

DEFINING DISSOCIATION BASED ON THE FACTOR STRUCTURES OF
THREE INSTRUMENTS

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THREE INSTRUMENTS

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DISSERTATION ABSTRACT
DEFINING DISSOCIATION BASED ON THE FACTOR STRUCTURES OF
THREE INSTRUMENTS

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Dissociation is a poorly defined construct in the literature. The 1st goal of this research was to better define and understand the concept of dissociation through factor analytic study of 3 common measures of dissociation, the DES-II, the DIS-Q, and the QED. The literature concerning the factor analysis of these 3 measures of dissociation is inconsistent.

395 participants were administered a packet of questionnaires including the 3 measures of dissociation, a demographics questionnaire, and 2 measures for validity purposes. Results from the factor analyses revealed a 5 factor structure for the DES-II, a

6 factor structure for the QED, and an insufficient factor structure for the DIS-Q. A 2nd goal was to develop a model of dissociation based on a higher order confirmatory factor analysis of the DES-II and QED factors. The higher order CFA between the DES and QED resulted in a model that was a poor fit. Implications are discussed.

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I. INTRODUCTION

Dissociation is a controversial, much debated construct in the psychological literature. Briefly put, it is “a lack of the normal integration of thoughts, feelings, and experiences into the stream of consciousness and memory” (Berstein & Putnam, 1986, p. 727). Most often associated with dissociative identity disorder (DID); dissociation is also exhibited in nonpathological behaviors. For example, runners often dissociate during a marathon in order to complete the arduous task, and many individuals dissociate during simple tasks such as driving a vehicle. Dissociation manifests in many of the *Diagnostic and Statistical Manual for Mental Disorders, (IV-tr) (DSM-IV-TR*, American Psychiatric Association, 2000) disorders such as obsessive compulsive disorder, eating disorders, posttraumatic stress disorder, and especially the dissociative disorders (Ross, 1999). Interestingly, although the literature on dissociation and the dissociative disorders has increased in the past ten years, little of the research is quantitative, and even less is experimental. Therefore, a substantial body of consistent research results does not yet exist (Kihlstrom, 2001; Ross, 1999).

A better understanding of the construct of dissociation is needed in the dissociation literature. The goal of this research is to better define and understand dissociation through factor analytic study of three common measures of dissociation, the Dissociative Experiences Scale-II (DES-II), the Dissociation Questionnaire (DIS-Q), and the Questionnaire of Experiences of Dissociation (QED). A body of the current

dissociation literature focuses on the factor structure of these measures through the use of exploratory factor analysis (EFA). The results are inconsistent as many different factor models have been found. The current study seeks to better define the factor structure of these scales by applying the number of factors found in the literature to the population used in this research to develop a factor structure of best fit. The second goal of the current research is to use the factors from the DES, QED, and DIS-Q to better define the construct of dissociation.

History of Dissociation

The modern study of dissociation dates back to the early 19th century with debates about association and dissociation of the mind and whether dissociation is continuous or discontinuous. Four of the most influential exemplars of 19th century interest in dissociation are Pierre Janet, F.W. Myers, Morton Prince, and Boris Sidis (Rieber, 2006).

Predecessors of Janet

Pierre Janet was perhaps one of dissociation's most valuable students. However, before considering Janet, it is important to recognize those who preceded and influenced him. Benjamin Rush, an American physician, was most likely one of the first to use the term dissociation (van der Hart & Horst, 1989). However, he used the term to describe patients suffering from mania or schizophrenia (van der Hart & Horst, 1989).

Meanwhile, Moreau de Tours took a more cognitive view of dissociation, describing dissociation as the splitting off of ideas that were not integrated (van der Hart & Horst). Charles Richet, another predecessor of Janet, distinguished three parts of what he termed the intellectual existence of man which included the personality, perceptions of events outside of the individual, and the ego. He described the ego as the one who both

observes and acts (van der Hart & Horst, 1989). He believed that those in a somnambulistic state have dissociated these parts of intellectual existence. Charcot was one of Janet's mentors who believed hypnosis to be artificial hysteria (Rieber, 2006). Charcot's view of dissociation was that certain centers of the psychic organ were being put into place without the psychic organ's awareness of it (van der Hart & Horst, 1989). Gilles de Tourette used dissociation to describe the abolition of senses in hysterical patients (van der Hart & Horst, 1989).

Pierre Janet

Janet built on the work of those before him using Lucie, his client who suffered from DID, as a case study (van der Hart & Horst, 1989). Janet used the term dissociation in the same sense as Charcot and Tourette: to describe a variety of phenomena which characterized his hysterical subject Lucie. *L'Automatisme Psychologique* was Janet's dissertation and first major study of dissociation (van der Hart & Horst, 1989). He developed the idea of psychological automatisms in 1889 which he believed to be elementary structures that made up the mental system (Rieber, 2006).

Janet believed automatisms, or complex acts that are responsive to both internal and external stimuli, were separate, but also connected to form the stream of consciousness (Kihlstrom, 2001). Along with this idea, he described the breakdown of this stream of consciousness, which he called "desaggregation" (dissociation). He defined desaggregation as the splitting off of at least one automatism from the others which then functions out of the voluntary control or the awareness of the individual (Kihlstrom, 2001).

Janet postulated that consciousness functioned as a system; however, an individual could be managed by two or more systems of consciousness (van der Hart & Horst, 1989). Janet thought that in certain pathological cases, a dissociation of personality occurs where a portion of the personality splits off to become a subpersonality (Spiegel, 1994). Janet believed the subconscious was composed of psychological automatisms. He thought that when a traumatic experience occurs, new nuclei of consciousness, independent from the central personality, develop (van der Hart & Horst, 1989). These nuclei (or psychological automatisms) are defensive maneuvers for individuals to shield themselves from the trauma (van der Hart & Horst, 1989). As some of these nuclei grow through association with new images and ideas, the central personality is weakened, and somnambulistic states sometimes take over (van der Hart & Horst, 1989). This was Janet's theory of how DID developed.

To expand upon the idea of somnambulistic states, Janet also developed the idea of narrowing of the field of consciousness (van der Hart & Horst, 1989). He believed the capacity for integration and the extent of consciousness were different from individual to individual; and that the field of consciousness was restricted in hysterical patients. He believed hysteria had two components; a narrowed field of consciousness and dissociation (van der Hart & Horst, 1989). Janet believed that many factors including trauma and vehement emotions could disturb the integrative capacity of the mind and lead to the splitting off of psychological systems (van der Hart & Horst, 1989). The resulting dissociated state could take over the regulatory system or interfere with the primary operating system. The dissociated states are thoughts, or mental images which are charged emotionally and, in hysterical patients, are isolated from the personality.

Janet believed these dissociated states exist in different degrees of complexity ranging from his idea of single *idée fixe* (fixed idea) to alter personalities. He also believed the dissociated states may remain isolated, or they may link to new information, grow, and dominate. He thought the individual is unaware of dissociated states due to dissociating when they occur (van der Hart & Horst, 1989). Janet also sought to describe flashbacks and intrusive thoughts, but thought of them as fixed ideas which disturbed consciousness. According to Janet's theory, the most complex dissociated state is an alter personality which may have its own life history and a distinct way of interacting with the environment (van der Hart & Horst, 1989).

In line with contemporary psychologists, Janet believed that alternative personalities could be reached through hypnosis. For Janet, suggestibility was a specific manner of addressing the subconscious (van der Hart & Horst, 1989). Janet believed that while hypnotized, the subconscious of the individual could be reached through suggestions made to the individual. Although the individual may not be aware of what was said, the information is stored in the subconscious. Janet believed suggestibility to be more prevalent in high dissociators due to their narrow field of consciousness, tendency to easily dissociate, and the ease at which their subconscious submits itself to another's directions. Janet coined the term *monoideic somnambulism* (monoideism) meaning a single idea dominates the conscious while everything else is dissociated (Rieber, 2006).

Janet's ideas were ahead of his time. Not only did he build upon the ideas of those before him, but he also paved the way for those following him. In fact, many of his theories of dissociation are similar to the theories that continue to exist today.

Myers, Prince, and Sidis

F.W. Myers was another individual who greatly influenced the development of thinking about dissociation. He tried to distance himself from Janet's automatism approach because Janet's automatisms were purely psychological in nature; Myers argued that unconscious aspects of consciousness had physiological correlates (Myers, 1954). He believed the human mind to be capable of more than one type of consciousness. Meyers argued for the existence of a bifurcation of the self, a secondary self within individuals that could be completely separate from the primary self (Rieber, 2006). This was the basis of his understanding of dissociation.

In 1906 Morton Prince wrote *The Dissociation of a Personality* (Spiegel, 1994). Prince strove to go beyond Janet to develop a physiologico-anatomical basis for the psychological phenomenon in Janet's work (Rieber, 2006). He studied the physiological aspects of multiple personality disorder and hysteria. He stated that no single principle could account for all of the facets of the disorder. He looked to John Hughlings Jackson, the father of neurology, for guidance (Rieber, 2006).

Jackson divided the mental processes into higher complex processes of thought and voluntary movements, and lower automatic subconscious processes (Rieber, 2006). This mind-body process theory was based on "duality of personality," which had two aspects: complex associated states of consciousness such as memories of the conscious individual, and autonomous subconscious mental states (Rieber, 2006). He associated more autonomous subconscious mental states with second level, middle motor and sensory regions of the brain and the central nervous system. He associated the higher

complex states of the subconscious with the higher level processes of the brain (Rieber, 2006).

