?		.43			.48	
SM - Item 11: Feeling gassy?		.84			.83	
SM - Item 12: An urge to urinate?		.73			.71	
SM - Item 14: Any irritability in your bowels?		.76			.79	
CPD - Item 17: Any difficulties in focusing?			.80			.85
CPD - Item 18: Any feelings of light-headedness or being faint?			.79			.81
CPD - Item 19: Yourself feeling dizzy?			.81			.79
CPD - Item 20: Yourself losing track of your thoughts?			.86			.85
CPD - Item 21: Yourself having difficulty concentrating?			.79			.83
CPD - Item 22: Feeling spaced out?			.86			.83

Extraction method: principal component analysis. Rotation method: Oblimin with Kaiser Normalisation. Rotation converged in 5 iterations.

PCAs - Total variance explained for three factor extraction and with items removed

Table 3.

General Threat ADQ total variance explained

	Component		
	STM	CPD	3?
Eigenvalues	2.07	6.18	1.37
% of variance	13.79	41.17	9.11

Table 4.

Attachment-related ADQ total variance explained

	Component		
	STM	SM	CPD
Eigenvalues	2.60	1.72	5.22
% of variance	17.34	11.50	34.78

Appendix S: Study 2 information sheet.



"Emotion Activation using Film Segments"

Information Sheet

Please read carefully before deciding to participate or not.

What is the Aim of the Project?

1. Investigate the relationship between different film presentations and how this affects peoples' emotions and bodily experiences.
2. If the observed differences in peoples' responses may relate to the different types of coping strategies they use in their daily life.

What will you be asked to do?

Should you agree to take part, you will watch a set of film clips on a computer (duration of 1-3 minutes per clip). You'll watch either one of the three types;

- Showing fearful content
- Showing the death of a loved one
- Showing only neutral content.

Prior to the film presentation, you will fill out some initial questionnaires as a baseline measure. Subsequently, the film presentation will begin; and after this, you will fill out some questionnaires regarding your mood state and bodily experience during the presentation. You will also fill out a questionnaire evaluating the content of the film presentation.

Once the survey is completed, we will provide you with a written debrief encompassing more information about the study.

The survey will take approximately 20 minutes to complete.

The film clips shown may cause distress for some people. If you have any lingering negative feelings (e.g., stress), please don't hesitate to read through the web pages provided at the end of this document. These entail useful information and strategies to help relieve stress.

Participation is voluntary and you are free to withdraw at any stage without penalty. You can withdraw by exiting the survey prior to completion or submitting the survey. Please note, that information cannot be withdrawn from the project once it has been submitted, as all information will be anonymised. Consent to participate is assumed by completion of the Survey. **Payment of \$3USD for your participation (paid through Mechanical Turk) will only be given to participants who complete this in an effective manner. Payment is based on legitimately answering every question and responding to the questionnaires within a minute of watching the videos.**

What will we do with the information collected?

The results of this project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation. All information will be anonymised and only the researchers will have access to the data, which will be securely stored electronically by password protection. After the conclusion of the experiment,

Martin Dorahy will keep a copy of the data for ten years, after which it will be destroyed. This project is part of a Ph.D. thesis, which is a public document and will be available through the University of Canterbury Library database once completed.

Further Information:

This project is being carried out as a requirement for a *Ph.D. thesis* by Lisa Chen, under the supervision of Martin Dorahy who can be contacted at the email addresses below. Lisa or Martin will be happy to address any concerns you have about participation in the project.
Contact details as follows:

-
-

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and complaints should be addressed to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)

Stress Reduction Web pages

General Stress Reducing Strategies

- <http://www.apa.org/topics/stress/index.aspx> https://www.mindtools.com/pages/main/newMN_TCS.htm (- Coping Strategies Tab)

Distress Tolerance Strategies

- <https://moodsurfing.com/distress-tolerance-2/> <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-tolerate-distress>

Emotion Management Strategies

- <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-regulate-emotions-part-one>
- <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-regulate-emotions-part-two>



Next →

Appendix T: Study 2 consent form.



"Emotion Activation using Film Segments" Consent Form

I have been given a full explanation of this project.

I understand that participation is voluntary and I may withdraw at any time prior to me submitting the full survey.

I understand that any information or opinions I provide will be kept confidential to the researcher and the supervisors and that any published or reported results will not identify me.

I understand that a thesis is a public document and will be available through the University of Canterbury Library.

I understand that information relating to general demographics (such as age and gender) will be gathered.