Prince attempted to apply Jackson's theories to pathological cases (Rieber, 2006). Prince's theory helped explain why sensory impressions are perceived and not recorded in hypnosis. Prince was unsure of what areas of the brain were involved, but explained physiologically why there could be an inhibition of higher centers while middle centers could continue to be reached (Rieber, 2006).

Boris Sidis was a student of William James who endorsed Janet's view of the unconscious (Rieber, 2006). He had a dynamic, neurophysiological theory developed in 1898 in an article called "Neuron Energy." He believed that neurons possessed a level of "dynamic energy." He postulated that neurons cluster, and when they dissociated from one another, their energy changed and resulted in dissociation (Rieber, 2006). He believed neuronal energy was associated with different states of consciousness, which resulted in degeneration of neurons and their aggregates, which are correlated with clinically observed symptoms. Like many today, Sidis believed one could discover the original traumatic event that brought about multiple personality disorder through the process of hypnosis. He believed that hypnotic recovery of memories could achieve integration of the self (Rieber, 2006).

Many other philosophers and neurologists contributed to the body of literature about dissociation that exists today. Johann Friedrich Herbart (1776-1841), for example, postulated that dissociation occurs along a continuum and is not necessarily pathological (Rieber, 2006; Ross, 1985).

Hypnosis

Dissociation cannot be overviewed without considering the topics of hypnosis and suggestion. Hippocrates recognized the importance of suggestion (Rieber, 2006). He convinced his patients that they would get well and thought he could induce sleep by commanding it. Paracelsus believed the attitude of an individual toward his own illness could effect the course of the disease. He believed that magnets could be used to concentrate fluids that possessed healing properties within the body to cure illness (Rieber, 2006). Valentine Greatrakes was the first great faith healer. He healed by touch and explained this by invisible entities that passed from his body to others (Rieber, 2006). Like dissociation, many writers have contributed to contemporary ideas about hypnosis. Anton Mesmer was among them. He believed there was a universal fluid within the individual and that individuals suffering from illness such as hysteria were bothered by the ebb and flow of this fluid in their body (Rieber, 2006). He looked to control this fluid with magnets, calling this “animal gravitation,” and later “animal magnetism.” He discovered how to put a patient into a hypnotic trance and, later, recognized the role played by suggestion. Abbe Faria (1819) published *On the Cause of Lucid Sleep* which replaced Mesmer’s term “animal magnetism” with the term “concentration” (Rieber, 2006). He called trances, lucid sleep. He had his subjects relax and concentrate on sleep (a hypnotic trance) and also experimented with posthypnotic suggestion. James Braid coined the term hypnotism (Rieber, 2006). He also established that the basis of hypnotism was not physical, but psychological. He stated that in order to accomplish this, the individual must clear his mind and focus on the concept of sleep. Ambroise-Auguste Liebault emphasized suggestion as effective therapy for dissociation (Rieber,

2006). With Hipolyte Bernheim, Liebault led the Nancy School of Hypnosis (Rieber, 2006). This school rivaled Charcot's Salpetriere School, which considered the ability to be hypnotized abnormal. Charcot's school believed that only hysterics could be hypnotized. The Nancy School, which eventually prevailed, believed the ability to be hypnotized was normal and not pathological (Rieber, 2006).

Sigmund Freud

The contribution of the studies of Sigmund Freud to this literature cannot be denied as dissociation is an unconscious process (Rieber, 2006). Freud was shaped by Charcot, but studied with Breuer. He was the first to use hydrotherapy and electrotherapy to treat hysteria (Rieber, 2006). He studied at the Nancy school of hypnosis and used hypnosis to treat patients. Freud followed the cathartic method of Breuer, having patients recall past traumas under hypnosis. Freud and Breuer found that physical symptoms could develop from psychological states (Rieber, 2006). They also believed that not everyone could be hypnotized. They developed psychoanalysis which included free association where they discovered that psychological symptoms were associated with emotional memories. They also developed the ideas of repression and resistance. Freud related problems to sexuality and rape. Early on, he believed his patients had been sexually abused, but repressed their memories of the painful events. He connected dissociation and double consciousness as central features of hysteria (Rieber, 2006). Freud viewed dissociation as a purely psychological process and used Janet's term "dissociation" to describe the phenomenon (Rieber, 2006). After 1910, Freud used the term "repression" instead of dissociation. Freud was later ostracized for his ideas of repressed sexual abuse and he repudiated his trauma theory (Rieber, 2006).

Although Janet and Freud both used the term dissociation, Janet described dissociation as a deficit phenomenon (Spiegel, 1994). Janet believed that alternate personalities split off from the ego (the core personality) as a result of insufficient binding energy caused by genetics, life stressors, trauma, etc. Freud, on the other hand, believed that dissociation was an active defense phenomenon. He thought that when a subsystem of ideas, wishes, thoughts and memories threatened the integrity of the overall psychic system, they are split off to protect the system (Spiegel, 1994).

Carl Gustav Jung was influenced by Janet and Freud. He thought the unity of consciousness was an illusion (Spiegel, 1994). Jung described what he called the *Vorstellungskomplex*, an emotionally charged complex of representations (Spiegel, 1994). He used the term “complex” for short and thought these representations could move by themselves and live a life of their own. He viewed these subpersonalities as hysteria/neurosis (Spiegel, 1994). Durand de Gros had another perspective on dissociation. He developed the term “polypsychism,” a system involving an ego-in-chief and a legion of subegos. He believed that in hypnosis, the ego-in-chief is pushed aside and direct access to the subego is achieved (Spiegel, 1994).

Hilgard’s Neodissociation

As the zeitgeist turned to the reign of Freud’s concept of repression and related dynamic theories, dissociation nearly disappeared from the lexicon of psychiatry. However, after WWII, during the “cognitive revolution,” interest in consciousness returned and dissociation again caught the attention of psychology (Kihlstrom, 2001). Hilgard’s neodissociation theory stated that the mind is composed of mental structures that control thought, experience, and action in different domains. These structures are

separate, but act as a system. Dissociation is thought of as a breakdown in system integration, producing divided consciousness (Hilgard, 1977). His theory, originally based on the study of hypnosis, was developed when he observed task interference in an individual's attempt to perform more than one task at a time (Hilgard, 1994). From these studies, he also developed the "hidden observer phenomenon" based on the observation that a hypnotized individual who is not aware of sensory information may be processing it for recall at a later time. Neodissociation theory is based on three major assumptions (Hilgard, 1994). First, within the cognitive system are subordinate systems, each of which has some level of unity as well as autonomy with other systems. Although the systems interact, they can become isolated from one another. Second, there is a hierarchical control system that manages competition between the subsystems. Third, there is an even greater, overarching structure that controls these subsystems. Hilgard believed the executive ego to be the central control structure (Hilgard, 1994).

Dissociation: A Defensive Function

It is clear that dissociation is a topic that has been debated over time. The past and current literature is expansive, composed of many different theories about what dissociation is and how it develops. Dissociation is now conceptualized as having a defensive, adaptive function. It is considered to act as a defense mechanism for individuals following a traumatic event, allowing the victims to detach themselves from the full impact of the trauma (Ijzendoorn & Schuengel, 1996; Tarnopolsky, 2003; Thomas, 2003). According to one prominent theorist (Putnam, 1995), dissociation has four defensive functions including automatization, compartmentalization, alteration of identity, and protection from unbearable pain. Automatization involves redirecting the

consciousness away from an activity that continues to be performed. This usually involves redirecting attention from external to internal activities (ex: when driving a car, redirecting attention from driving to daydreaming). Compartmentalization involves partitioning off certain specific areas of consciousness from one another. This is especially seen following exposure to a traumatic event. During alteration of identity, the individual is unaware of his identity, and sometimes creates a new identity. The last defensive mechanism is protection from pain, whether the pain is physiological, or psychological, the individual dissociates to numb the pain.

Dissociation on a Continuum

Dissociation has been said (Putnam, 1995) to exist on a continuum ranging from minimal dissociation to dissociative identity disorder. However, dissociation can also be viewed as a unique state of consciousness. This unique state of consciousness maintains certain features, including isolation of memory and affects normal states of consciousness, disturbance in identity, and absorption or focused concentration. These two accounts of dissociation are said to be layered as dissociation is considered a specific state of consciousness that individuals can experience at different degrees (Putnam, 1995).

The Dissociative Disorders

The dissociative disorders are a group of disorders whose commonality is an alteration in consciousness that affects memory and identity (Kihlstrom, 2001). According to the *DSM-IV, tr* (American Psychiatric Association, 2000), there are five dissociative disorders: dissociative amnesia, dissociative fugue, dissociative identity disorder, depersonalization disorder, and dissociative disorder, not otherwise specified

(NOS). Dissociative amnesia is characterized by episodes of "inability to recall important information, usually of a traumatic or stressful nature, that is too extensive to be explained by ordinary forgetfulness" (American Psychiatric Association, 2000); whereas dissociative fugue involves sudden, unexpected travel away from home, or work with an inability to recall the past. An individual in a dissociative fugue is often confused, or assumes a new identity. Dissociative identity disorder is characterized by the presence of two or more distinct identities which take control of the individual's behavior. It further involves the inability to recall pertinent personal information. Depersonalization disorder involves feeling detached to the extent that one feels like a separate entity from the body. When the individual's major symptom is dissociation, but the individual does not meet criteria for the other dissociative disorders, the diagnosis of dissociative disorder, not otherwise specified is used.