I understand that all data collected for the study will be kept in locked secure facilities and password protected electronic form, and will be destroyed after ten years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that for further information I can contact the researcher via email: _____ or
phone: +64 3 369 2693 or the supervisor Professor Martin Dorahy via email: _____ or
phone: +64 3 369 4337.

If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee,
Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

I wish to receive a summary of the study's results:

☒ Yes ☐ No

Email:

By clicking "Next" below and completing the survey, I understand what is required of me and I agree to participate in this research.

Next →

Appendix U: Study 2 Demographic questions.



Please fill in the following demographics below:

What is your age?

What is your sex?

How would you describe yourself?

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic, Latino or Spanish Origin

- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Other race, ethnicity or origin, please specify

Marital status:

- ☐ Single
- ☐ In relationship
- ☐ Married
- ☐ Widowed
- ☐ Divorced
- ☐ Separated

Have you ever been diagnosed with a mental health problem?

- ☐ Yes
- ☐ No
- ☐ Do not wish to disclose

Are you currently on any medication for psychological difficulties?

- ☐ Yes
- ☐ No
- ☐ Do not wish to disclose

Appendix V: Study 2 Written debrief form.



Debriefing form

You were shown one of three combinations of films used to elicit different emotions; neutral, grief/loss and fear. This study was interested in whether there were differences in individuals' emotions and bodily experiences, which include anxiety levels and dissociative experience, felt during different film presentations. Specifically, we wanted to see if there were differences between the neutral compared to the two unpleasant film presentations (grief/loss and fear). Individuals' emotions and bodily experiences felt during the film presentation were measured using the questionnaires that were presented after each film presentation.

Furthermore, if there were differences observed between the neutral and unpleasant film presentations, we would want to investigate this further. For example, for individuals that experienced higher levels of anxiety and/or dissociative experiences during the unpleasant film presentation, would they be more likely to experience more dissociative experiences in their daily lives and/or use more unhelpful coping styles. Participants' coping styles and dissociative experiences in their daily lives were assessed using two different questionnaires that were administered at the start of the survey.

If you have any lingering negative feelings (e.g., stress) please don't hesitate to read through the web pages provided at the end of this document. These web pages entail useful information and strategies to help relieve stress.

Thank-you for your participation. If you wish to withdraw at this stage, there will be no penalty and we will remove information relating to you. You can withdraw at this stage simply by exiting the survey. As all information are anonymised, once you press the completion button the information cannot be withdrawn from the project.

If you have any further questions regarding this project, please feel free to contact us:

Stress Reduction Web pages

General Stress Reducing Strategies

- <http://www.apa.org/topics/stress/index.aspx>
- https://www.mindtools.com/pages/main/newMN_TCS.htm (-Coping Strategies Tab)

Distress Tolerance Strategies

- <https://moodsurfing.com/distress-tolerance-2/>
- <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-tolerate-distress>

Emotion Management Strategies

- <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-regulate-emotions-part-one>
- <https://www.mindfulnessmuse.com/dialectical-behavior-therapy/top-10-ways-to-regulate-emotions-part-two>

Next →

Appendix W: Film segment information.

Fear Condition:

“Shining”

Film: "The Shining"

Target emotion: Fear

Clip length: 1'22"

Instructions: Advance to the first frame of the film, which shows a body of water surrounded by mountains. Reset the timer to 00:00:00:00 (hours:minutes:seconds:frames). Begin the clip at 00:56:51:15. At this point, a boy's hands are visible (one flat on the floor and the other in a fist). There are toy trucks and cars on a red, brown, and orange carpet. End the clip at 00:58:12:18. At this point, an open door with a key in the lock is visible, and one full second has passed since the boy has said: "Mom, are you in there?"

“Lambs”

Film: "Silence of the Lambs"

Target emotion: Fear

Clip length: 3'29"

Instructions: Advance to the first frame of the film in which the words "A STRONG HEART DEMME PRODUCTION" appear. Reset the timer to 00:00:00:00 (hours:minutes:seconds:frames). Begin the clip at 01:40:16:29. At this point, a dirt road and trees are in the forefront and a mint green trailer is in the background. Stop recording at 01:43:44:23. At this point, the profile of a dark-haired woman is visible. There is a metal wire hanging from the ceiling that appears to almost (but not quite) touch her nose and chin. Begin recording at 01:46:36:24. At this point, hands holding a gun are moving rapidly into the scene from the right of the screen. In the background, there is dirty yellow wallpaper. End the clip at 01:46:38:19. At this point, the dark-haired woman has her back to the yellow wallpaper and has pointed her gun between the upper-middle and the upper-right hand portions of the screen. Her right hand obscures most of the left half of her face and we hear her exclaim as the lights go out.