Before coming to these concise definitions, the *DSM* went through many revisions of the dissociative disorders. These revisions speak to not only the evolution of the dissociative disorders, but also to the evolution of the conceptualization of dissociation. Before the *DSM* was developed, the dissociative and conversion disorders were classified as hysterical reactions. The *DSM I* classified the dissociative disorders as psychoneurotic disorders and included the diagnoses of depersonalization, dissociated personality, stupor, fugue, amnesia, dream states, and somnambulism (American Psychiatric Association, 1952). This classification of the dissociative disorders was influenced by psychoanalytic theory. The *DSM-II* continued to reflect psychoanalytic thinking by categorizing the dissociative disorders as hysterical neurosis dissociative type and conversion disorders as hysterical neurosis, conversion type (American Psychiatric Association, 1968). The

DSM-III & DSM III-R used a separate classification for the dissociative disorders. The separate class of dissociative disorders included psychogenic amnesia, psychogenic fugue states, multiple personality disorder (MPD), depersonalization syndrome, and atypical dissociative disorder (American Psychiatric Association, 1980; 1987). The conversion disorders were then classified under somatoform disorders. In the *DSM-IV*, the main feature of the dissociative disorders is that they entail a disturbance in the normal integration of identity, memory, or consciousness that cannot be accounted for by injury or disease. The *DSM-IV* also provided an explicit criterion of amnesia in MPD, and MPD was renamed dissociative identity disorder (DID; American Psychiatric Association, 1994). Dissociative identity disorder, not otherwise specified was also added to the dissociative disorders to account for those that resembled DID without amnesia and derealization without depersonalization and trance states (American Psychiatric Association, 1994).

The etiology of dissociation and the prevalence of dissociative disorders is controversial in the literature. Much evidence indicates that there is a strong relation between DID and a history of childhood sexual abuse; however, a causal link has not been made. The prevalence of the dissociative disorders is much debated especially with the development of diagnostic and screening measures which allowed researchers to better quantify dissociation.

Measures of Dissociation

Dissociative Experiences Scale-II

Numerous scales have been developed to measure dissociation; however, the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) continues to be the

most commonly used in both research and practice. The DES is a 28-item paper and pencil, self report scale. It is a screener for the dissociative disorders and quantifies dissociative pathology. The DES was developed to measure dissociation in both clinical and nonclinical populations and was developed using clinical data and interviews, reports of experts in the field of dissociation, and scales that measure memory loss (Bernstein & Putnam). The DES is not a diagnostic instrument, but a screening instrument; scores above 20 are indicative of a substantial number of dissociative experiences (Ross, Joshi, & Currie, 1990).

There is much inconsistency concerning the factor structure of the DES. Some studies have found three factors, some one, and others four. Many studies indicate that the DES is composed of three factors. Ross et al. (1990) studied a sample of 1,055 people from the general population in Winnipeg. A principal component analysis of their scores on the DES found three factors that accounted for 47.1% of the total variance of the scores. The three factors were absorption- imaginative involvement (accounting for 19.3% of the variance), activities of dissociated states (13% of the variance), and depersonalization/derealization (14.8% of the variance). However, in their analysis, Ross et al. excluded seven of the items on the scale with the rationale that these items did not load onto the three factors. They labeled the seven items “other experiences.” Sanders and Green (1994) explored the factor structure of the DES using a sample of college undergraduates (N = 860). They analyzed their data for men (n = 294) and women (N = 566) separately. For the male participants, factor analyses produced three factors which accounted for 42% of the variance. These factors included imaginative involvement, depersonalization/ derealization, and amnesia. The same factors were found for women

(n = 566) and accounted for 44% of the variance; however the items loaded slightly differently on the factors. The items on the depersonalization/derealization factor loaded the same for men and for women, but the two other factors showed different item loadings. Like Ross et al. (1990), Sanders and Green also did not include a set of items in their analysis. They reported that they included items in the analysis which loaded at .40 or above on one factor and .25 or lower on the other factors. This study is a testament to the fact that even within one study, inconsistent factor structures are found. Ross, Ellason, and Anderson (1995) also studied the factor structure of the DES; however, their participants were a clinical population diagnosed with DID (N = 274). Using a principal components analysis to determine the factor structure, results were similar to the previous nonclinical study. Ross et al. (1995) also indicated three factors which accounted for 53.4% of the variance. These factors included absorption and imaginative involvement (accounting for 15.8% of the total variance), activities of dissociative states (accounting for 20.3% of the variance), and depersonalization/derealization (accounting for 17.3% of the variance).

Using a nonclinical sample of 1190 college students, Ray and Faith's (1995) analysis of the DES yielded a four factor structure. The factors included absorption/derealization, depersonalization, segment amnesia, and in situ amnesia. All item loadings exceeded .40. Gleaves, Eberenz, Warner, and Fine (1995) studied the factor structure of the DES in both clinical (n = 30; 15 diagnosed with MPD and 15 diagnosed with an eating disorder) and nonclinical populations (n = 170 college undergraduates). They performed a principal components analysis and also discovered a four factor structure for the DES accounting for 67.3% of the variance. These factors included amnesia,

depersonalization/ derealization, common dissociative experiences, and absorption.

However, they excluded three items which they reported had low factor loadings, and the sample size was small.

In another study that included both clinical and nonclinical populations, Bernstein, Ellason, Ross, and Vanderlinden (2001) found a four factor solution for the DID sample, and a five factor solution for the nonclinical sample. However, the scree plot was consistent with a single factor structure indicating that the DES can be thought of as one-dimensional.

Stockdale, Gridley, Balogh, and Holtgraves (2002) performed a confirmatory factor analysis on the DES. The researchers sought to clarify the factor structure of the DES in nonclinical samples of 971 and 400 undergraduate students. Confirmatory factor analyses were conducted based on one, two, three, and four factor first order models, as well as two hierarchical models. Exploratory factor analysis did not rule out any of these models as possible models of good fit. Therefore, confirmatory factor analyses were performed, and their results fit the three factor, first order model with the three factors of amnesia, depersonalization, and absorption. The analyses revealed $\chi^2/df=5.69$, RMSEA=.07 (Root Mean Squared Error), and GFI = .87 (Goodness of Fit Index). The three factor model showed the greatest reduction in χ^2/df and RMSEA, as well as the greatest increase in GFI.

Questionnaire of Experiences of Dissociation

The QED was developed by Riley (1988). The items were derived from the clinical literature related to the dissociative disorders, classical hysterics, and individuals with temporal lobe epilepsy (Riley, 1988). The items range from those that related to

normal, everyday dissociation, to those that relate to pathological dissociation. The factor structure of the QED is also a topic of debate.

Ray and Faith (1995) compared the factor structures of the DES and the QED using principal components analyses in a population of 1090 undergraduate participants. The DES had four factors (listed in order of greatest accounting variance). The first factor was absorption/derealization which included such items as feeling as if fantasy were real, being unaware of other events while watching a movie or TV, staring into space, absorption in fantasy, and not remembering if one imagined an event or if it actually happened. The second factor was depersonalization which included items such as feeling like other people and experiences are not real, feeling like one's body is not one's own, not recognizing oneself in the mirror, and viewing the world through a fog. The third factor was segment amnesia which was defined as an experience where one is amnesic for an aspect of one's life. The fourth factor was in situ amnesia which was defined as amnesic processes where one awakes to the current situation. The analyses revealed a five factor structure for the QED. The first factor was depersonalization and included items such as wondering who one really is, feeling like someone else, and being removed from one's thoughts and actions. The second factor was process amnesia which included items such as one's mind being blank, staring into space, words not coming out right, and one's mind being blocked. The third factor was fantasy/daydream which included items such as daydreaming in school as a child, daydreaming in general, having a rich fantasy life, and being off in own world. The fourth factor was dissociated body behavior and included items such as one's limbs moving on their own, and someone inside directing one's actions. The fifth factor was trance and included processes such as

hypnosis and déjà vu. The first three factors on the DES and the QED, depersonalization, fantasy absorption, and amnesia were correlated with one another.

Gleaves et al. (1995) also compared the DES and the QED. This study was performed with both clinical and nonclinical populations. 200 subjects participated. 170 of these subjects were classified as “normal controls” and 30 clinical subjects were included (15 diagnosed with multiple personality disorder, and 15 diagnosed with eating disorders). A component factor analysis found the DES to be composed of four factors, amnesia, depersonalization and derealization, common dissociative experiences, and absorption, accounting for 67.3% of the total variance. The QED was composed of five factors, accounting for 50.1% of the variance. The factors included depersonalization and derealization, memory and communication deficits, hypnotizability, mental blocking, and daydreaming. All factors are listed in descending order of number of items that loaded onto each factor. Both the DES and QED classified MPDs versus controls as well as MPDs versus eating disordered patients at a percentage better than chance. However, it is noteworthy that the clinical population of 30 subjects was small, and was entirely female; whereas the nonclinical sample, while also small, was a mixture of males and females.

Using a principal component analysis, Wolfradt and Engelmann (1999) found that the QED broke down into two main factors, depersonalization and amnesia, and fantasy and daydreams which accounted for 58.4% of the total variance. Their population was both clinical and nonclinical (N=200).