Grief/Loss Condition:

“Champ”

Film: The Champ

Target emotion: Sadness

Clip length: 2'51"

Instructions: Advance past the title, "Metro-Goldwyn-Mayer Presents," to the first frame in which the title is no longer visible. Reset the timer to 00:00:00:00 (hours:minutes:seconds:frames). Begin the clip at 01:50:29:02. At this point, a boxer is lying on a table in a locker room. The boxer says "Where's my boy?" Another man answers, "He's right here". Begin recording as a blond-haired boy walks out of a darkly lit area, just before you hear the boxer ask "Where's my boy?" for the last time. Stop recording at 01:50:52:05. At this point, the boxer says "TJ," and then says "Annie was

here tonight, TJ." Stop recording after he says "TJ" and before he says "Annie was here tonight, TJ." Begin recording at 01:51:56:14. Begin recording immediately before the child says "Yeah... The champ always comes through...". Stop recording at 01:52:26:04. At this point, the boxer has just closed his eyes and died. Begin recording at 01:53:15:21. At this point, we see a side view of the dead boxer lying on the table. The camera then goes to the boy who is standing in front of a tall man. Only the man's torso is visible. He is wearing a towel around his neck and is holding the boy's shoulders. The boy is crying and saying, "Champ". End the clip at 01:55:11:03. At this point, the boy is crying, saying "I want Champ." The man replies, "Please TJ, listen to me. He's gone. He's gone, son. He's gone." The child, still crying, replies, "No. No. He's not gone, he's not, he's not." Stop recording at the frame in which the boy backs away from the man.

“Angels”

Film: City of angels (number 36, code 46)

Target emotions: Sadness

Clip length:

Description: Maggie (female main) dies in Seth's (male main) arms. The beginning of the clip starts with a close-up of Maggie's, she is riding a bike. She's involved in a traffic accident and the segment ends when Seth rocks Maggie's dead body in his arms.

Neutral:

“Denali”

Film: “Alaska's Wild Denali”

Target emotion: Neutral

Clip length: 5'02”

Description: Segment begins right after a person plays the guitar, music is playing and fading and the visual is a silhouette of a mountain and midnight sky; the narrator talks about the Alaskan midnight sky. The clip ends when a buck is eating little grasses, and there is a shot of a mountain stream.

“Weather”

Source: YouTube

Target emotion: Neutral

Clip length: ~3mins

Description: Weather report of England.

Appendix X: Baseline measure of the Anxiety Discharge Questionnaire 20 items (ADQ-20).



We'd like you to now take a moment to pay close attention to your body and how you are feeling. Since starting this survey today, have you noticed...?

	None	Little	Some	Quite a bit	A lot
Any muscle tension in your hands or forearms?	☐	☐	☐	☐	☐
Any muscle tension in your shoulders or neck?	☐	☐	☐	☐	☐
Any muscle tension in your chest?	☐	☐	☐	☐	☐
Any muscle tension in your lower back?	☐	☐	☐	☐	☐
An increase in heart rate?	☐	☐	☐	☐	☐
An increased urge to sigh?	☐	☐	☐	☐	☐
Feelings of nausea?	☐	☐	☐	☐	☐
Feeling gassy?	☐	☐	☐	☐	☐
An urge to urinate?	☐	☐	☐	☐	☐
Any churning sensation in your stomach?	☐	☐	☐	☐	☐
An upset stomach?	☐	☐	☐	☐	☐
An increased urge to burp?	☐	☐	☐	☐	☐
Any tightness in your airways?	☐	☐	☐	☐	☐
Any irritability in your bowels?	☐	☐	☐	☐	☐
Any difficulties in focusing?	☐	☐	☐	☐	☐
Any feelings of light-headedness or being faint?	☐	☐	☐	☐	☐
Any dizziness?	☐	☐	☐	☐	☐
Losing track of your thoughts?	☐	☐	☐	☐	☐
Having difficulty concentrating?	☐	☐	☐	☐	☐
Feeling spaced out?	☐	☐	☐	☐	☐

Note. The question asked on the ADQ-20 administered after the film presentation was changed to “Since the start of the last film presentation, have you noticed...?”. In addition, a validity check statement was inserted beneath item: Any irritability in your bowels? Wording of this statement was: Please select "Quite a bit"

The boxed items in the above image were additional items added for Study 2, which included an extra item, “...have you noticed an increased urge to sigh?” was added to the STM factor. This was under the consideration that when individuals’ experiences anxiety discharge through straited muscles, it is often accompanied by frequent sighing (related to tension in intercostal muscles). For SM discharge type, the first two items added were “...have you noticed any churning sensation in your stomach?” and “...have you noticed an upset stomach”, these were added as it seem to convey for common literature descriptions of “abdominal pain”, “gastrointestinal tract spasm”, “abdominal cramps”, “irritable bowel symptoms”, and “GI

symptoms”. The third item “...have you noticed an increased urge to burp?” was added and was believed to represent common literature descriptions of “gas pain” or “reflux symptoms”. The fourth item added was “...have you noticed any tightness to your airway”, as this item was considered similar to descriptions like “bronchospasm” – narrowing of bronchi, “asthma”, “bronchi symptoms: asthma”, or “upper airway constriction mimicking asthma” reported to be a SM discharge experience.