Dissociation Questionnaire

The Dissociation Questionnaire (DIS-Q) is a 63-item Dutch scale developed as an alternate measure of dissociation after the development of the DES and the QED (Vanderlinden, Van Dyck, Vandereycken, Vertommen, & Verkes, 1993). It was developed based on a pool of 95 items which were derived from statements made by patients diagnosed as having dissociative disorders, and a selection of items from the DES, the Perceptual Alterations Scale (PAS), and the QED. The 95 items were given to five clinicians experienced in the dissociative disorders who evaluated each item regarding the extent to which it reflected a dissociative experience. Items from the pool were then eliminated, to produce the 63-item measure. The scale consists of five Likert scale choices including 1= not at all, 2=a little bit, 3=moderately, 4=quite a bit, and 5=extremely. Respondents endorsed the extent that each item is applicable to them.

The DIS-Q was tested with a sample of 374 participants from the general population (Vanderlinden et al., 1993). In this preliminary study, a factor analysis was performed to determine the factor structure of the measure. A four factor structure was found which accounted for 77% of the variance. The factors included identity confusion and fragmentation (accounting for 57.4% of the variance), loss of control (accounting for 8.34% of the variance), amnesia (accounting for 6.0% of the variance), and absorption (accounting for 5.4% of the variance). All factors were intercorrelated. Bernstein et al. (2001) studied the factor structure of the DIS-Q with a nonclinical sample of 405 college undergraduates. Although the scale was thought to have a four factor structure, based on the scree plot, a one factor structure was found. Bernstein et al. argued that the scale is actually unidimensional.

Rationale of the Present Research

Due to the discrepancy between studies, it is important to further explore the factor structure of the DES-II, QED, and DIS-Q. Although there is a growing body of literature using EFA to study the DES-II, the DIS-Q and the QED, a confirmatory factor analysis has not been published on the DIS-Q and the QED. Only one confirmatory factor analysis study has been published on the DES. The present research sought to better define the factor structures of the DES, the QED, and the DIS-Q, using the number of factors from the literature as a guide. The literature suggests possible one, three, four, and five factor models for the DES; one, two, and five factor models for the QED; and one and four factor models for the DIS-Q. Another goal of this research was to develop an overall model of dissociation based on a higher order confirmatory factor analysis of the factors found for the DES, DIS-Q, and QED.

II. METHOD

Participants

Participants were 395 students enrolled in psychology classes at Auburn University. Students were electronically recruited for participation using Auburn University's system for participating in research experiments at "auburn.sona-systems.com." Students logged onto sona-systems where they were given the opportunity to participate in research in order to receive extra credit in their Auburn University Psychology classes. On this site, descriptions of the experiments were presented. Students were also recruited for the study via e-mail. Students used the system to sign up for the experiments they chose and were assigned extra credit through the use of the system. The experiment was posted on the site over the course of one year. All students in psychology classes over the age of 18 (the legal age of consent) were welcomed to participate.

Seventy percent of the participants were female and 29.8% were male. Three participants did not report their sex. Participants' ages ranged from 19-52 with the average age being 20.66 years ($SD=2.33$). The modal age was 19. Seventy six point seven percent of the participants were Caucasian, 17% African American, 3.0% Asian, 1.3% biracial, 1% Hispanic, and 1% other.

Thirty six point five percent of the participants were seniors, 23.5% juniors, 22.8% sophomores, and 17% freshmen. Participants varied by major; however, 27.9% were psychology majors, 9.9% biomedical science majors, and 6.3% exercise science majors. Numerous other majors were represented in the sample, but occurred at low percentages (less than 5% each).

Materials and Measures

The DES-II, the QED, and the DIS-Q were dissociation measures chosen for this study after a search of the literature concluded that they were the most frequently used dissociation scales. The literature was reviewed using “Psychinfo.” After a preliminary list of dissociation measures was created, each measure was entered into Psychinfo to determine the number of hits that each measure would receive. The DES-II had 618 hits, the DIS-Q had 67 hits, and the QED had 20 hits. The Clinician Administered Dissociative States Scale had 17 hits, and the other scales had five hits or less including the Multidimensional Inventory of Dissociation, the North Carolina Dissociation Index, and the General Dissociation Scale. The scales which were included in this research were instruments intended to measure the construct of dissociation as opposed to other measures which tap into a portion of the construct, such as hypnotizability and absorption.

Dissociative Experiences Scale-II

As noted earlier, the DES is a 28-item paper and pencil, self report scale developed by Bernstein and Putnam (1986). It is a screener for the dissociative disorders and it quantifies dissociative pathology. When the DES was developed, it showed strong psychometric properties (Bernstein & Putnam). The DES had four- to eight-week test-

retest stability of .84 ($p < .001$), reliability coefficients of the individual items averaged .60, and 25 of the 28 items reached significance (Bernstein & Putnam). An average reliability coefficient of .64 was found and all item correlations reached significance (Bernstein & Putnam). Bernstein and Putnam also compared DES scores across groups of normal adults, alcoholics, phobics, adolescents, schizophrenics, posttraumatic stress disorder cases, and multiple personality disorder, and the DES was able to differentiate between diagnostic groups (Kruskall-Wallis test; $N=192$, $df=7$, $p < .0001$). Ijzendoorn and Schuengel (1996) performed a meta-analysis on the literature of the DES. The meta-analysis included 22 studies comparing the DES and alternative measures of dissociation (such as the Tellegen Absorption Scale), 34 studies on the DES' discriminant validity, and 79 studies on the predictive validity of the DES. Comparing the convergent validity of the DES to other measures of dissociation, the overall, combined correlation across different measures was $r = .67$. The overall average Cohen's d was 1.82 ($N = 5,916$), which they stated was impressive. Comparing 16 studies using the DES, they found a mean alpha reliability of .93, indicating the DES is a consistent scale. When analyzing the measure's predictive validity for the dissociative disorders, the researchers found an overall large effect size (Cohen's $d = 1.05$) comparable to a correlation coefficient of $r = .46$.

The DES-II is a revised scale based on the original DES with the same items as those in the DES (Carlson & Putnam, 1993). The original measure provided a scale after each question that consisted of a line with a 0 at one end and 100 at the other. The respondent was to make an "X" on the line at the appropriate place. The revised measure was developed in order to simplify scoring. Instead of the scale used in the DES, the

DES-II provides 11 response options ranging from 0 to 100 in increments of 10. The respondent is to circle the number that best denotes their response to the question.

As noted, the DES is the most commonly used measure of dissociation and its validity has been consistently established. Frischolz et al. (1991) tested the construct validity of the DES by comparing it to the Tellegen Absorption Scale (TAS) and the Perceptual Alterations Scale (PAS) in a population of 311 undergraduate participants. They also tested the construct of “ambiguity intolerance” assessed by the Yellen Ambiguity Intolerance Scale (YAIS), and the Jenkins Activity Schedule (JAS). They found that the DES total score and three factor scores (amnesic experiences, depersonalization-derealization, and dissociative like experiences) significantly correlated with the TAS, PAS, and the YAIS. However, the correlations were not high (most were below .50). Further, the overall score as well as the factor scores did not significantly correlate with the JAS. Frischolz et al. (1991) concluded that the DES had good convergent validity, but the scores were not high enough to consider the measures as interchangeable.

Dubester and Braun (1995) studied the test-retest stability of the DES in a clinical sample of 78 participants in a dissociative disorders inpatient clinic. The test-retest stability was .93 for the total score, and .95, .80, and .82 for the three factors of amnesia, depersonalization-derealization, and absorption, respectively.

Questionnaire of Experiences of Dissociation

As noted above, the QED was developed by Riley (1988) due to the few valid and reliable instruments for the measurement of dissociation. It is a 26 true/false item self report measure. According to Riley, the DES does not overlap in content with the QED,

and therefore, the QED can be used as a separate measure of dissociation. Further, the QED was developed using college students, whereas the DES was developed using a clinical population. The QED was found to have good clinical utility for the differentiation and identification of individuals who are diagnosed with dissociative identity disorder (Dunn, Ryan, Paolo, & Miller, 1993). The reliability of the QED was calculated and a Chronbach's alpha (the average of all split-half correlations) of .77 was found. The QED has been found to differentiate between those diagnosed with dissociative disorders, those without, and those with somatic and eating disorders (Wolfradt & Engelmann, 1999). It also had good internal consistency (Chronbach's alpha = .82; Wolfradt & Engelmann, 1999).

Gleaves et al. (1995) compared the DES and the QED. Using both clinical and nonclinical populations. Internal consistency was compared via alpha coefficients for the DES and the QED using clinical and nonclinical populations separately, and for the entire sample. Scores on the DES were consistently higher than on the QED with DES alphas at .98, .92, and .96 for the clinical, nonclinical, and combined samples respectively. Item- total correlations were also higher for the DES in comparison to the QED. Within clinical populations, the correlation between the two measures was .76; within the nonclinical sample, the correlation between measures was .58.

The original version of the QED was produced in a true/false format, but has also been converted to a 10-point likert scale for the purpose of making comparisons to the DES (Ray & Faith, 1995). Ray and Faith's version of the QED had internal consistency ranging from .92 to .94. Ray and Faith compared the DES and the QED in a large population of college undergraduates (N = 1190). The correlation between the two

measures was .80 ($p < .001$) indicating that they measure similar processes, but they found the QED was composed of different underlying factors. Like Ray and Faith, the current research altered the QED from its original true/false form to a 5 point scale. This was done to make it more comparable to the other scales which were rated on a continuum.

Dissociation Questionnaire

As previously mentioned, the Dissociation Questionnaire (DIS-Q) is a 63-item Dutch scale developed as an alternate measure of dissociation (Vanderlinden et al., 1993). According to Vanderlinden et al's (1993) four factor model of the measure, the DIS-Q has a Chronbach's alpha of .96 for the total score, .94 for the identity confusion and fragmentation factor, .93 for the loss of control factor, .88 for the amnesia factor, and .67 for the absorption factor. According to Vanderlinden et al., the lower alpha for the absorption factor is due to the fewer item loadings. Test-retest stability was also determined, using a 50 subject sample from the general population with an interval of three to four weeks between successive occasions. The total score stability coefficient was .94, and was also significant for each of the four subscales with coefficients of .92, .92, .93, and .75. Stability for individual items ranged from .42 to .99; all reached significance.

Construct validity of the DIS-Q was also measured using a clinical sample of 98 eating disordered patients, and comparing their scales with those of the general population (Vanderlinden et al., 1993). Patients consistently demonstrated higher scores on the four subscales in comparison to the general population. Other clinical samples were also compared. Subjects diagnosed with dissociative disorders scored significantly higher on the DIS-Q than did groups with other diagnoses (ex: PTSD, schizophrenia,

etc.). Further, those diagnosed with DID had significantly higher scores than those diagnosed with dissociative disorder, NOS. When comparing the DIS-Q with the DES, high correlations were found between the DIS-Q subscale of identity confusion and the DES' depersonalization/derealization subscale as well as between the amnesia subscales on both questionnaires.

The Proactive Coping Inventory

The Proactive Coping Inventory (PCI; Greenglass, Schwarzer, Jakubiec, Fiksenbauer, & Taubert, 1999) was included as a comparison for measuring discriminant validity of each measure of dissociation. The PCI is a 55-item measure which consists of seven scales including proactive coping (14 items), reflective coping (11 items), strategic planning (4 items), preventive coping (10 items), instrumental support seeking (8 items), emotional support seeking (6 items), and avoidance coping (3 items; Greenglass et al., 1999; Greenglass, 2002). The subscales were developed based on a Canadian student sample. The PCI contains items which tap into coping based on resourcefulness, responsibility, and vision. Internal consistency for the subscales of the PCI as measured by the Chronbach's alpha coefficient ranged from .61 to .87 in both a Canadian and a Polish sample (Pasikowski, Sek, Greenglass, & Taubert, 2002). Participants indicate how true each of 55 statements is in describing their general coping reactions, including positively and negatively keyed items. Ratings were made on a 4-point scale (1=not at all true, 4=exactly true).

The Tellegen Absorption Scale

The Tellegen Absorption Scale (TAS; Tellegen & Atkinson, 1974) is a 34 item true/false questionnaire that measures absorption, one commonly found component of

dissociation. The TAS was included to assess the convergent validity of the measures of dissociation. It was converted to a 5 point scale (1=not at all, 5=extremely) for use here. The TAS is commonly used in the dissociation literature and has been shown to have a significant positive correlation with the DES (Frischholz, et al., 1991).

Procedure

The inventories were administered to large groups of college undergraduates. Up to 20 participants participated at a time and group size depended upon how many participants signed up for the session. One of three possible experimenters read from a script in order to maintain consistency in administration. The inventories were administered in packets along with a demographics questionnaire. The dissociation inventories were arranged in twelve different orders to control for order effects; the demographics questionnaire always came first and the PCI and TAS always came either second or last. Participants first read an information letter and after giving their consent to participate, were told to complete the entire packet, answering questions as truthfully as possible. Participants completed the packet, and were then given a debriefing form, which explained the purpose of the study. They were then awarded extra credit. The work took approximately one hour to complete.

III. RESULTS AND CONCLUSIONS

Reliability and Validity

Chronbach's alpha, a measure based on the average correlation among items, is a measure used to assess the internal consistency of the scales. A score of .60 or higher is usually deemed adequate for research purposes. Split half reliability is another measure of internal consistency; however, it is based on splitting the scale in half and determining how well the two halves of the scale correlate with one another. Two types of reliability coefficients are the Spearman-Brown split half reliability coefficient and Guttman's split half reliability coefficient. The Spearman Brown coefficient estimates the full test reliability based on split half reliability, while Guttman's split half reliability coefficient adapts the Spearman Brown's, but does not require equal variances between the two split forms.

The DES demonstrated good internal consistency and split-half reliability (see alpha coefficient and Spearman Brown coefficient in Table 1). The Guttman's split half coefficient for the DES can be interpreted as adequate reliability (see Table 1). The DIS-Q also demonstrated good internal consistency and split-half reliability as shown by the alpha and the Spearman Brown coefficients (see Table 1). The Guttman's split half coefficient for the DIS-Q can be interpreted as good reliability (see Table 1). The QED demonstrated adequate internal consistency as measured by the alpha coefficient and adequate split-half reliability as show by the Spearman Brown coefficient (see Table 1).

The Guttman's split half coefficient for the QED can be interpreted as adequate reliability (see Table 1). The TAS demonstrated good internal consistency as shown by the alpha coefficient and good split-half reliability as shown by the Spearman Brown coefficient (see Table 1). The Guttman's split half coefficient for the TAS can be interpreted as good reliability (see Table 1). The PCI demonstrated good internal consistency as shown by the alpha coefficient and adequate split-half reliability (see Table 1). The Guttman's split half coefficient for the PCI was adequate (see Table 1).

To determine discriminant and convergent validity, the participants' average item response in the three dissociative measures were compared with their average item response in two other scales that measure different and similar constructs to the different dissociative measures. To determine convergent validity, the participants' average item response to the DES, QED, and DIS-Q were correlated with their average item response in the TAS, a measure of absorption which is similar to the construct of dissociation. Responses on the TAS significantly correlated with scores on the DES ($r=.66$, $p<.001$); QED, ($r=.53$, $p<.001$); and DIS-Q, ($r= .53$, $p<.001$). To determine discriminant validity, each of the measures' average item response was compared with the PCI, a measure of proactive coping which differs from the dissociative measures not only in content, but in that it is a measure of coping, while the dissociative measures are measures of pathology. On the PCI, the higher the score, the higher the degree of proactive coping expressed by the individual; whereas in the dissociative measures, the higher the score, the greater the degree of dissociative pathology. The PCI scores did not significantly correlate with the DES ($r = -.02$, $p>.05$), QED ($r = -.1$, $p>.05$), or DIS-Q ($r = -.07$, $p>.05$).

Exploratory Factor Analysis

Principal component analysis with varimax rotation was used to obtain a preliminary assessment of the factor structure of the DES. Five factors with eigenvalues greater than one were retained following with the majority of the analyses in the literature. Five factor model accounted for 56.31% of the total variance. Previous research has suggested a one factor model (Bernstein, et al., 2001), three factors accounting for between 42% and 53.4% of the total variance (Ross et al., 1995; Ross et al., 1990; Sanders & Green, 1994; Stockdale et al., 2002) and four factors accounting for 50.1% (Gleaves et al., 1995; Ray & Faith, 1995). In the present study, the percentage of total variance accounted for by the one factor model was 35.66%, the three factors accounted for 47.82%, and the four factors accounted for 52.32%.

There are a set of core items which together, consistently loaded onto the same factor in both the present analysis and in the literature (for a comparison of item loadings across the literature, see bolded items in Table 2). However, Gleaves et al. (1995) and Sanders and Green (1994) were excluded from this analysis as the factors they found were so different from the rest of the literature. This could be due to the fact that Gleaves et al had a small sample size, and the analyses were performed separately for males and females in the Sanders and Green article. These core items include items 14, 15, 17, 18, 19, 20, 23, and 24 (“remembering a past event so vividly they feel like they are reliving the event”, “not being sure whether things remembered really happened or whether they just dreamed them”, “becoming so absorbed in the TV or a movie that they are unaware of other events happening”, “becoming so involved in fantasy or daydream that it feels as though it were really happening to them”, “being able to ignore pain”, “sitting, staring off

into space, thinking of nothing, and are not aware of the passage of time”, “being able to do things with amazing ease and spontaneity that would usually be difficult for them”, and “being unable to remember whether they have done something or have just thought about doing that thing”) on one factor. Items 5 and 8 (“finding new things among belongings that they do not remember buying,” and “not recognizing friends and family members”) consistently loaded together on a separate factor. Items 11, 12, 13, 27 and 28 (“having the experience of looking in a mirror and not recognizing themselves”, “having the experience that people, objects, and the world around them are not real,” “feeling that their bodies do not belong to them”, “hearing voices inside their head that tell them to do things or comment on things that they are doing”, and “feeling like they are looking at the world through a fog so that people or objects appear far away or unclear”) consistently loaded together on a third factor.

Principal component analysis with varimax rotation was used to investigate the factor structure of the QED. Six factors with eigenvalues greater than one were retained. The six factor model accounted for 54.20% of the total variance. Previous research has suggested a two factor model accounting for 50.1% of the total variance (Wolfradt & Engelmann, 1999) and five (Gleaves et al., 1995; Ray & Faith, 1995) factor model accounting for 58.4%. In the present study, a two factor model accounted for 33.69% of the total variance, and the five factor model accounted for 50.11% of the total variance. A one factor model was also tested, accounting for 22.63% of the total variance.

There are a set of core items which together, consistently loaded onto the same factor in both the present analysis and in the literature (see Table 3 for a comparison of item loadings across studies; core items are bolded). However, again Gleaves et al.

(1995) was removed from the analyses due to its small sample size and factor structure that was inconsistent from the rest of the literature. The core items for one factor were items 1, 4, 5, and 6 (“I often feel as if things are not real,” “I often wonder who I really am,” “At one or more times, I have found myself staring intently at myself in the mirror as though looking at a stranger,” and “I often feel that I am removed from my thoughts and actions”). Items 15, 20 and 21 (items related to: as a child, sitting and daydreaming in school, staring off into space without thinking of anything, and daydreaming) were included as a set of core items for a second factor.