Appendix Y: Study 2 Validation Checks in online survey in detail.

Validation Checks

Questionnaire validation checks. Across the survey several validation checks were applied. Firstly, two validation check questions were added into two questionnaires, the DES-II, and the ADQ-19 (post-film presentation). These questions asked participants to select a certain point on the rating scale. For example, in the DES-II, participants were asked to select the 20% on the rating scale. Additionally, there were two questions on the mPFQ that provided some information to whether individuals were putting genuine effort into the survey. The “interest” emotion score helped provide indication as to whether individuals paid attention to the video presentation or not (scores on this item should be larger than zero). The other question was whether participants had looked away which could be used to provide some indication to whether individuals’ paid attention and watched the entirety of the film segment.

Timing cut-offs. To ensure that participants had read and answered the trait questionnaires (DES-II and DSQ-40) in a genuine manner, timing cut-offs were used. Individuals that performed above the timing cut-offs were believed to have filled the questionnaires in a genuine manner. These cut-offs were determined by selecting the shortest completion time required for three postgraduate students who were highly familiar with these measures. It was determined that a cut-off time for the DES-II was 115s and the DSQ-40 was 160s. In addition, Participants’ responses on these measures were still considered valid if they performed at less than 10s below the cut-off (e.g., 105s completion time on the DES-II was considered valid). Another indirect method to check whether participants had watched the entirety of the film presentation and then proceeded to the questionnaires immediately was to check the time spent on the film presentation. Submitted survey responses were determined valid if participants remained on the film presentation page for at least 90% of the total film presentation time and that moved onto the questionnaires within 60 seconds after the total film presentation time.

Checking for bots. At the end of the survey, a bot question was added to test whether responses submitted was answered by a person or a bot (an autonomous program designed to behave like a human). The question was designed so that bot programs were unlikely to answer correctly. The question was: “If you are not a robot, what are the first and third letters in the name of the USA’s capital city?”. Additionally, following recommendation by Miele (2018), the bot question was displayed as an image (.jpeg) as bots were less likely to detect text within an image.

Appendix Z: Study 2 Ethics, HEC 2018/57

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2018/57



9 July 2018

Lisa Ying Xin Chen
Psychology
UNIVERSITY OF CANTERBURY

Dear Lisa Ying Xin

The Human Ethics Committee advises that your research proposal "Induced Anxiety and Its Relationship to Dissociation" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 3 July 2018.

Best wishes for your project.

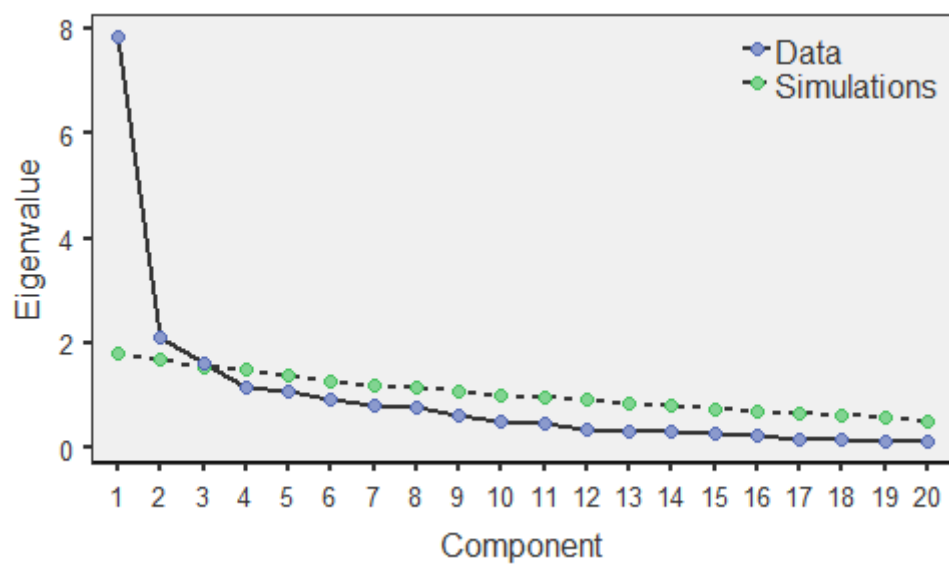
Yours sincerely

pp. *R. Robinson*

Professor Jane Maidment
Chair
University of Canterbury Human Ethics Committee

Appendix AA: Jamovi PCA Scree plot and Initial eigenvalues table for ADQ-20 (GT and AT collated data)