Principal component analysis with varimax rotation was performed to investigate the factor structure of the DIS-Q. 14 factors with eigenvalues greater than one were retained. However, after closer analyses of the factor loadings, factors 13 and 14 were composed of items that were a better fit with other factors, and therefore these factors were excluded from the analysis, decreasing the factors to 12. The 12 factor model accounted for 59.61% of the total variance. Previous research has suggested a one factor model (Bernstein et al., 2001) and four factor model (Vanderlinden et al., 1993) accounting for 77% of the total variance. In the present study 31.40% of the total variance was accounted for by the one factor model and 42.47% was accounted for by the four factor model.

There are a set of core items which together, consistently loaded onto the same factors in both the present analysis and in the literature for the DIS-Q (see Table 4 for item loadings across the literature). The items 3, 7, 9, 34, 39, and 61 (“At times it seems that I have lost contact with my body,” “It happens that I have the feeling that I am somebody else,” “When I am tired, it seems as if a strange power from outside takes

possession of me and decides for me what to do,” “At times it seems as if someone inside of me decides what I do,” “Sometimes I find myself in a well-known place that appears strange and unknown to me,” It happens that I hear voices in my head telling me what I am doing or making comment on what I am doing”) consistently loaded onto one factor. Items 5, 8, 14, and 48 (“While driving and/or bicycling, I suddenly realize that I cannot remember what happened on the way,” “It happens that I am listening to someone and suddenly realize that I have not heard part or the whole story,” “I regularly feel an urge to eat something, even when I am not hungry,” and “When eating, doing so without thinking about it”) consistently loaded onto the second factor.

Confirmatory Factor Analysis

Maximum likelihood confirmatory factor analyses were performed to assess the fit of the models proposed by past research and the models suggested by the preliminary exploratory factor analyses. For each model, four indices of fit were reported. First, the model chi-square indicates the degree in which the model parameters reproduce the observed correlations or covariances among items. The smaller the value of the model chi-square, the better fit of the model. However, this index tends to be larger when sample size increases (Byrne, 2001, chap.3). Second, the goodness of fit index (GFI) is an absolute index of fit due to the fact it compares the residuals of the hypothesized model against the variability of the correlations in the data. GFI is analogous to a multiple R square and ranges from 0.00 to 1.00, with the values closer to one indicating a better fit (Byrne, 2001, chap.3). The comparative fit index (CFI) is a fit index that takes into account the sample size and compares the hypothesized model against an independence model that states that there is no correlation among the observed variables.

It ranges from 0.00 to 1.00, with larger values indicating a better fit of the model (Byrne, 2001, chap.3). The root mean square error of approximations (RMSEA) assesses the error of approximation of the hypothesized model to the population variance-covariance. This value is sensitive to the number of parameters in the model as it is expressed per degree of freedom. The RMSEA can take values from 0.00 to 1.00 and its sampling distribution is known and can be used to establish confidence intervals for the sample RMSEA value. Values of less than .05 indicate a good fit and values up to .08 indicate reasonable errors of approximation in the population (Byrne, 2001, chap.3).

Maximum likelihood confirmatory factor analysis (CFA) of the DES scores for the 395 participant sample was conducted to assess the fit of the one, three, and four factor models reported in the literature, and the five factor model found in the present study. To aid in the interpretation, the fit of an independence model, i.e. no correlation among items, was also obtained. As Table 5 shows, there is a reduction in χ^2 and RMSEA as the number of factors increased from one to three, four, or five. An increase in CFI and GFI was noted as number of factors increased in the model from one to five. Also presented in Table 5 are the modified results for the three and five factor models when the error terms of the items with high correlations within factors were correlated. The five factor model is the model of best fit according to these analyses and is presented in Figure 1. The correlations of the items into each factor are displayed in Table 6. Based on the items included in each of these five factors, the factors in this model include absorption and imaginative involvement, segment amnesia, depersonalization, in situ amnesia, and common dissociative experiences. The items' loadings (standardized regression weights) into each factor are displayed in Table 6.

Maximum likelihood CFA of the QED scores for the 395 participants was conducted to assess the fit of the two and five factor first order models presented in the literature and the one and six factor model found in the present study. As Table 7 shows, there is a reduction in χ^2 and RMSEA as the number of factors increased from one to two, five, or six. An increase was noted in CFI and GFI in the five and six factor models in comparison to the two and one factor models. Both the five and six factor models are good fits for the data. These models are presented in Figures 2 and 3. The five factor model includes the factors depersonalization/derealization/amnesia, fantasy/daydream, hypnotizability, dissociated body behavior, and cognitive deficits. The six factor model includes depersonalization/derealization, fantasy/daydream, hypnotizability, trance/amnesia, dissociated body behavior, and cognitive deficits. The item's loadings (standardized regression weights) into each factor for the five and six factor models for the QED are displayed in Tables 8 and 9.

Maximum likelihood CFA of the DIS-Q scores for the 395 participant sample was conducted to assess the fit of the 1 and 4 factor models reported in the literature and the 12 factor model found in the present study. To aid in the interpretation, the fit of an independence model, i.e., no correlations among items, was also obtained. As Table 10 shows, there is a reduction in χ^2 and RMSEA as the number of factors increases from 1 to 4, or 12 factors. Further, an increase was noted in CFI and GFI in the 12 factor model in comparison to the 4 and 1 factor models. However, none of the models demonstrated a good fit for the data. Even after the 12 factor model was modified by correlating the error terms, the model did not significantly improve (see Figure 3). Further, when deciphering factor names for the 12 factors, much overlap in content was noted between

factors. The item's loadings (standardized regression weights) into each factor are displayed in Table 11.

Analysis of Factor Scores between Measures

The correlations of the scores for the 5 DES, 6 QED, and 12 DIS-Q factors are presented in Table 12. As can be seen, the majority of the factors are significantly correlated. However, the QEDF3 was one factor which was not significantly correlated with most of the other factor scores. Next, EFA was performed between the factors of the DES and the QED. The DIS-Q was excluded from this analysis as its factor structure was insufficient for further analyses. The EFA resulted in a two factor structure (54.3% total variance). However, the second factor had only two items, one from each measure. These factors included "in situ amnesia" from the DES, and "hypnotizability" from the QED. The hypnotizability factor was the factor that was negatively correlated with the other factors, and the "in situ amnesia" factor was the factor that consisted of only two items. The remaining factors of the QED (depersonalization/derealization, fantasy/daydream, trance/amnesia, dissociative body behavior, and cognitive deficits) and the DES (absorption and imaginative involvement, segment amnesia, depersonalization, and common dissociative experiences) loaded onto the first factor.

Maximum likelihood CFA for the factors of the DES and QED was conducted for the sample (see Figure 4). CFA analyses resulted in a χ^2 of 225.22. Further, a CFI of .88 and GFI of .90 indicate good fits for the model. However, the RMSEA of .10 demonstrated that the model was only a mediocre fit for the data.

IV. DISCUSSION

Reliability and Validity

The DES, QED, DIS-Q, TAS, and PCI demonstrated good to adequate internal consistency and split half reliability. The DES, QED, and DIS-Q had good convergent validity with the TAS and demonstrated good discriminant validity with the PCI. These three measures proved to be reliable and valid which is congruent with past research findings.

Dissociative Experiences Scale Analyses

According to the results of the exploratory factor analyses, a five factor model was the model of best fit for the DES in a nonclinical sample, accounting for over half of the variance. However, this finding did not rule out the possibility of the data fitting with the one factor (Bernstein et al., 2004), three factor (Sanders & Green, 1994), or four factor models (Ray & Faith, 1995; Gleaves et al., 1995). In fact, a one factor solution was possible due to the large percentage of the variance accounted for by the first factor. Due to these results, further analyses were needed to determine the model of best fit for the current data.

Each of the models supported by previous research (one, three, and four factor models) and the five factor model which was supported by the exploratory factor analysis were analyzed using maximum likelihood confirmatory factor analysis based on the item

structure suggested by the preliminary exploratory analyses of these data. According to the CFA that was conducted, the model of best fit for these data was the five factor model

It is noteworthy that two of the factors in the five factor model are comprised of only two items each. One of the factors, “in situ amnesia,” included the following items: finding oneself in a place and having no idea how one got there, and finding oneself dressed in clothes that one does not remember putting on. The other 2 item factor, “common dissociative experiences,” included the following items: when alone, talking out loud to oneself, and in one situation acting so differently compared with another situation that one feels as if they are a different person. Although the data fit this model well, clinically, these two-item factors may not be useful or meaningful as there is little convergent data (only two items) on which to base a subscale score. These items may statistically group together due to either being outliers or being significantly correlated with one another, but may have little clinical utility. The remainder of the data was similar to the results of the Stockdale et al. (2002) confirmatory factor analysis which produced a model that consisted of three factors including absorption, amnesia, and depersonalization. Although the items did not load onto the factors in the exact same manner, the factors were conceptually similar.

Questionnaire of Experiences of Dissociation Analyses

According to the results of the exploratory factor analyses, a six factor model was the model of best fit for the QED in a nonclinical sample, accounting for over half of the variance in the model. However, this finding did not rule out the possibility that a one factor model could be the model of best fit as it accounted for a significant portion of the variance. It also did not rule out the two factor (Wolfradt & Engelmann 1999), and five

factor models (Ray & Faith, 1995; Gleaves et al., 1995) found in previous research. In fact, a five factor solution was likely due to the large percentage of the variance for which it accounted. Due to these results, further analyses were needed to determine the model of best fit for the current data.