Scree Plot:



Initial Eigenvalues:

Initial Eigenvalues			
Component	Eigenvalue	% of Variance	Cumulative %
1	7.862	39.310	39.3
2	2.094	10.470	49.8
3	1.629	8.146	57.9
4	1.172	5.859	63.8
5	1.075	5.375	69.2
6	0.937	4.684	73.8
7	0.820	4.098	77.9
8	0.753	3.767	81.7
9	0.633	3.164	84.9
10	0.521	2.606	87.5
11	0.468	2.338	89.8
12	0.346	1.731	91.5
13	0.328	1.641	93.2
14	0.297	1.483	94.7
15	0.282	1.409	96.1
16	0.234	1.170	97.3
17	0.166	0.829	98.1
18	0.152	0.762	98.8
19	0.128	0.640	99.5
20	0.103	0.516	100.0

Appendix AB: PCAs – Component Loadings

Component Loadings

ADQ-20 items	Component			Uniqueness
	1	2	3	
ADQ_STM_1			0.791	0.360
ADQ_STM_2			0.834	0.299
ADQ_STM_3			0.661	0.341
ADQ_STM_4			0.588	0.560
ADQ_STM_5	0.491			0.576
ADQ_STM_6				0.741
ADQ_SM_7	0.781			0.315
ADQ_SM_8	0.795			0.391
ADQ_SM_9	0.516			0.733
ADQ_SM_10	0.804			0.278
ADQ_SM_11	0.861			0.212
ADQ_SM_12		0.443		0.680
ADQ_SM_13	0.460			0.641
ADQ_SM_14	0.825			0.327
ADQ_CPD_15		0.740		0.281
ADQ_CPD_16	0.527			0.439
ADQ_CPD_17	0.550			0.484
ADQ_CPD_18		0.799		0.210
ADQ_CPD_19		0.916		0.207
ADQ_CPD_20		0.766		0.341

Note. 'oblimin' rotation was used

Appendix AC: Study 2 Descriptive Statistics for full DSQ-40

Table X.
Descriptive Statistics for full DSQ-40

	Mean	SD	α
<i>DSQ-40, n=215</i>			
Mature Factor	5.36	1.25	.65
Sublimation	5.04	1.73	
Humour	6.04	1.82	
Anticipation	5.20	1.88	
Suppression	5.13	1.77	
Neurotic Factor	3.98	1.25	.60
Undoing	3.49	1.81	
Pseudo-altruism	5.21	1.82	
Idealisation	3.02	1.91	
Reaction Formation	4.20	1.89	
Immature Factor	3.25	0.98	.81
Projection	3.20	1.75	
Passive aggression	2.98	1.69	
Acting out	3.08	1.71	
Isolation	3.77	2.04	
Devaluation	3.13	1.49	
Autistic Fantasy	3.51	2.17	
Denial	2.30	1.29	
Displacement	3.62	1.89	
Dissociation	2.15	1.35	
Splitting	2.96	1.62	
Rationalisation	5.08	1.74	
Somatisation	3.25	1.88	

Note. An acceptable Cronbach's alpha (α) range from .70-.95 (Tavakol & Dennick, 2011).

Appendix AD: Final ADQ-13 measure.

Since starting this survey today, have you noticed...?

	None	Little	Some	Quite a bit	Alot
Any muscle tension in your hands or forearms?	0	1	2	3	4
Any muscle tension in your shoulders or neck?	0	1	2	3	4
Any muscle tension in your chest?	0	1	2	3	4
Any muscle tension in your lower back?	0	1	2	3	4
Feelings of nausea?	0	1	2	3	4
Feeling gassy?	0	1	2	3	4
An urge to urinate?	0	1	2	3	4
An upset stomach?	0	1	2	3	4
Any irritability in your bowels?	0	1	2	3	4
Any difficulties in focusing?	0	1	2	3	4
Losing track of your thoughts?	0	1	2	3	4
Having difficulty concentrating?	0	1	2	3	4
Feeling spaced out?	0	1	2	3	4

Note. The question asked on the ADQ-13 can be changed accordingly.