Each of the models supported by previous research (two and five factor models), a one factor model, and the present six factor model were analyzed using maximum likelihood confirmatory factor analysis based on the item structure suggested by the preliminary exploratory analyses of these data. According to the CFA that was conducted, two models fit the data well. The model of best fit for these data was the six factor model; however, the fit indices varied little from the five factor model.

The five and six factor models were comprised of similar factor structures. In fact, the two models shared four of the same factors. These factors included fantasy/daydream, hypnotizability, dissociated body behavior, and cognitive deficits. The first factor of the five factor model, depersonalization/derealization/amnesia is broken into two factors in the six factor model (the trance/amnesia items loaded onto a separate factor), thus creating the sixth factor. Either model is a good fit depending upon the goal of the analysis. If parsimony is the goal, then the five factor solution is a good fit for the data; however, if parsimony is not an issue, then the six factor model is the model of best fit. For the purposes of these analyses, the six factor model is the best choice as it more precisely breaks down the depersonalization/derealization/amnesia factor into more succinct and well defined factors.

It is noteworthy to discuss the original structure of the QED which was in the form of a true/false questionnaire. In the past, the QED has been transformed from its

original structure into a scale in order to compare it to other similarly scaled measures. When this transformation occurred in the present study, some of the items which were written in the negative, for example: “I have never had periods of déjà vu” remained in the negative to maintain the integrity of the scale. Behavioral observations that were noted during administration of the measures revealed that participants consistently asked questions concerning the ratings of these negatively worded items. The items were not changed to reflect positive items in order to keep the measure as true to form as possible. The items were reversed scored in the database and it is important to note that after these items were reversed scored, the negative items loaded onto all of the same factors. The factors fantasy/daydream, hypnotizability, and cognitive deficits were all comprised of reversed scored items. It is possible that these items naturally load onto the same factors, as the items that make up the factors are face valid and logically fall together. However, it is also possible that the participants struggled answering these items and therefore, their responses to them are similar (ex: perhaps they answered the questions in a positive or negative extreme, or were more neutral in their responses).

It is also noteworthy that like with the analysis of the DES, there were two factors in both the five and six factor structure of the QED which were composed of only two items. The factor “dissociated body behavior” was composed of the items that stated “sometimes my limbs move on my own,” and “my soul sometimes leaves my body.” The other two item factor was “cognitive deficits” which included the items, “I rarely feel confused, like in a daze,” and “I am rarely bothered by forgetting where I put things.” A two item factor has little clinical utility and creates a less parsimonious model.

The Dissociation Questionnaire Analyses

The DIS-Q is the measure with the least amount of supportive published research of the three dissociative measures used here. This measure was much more difficult to analyze due to its large number of items. According to the results of the exploratory factor analyses, a twelve factor model was the model of best fit for the DIS-Q in a nonclinical sample, accounting for well over half of the percentage of variance in the model. However, this finding did not rule out the possibility that a one factor model (Bernstein et al., 2001) could be the model of best fit as it accounted for almost a third of the variance. The four factor model (Vanderlinden et al., 1993) was also not excluded as a possible good fit for these data by the exploratory factor analysis. In fact, a four factor solution was possible due to the large percentage of the variance for which it accounted. Due to these results, further analyses were needed to determine the model of best fit for the current data.

Each of the models suggested by the literature (one and four factor models) as well as the 12 factor model found in the exploratory factor analysis were analyzed using maximum likelihood confirmatory factor analysis based on the item structure suggested by the preliminary exploratory analyses of these data. According to the CFA that was conducted, the 12 factor model was a better fit for the data. However, according to the fit indices, none of the models were a good a fit for the data. Even after the residuals with the highest correlations were correlated, the model did not demonstrate a good fit.

It is also important to note that three of the factors were composed of only two items which, as stated earlier, renders the factors not necessarily useful for interpretation. The factor “daydreaming” was composed of two items which stated “at times I have the

feeling that I am daydreaming,” and “it happens that I catch myself daydreaming.”

Another two item factor, “trance,” was composed of two items including “it happens that I stare aimlessly without thinking about everything,” and “I often think about nothing.”

The third two item factor was “self awareness” which was composed of the items “when I walk, I am aware of each step I take,” and “when eating, I am aware of every bite I take.” The items that make up these three factors are extremely face valid and are almost the exact same question asked different ways which demonstrates that the participants were answering the items consistently. However, had these items not been repeated so blatantly in the measure, or had only been asked once, they may have loaded onto other factors in the analysis instead of being pulled into one factor made up of two significantly correlated items.

A 12 item structure is not a parsimonious factor structure; the factors are difficult to interpret. In fact, many of the factors seemed to overlap conceptually. It was difficult to distinguish and differentiate the factors with suitable names. The results of this analysis are also inconsistent with the results of previous analyses. The number of items included in this measure made for a cumbersome analysis; however, it is noteworthy that even a measure with a large number of items such as the Minnesota Multiphasic Personality Inventory-second edition (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) is composed of a smaller proportion of subscales to items than the results of the DIS-Q. Therefore, perhaps the DIS-Q is not composed of items that clearly define the construct of dissociation.

It is also noteworthy that the DIS-Q was originally a Swedish measure which was translated into English. It is possible that this measure loses some of its original meaning

when translated into English. No model was a clear fit for the data and, the results of these analyses did not rule out the one or the four factor models as possible models of good fit. Results in the current body of literature surrounding this measure and the other two measures of dissociation are inconsistent. Many different factor structures and models of dissociation have been proposed. The current research only further adds to the inconsistent data and offers yet another perspective as to how these data fit together.

Higher Order Confirmatory Factor Analyses

The current effort sought to better define the construct of dissociation through the interpretation of correlational analyses between the factors of the DES, QED, and DIS-Q and through the use of a higher order factor analysis. It was hoped that similar factors would group together to form a higher order factor structure. Although all factors were included in the correlation matrix, the DIS-Q was not included in the higher order analysis as the factor structure was not a clear fit with the data. Although the majority of the variables in the correlation matrix were positively correlated, the correlations were fairly low. Further, one of the QED factors, the QEDF3 (hypnotizability), was negatively correlated, or not significantly correlated with the majority of the other factors. This was one of the QED factors which was reversed scored. Also, the DIS-QF12 (self awareness) did not significantly correlate with most of the other factors.

Despite the low correlations, an exploratory factor analysis was attempted in order to determine whether the different factors from the different scales load together to create higher order factors. The results of the exploratory analysis revealed a two factor solution. However, results of the confirmatory factor analysis did not demonstrate good fit in all fit indices. Any interpretations made based on this analysis should be made with

caution. It is also important to note that only two of the items loaded onto the second factor. Of these two items, one (hypnotizability) was negatively correlated with the other factors, and the other, (in situ amnesia) was composed of only two items. One interpretation is that in situ amnesia and hypnotizability were the two factors with the weakest correlations with the other factors and therefore, had better fit with one another in a separate factor. It is possible that the factors that loaded onto the first factor (absorption and imaginative involvement, segment amnesia, depersonalization, and common dissociative experiences from the DES; depersonalization/derealization, fantasy/daydream, trance/amnesia, dissociative body behavior, and cognitive deficits from the QED) are more representative of the construct of dissociation.

Further, the fact that the measures were not highly correlated with one another could be related to the manner the measures were developed. The DES-II was developed based on interviews with people who met criteria for the dissociative disorders and with the clinicians who work with such people. According to Bernstein and Putnam (1986, p. 729), the items on the questionnaire targeted experiences related to “disturbance in identity, memory, awareness, and cognition and feeling of derealization or depersonalization or associated phenomenon such as déjà vu and absorption, which were thought to be related to dissociative experiences.” The QED was developed based on the literature of those such as Freud, Breuer, and Janet which described experiences of “hysterics, patients with dissociative and multiple personality disorders, and the dissociative experiences associated with temporal lobe epilepsy” (Riley, 1988, p.449). Riley also stated that the items on the QED were worded in an attempt to not significantly overlap with the DES so that it could be used as a separate measure of dissociation. The

DIS-Q was developed based on “statements by patients with dissociative disorders and secondly, on a selection of items of the three existing dissociation questionnaires (DES, PAS, and QED)” (Vanderlinden et al., 1993, p. 22). The items were then analyzed by five clinicians experienced in the dissociative disorders who evaluated the items in reference to the degree to which they were representative of dissociative experiences. Based on their analyses, items were eliminated from the measure due to the fact that they seemed like items that most people would endorse. It is interesting that the DIS-Q, which was developed based on items from the DES and the QED, had some of the highest and lowest correlations with the other measures. However, its development appears less systematic in comparison to the other measures that seemed to stem from an a priori factor structure. It is not surprising that the DIS-Q was the more difficult measure to create a specific factor structure or model.

Summary of Findings

The goal of this research was to better define the construct of dissociation. First, the factor structure of the DES-II, QED, and DIS-Q in a nonclinical population was explored. The results of the EFAs and CFAs of the dissociative measures found: 1.) The DES had a five factor structure including the factors absorption and imaginative involvement, segment amnesia, depersonalization, in situ amnesia, and common dissociative experiences. 2.) Both a five and six factor structure fit the data for the QED; however, the six factor structure was the best fit including the factors depersonalization/derealization, fantasy/daydream, hypnotizability, trance/amnesia, dissociative body behavior, and cognitive deficits. 3.) The model of best fit for the DIS-Q had a 12 factor structure including the factors memory/cognitive deficits, self

regulation, daydreaming, trance, mind/body disconnect, derealization, depersonalization, disjointed sense of self, identity confusion, loss of control, absorption, and self awareness; however, the model was not a good fit. The second major goal of this research was to develop an overall model of dissociation based on a higher order confirmatory factor analysis of the factors found for the DES, DIS-Q, and QED. The DIS-Q was removed from the analysis due to its poor fit with the data. The second order CFA between the DES and QED resulted in a model that was a poor fit.

Limitations

It is important to note that although the EFAs accounted for about half of the variance, a substantial portion of the variance was not accounted for. This must be remembered when making interpretations of the results. Stockdale et al. (2002) also noted this as a problem in their interpretations as their analyses accounted for only 45.8% of the total variance.

Although using a sample of convenience such as a college student population is not a new concept in the clinical literature, it does have some drawbacks. The measures in the current research seek to quantify a construct which is thought to exist on a spectrum (Hilgard, 1977). This being said, the construct is considered pathological at one end and nonpathological at the other end. College students are typically not representative of a pathological population and therefore do not fall into the pathological range of this spectrum. Therefore, their responses on items may not include a great range as would a clinical or mixed clinical/nonclinical population. This is not meant to imply that the information obtained is not useful information about dissociation. The data simply must be interpreted with the understanding that the construct being measured is

being analyzed in a nonclinical population. This also limits the ecological validity of this study as college students are not necessarily representative of the general population.

An important drawback to using these measures is that each one is quite face valid, making it vulnerable to social desirability influences and to malingering. There is often motivation to malingering dissociation for personal gain such as in the case of Kenneth Bianchi, also known as the hillside strangler, who used DID as a defense in his trial (Watkins, 1984). If he were given any of these measures as a screener for dissociation, he could have easily fabricated the data in his favor. In fact, Gilbertson, Torem, and Cohen (1992) administered the DES, QED, and other measures of dissociation to 320 nursing students who were randomly assigned to respond to the questionnaires honestly, “faking good,” “faking bad,” or “trying to appear as if you had multiple personality disorder.” All measures were found to be extremely susceptible to malingering, and none appeared better at deflecting this than others. If any of the participants in the present research were motivated to complete the questionnaire in a deviant manner, it would have been easy to accomplish. As with all assessments, it would be necessary to evaluate a patient being screened for a dissociative disorder using multiple sources of convergent data as well as a measure of malingering psychopathology such as the Miller Forensic Assessment of Symptoms Test (M-FAST; Miller, 2001).

Future Directions

There is a great deal of inconsistency in the literature concerning the number of factors for the DES, QED, and DIS-Q. The data are even more inconsistent when comparing the items that make up these factors. However, there exists a set of “core items,” or items that are found consistently across the literature and in the present

analysis to load together onto the same factors for the DES, QED, and DIS-Q. These items are stable across populations and across the literature. This set of core items should be the focus of future research to determine if they, together, could be developed into a new measure of dissociation. These core items seem to be the most consistent part of this literature. Perhaps the set of core items are the items that best define dissociation.

The current research focused on measures that were most commonly used in research studies on dissociation. Other measures of dissociation have more recently been developed (e.g. the Multiscale Dissociation Inventory; Briere, Weathers, & Runtz, 2005) in the hopes of improving the assessment of this construct. The newer measures were not used here because less research exists in the literature in regards to the factor structure of the newer scales. There is more controversy in the literature surrounding the factor structure of the older scales of dissociation. It is important that research continue to focus on the older, more commonly used measures so that if they are deemed less useful, researchers and clinicians cease using them. However, it is also important that future studies examine the more newly developed measures of dissociation such as the Multiscale Dissociation Inventory (Briere et al., 2005) as the newer measures may have improved upon the older measures of dissociation; therefore overcoming the flaws and drawbacks of the older scales.

Continued study of the factor structure of the DES in both clinical and nonclinical populations is especially useful. Few exploratory factor analyses research studies have had consistent findings concerning the factor structure and even fewer have used confirmatory factor analysis to determine the factor structure.

Dissociation is a strange phenomenon in the literature. It is poorly defined and this can be seen in the many different factors that can possibly define dissociation as well as the many different ways the factors that make it up (ex: absorption, derealization, etc.) can be defined. What is dissociation? According to these analyses, dissociation is a multifaceted construct with different meanings depending on which instrument is used to measure it. Dissociation can be absorption, imaginative involvement, amnesia, depersonalization, common dissociative experiences, derealization, hypnotizability, fantasy/daydream, dissociated body behavior, cognitive deficits, trance, self awareness, loss of control, identity confusion, disjointed sense of self, mind/body disconnect, and self regulation. Given that the questionnaires yielded different answers to the definition of dissociation, perhaps an approach to the definition of dissociation other than the psychometric approach would be necessary.

The *DSM-IV-tr* (American Psychiatric Association, 2000) has a parsimonious definition of dissociation, stating that it is “a disruption in the usually integrated functions of consciousness, memory, identity, or perception. The disturbance may be sudden or gradual, transient, or chronic.” This definition has been refined throughout the revisions of the *DSM*. The evolution of the theory behind dissociation can be followed in the American Psychiatric Association’s development of the classification of the dissociative disorders. The American Psychiatric Association refined dissociation from a hysterical reaction to its classification as a psychoneurotic disorder, hysterical neurosis, part of the conversion disorders, and finally as its own, separate classification under the dissociative disorders. The American Psychiatric Association continues to work towards a system of diagnosis to define disorders and concepts such as dissociation. Perhaps this

classification system is the best tool yet to accurately define dissociation. Therefore, diagnostic interviews such as the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D-R; Steinberg, 1994), which are based on DSM diagnoses, should be the focus of continued research efforts.

Continued research on dissociation and the dissociative disorders is imperative in psychology and psychiatry. The dissociative disorders have a high rate of comorbidity with many of the disorders including somatoform disorders, borderline personality disorder, schizophrenia, mood disorders, posttraumatic stress disorder, and eating disorders, to name a few (Sar & Ross, 2006). According to Sar and Ross, “dissociation is a confounding factor in the entire spectrum of psychiatric disorders.” Sar and Ross challenge researchers to incorporate dissociative measures into their research protocols in order to better understand the poorly defined construct of dissociation and its interaction with the other disorders. In line with this way of thinking, the present research also challenges researchers to fine tune measures of dissociation with the hopes that researchers will want to incorporate these measures into their protocols.

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APPENDIX A

TABLES

Table 1

Scale Reliability and Validity

Scale	N. Items	Cronbach's Alpha	S-B Split half	Guttman Split half
DES	28	.92	.92	.87
DIS-Q	63	.96	.94	.94
QED	26	.81	.64	.64
TAS	34	.95	.93	.93
PCI	55	.92	.72	.72

Table 2

Dissociative Experiences Scale Factor Item Loadings

Study	Factors	Items
Bernstein et al. (2001) Clinical and Nonclinical (N=274 clinical & 1,055 nonclinical)	1 factor	
Ross et al. (1995) Clinical Sample (N=274)	absorption and imaginative involvement activities of dissociative states depersonalization/derealization	2, 14, 15, 17, 18, 19, 20 , 21, 22, 23, 24, 25 3, 4, 5, 6, 8 , 10, 25, 26 1, 7, 11, 12, 13 , 16, 27, 28
Ross et al. (1991) Nonclinical Sample (N=1,055)	Absorption-imaginative involvement activities of dissociative states depersonalization-derealization	2, 14, 15, 17, 18, 19, 20 , 21, 22, 23, 24, 25 3, 4, 5, 8 11, 12, 13, 27, 28
Sanders & Green (1994) Nonclinical Sample (N=860)	<u>Men</u> imaginative involvement depersonalization/ derealization amnesia <u>Women</u> imaginative involvement depersonalization/ derealization amnesia	14, 16, 17, 18, 20, 23 7, 11, 12, 13, 28 5, 6, 8, 25 6, 10, 14, 15, 16, 17, 18, 20, 21, 23, 24 7, 11, 12, 13, 28 3, 4, 5
Stockdale et al. (2002) Nonclinical Sample (N=1371)	Absorption Amnesia Depersonalization	1, 2, 10, 14, 15 , 16, 17, 18, 19, 20 , 21, 22, 23, 24 , 25, 26 3, 4, 5, 6, 8, 9 7, 11, 12, 13, 27, 28
Dillon (2008) 3 factor model Nonclinical Sample (N=395)	absorption & imaginative involvement activities of dissociative states depersonalization	1, 2, 14, 15 , 16, 17, 18, 19, 20 , 21, 22, 23, 24 3, 4, 5, 6, 8, 9 , 10, 25, 26 7, 11, 12, 13, 27, 28
Gleaves et al. (1995) Clinical and Nonclinical (N= 170 nonclinical & 30 clinical)	amnesia depersonalization/derealization common dissociative experiences absorption	3, 4, 5, 8, 9, 11, 25, 26 7, 12, 13, 27, 28 21, 22, 23, 24 17, 18
Ray & Faith (1995) Nonclinical Sample (N=1190)	absorption/derealization depersonalization segment amnesia in situ amnesia	14, 15 , 16, 17, 18, 19, 20 , 21, 22, 23, 24 , 7, 11, 12, 13, 27, 28 5, 6, 8, 9 , 10, 25, 26 1, 3, 4, 2
Dillon (2008) 5 factor model Nonclinical Sample (N=395)	absorption & imaginative involvement depersonalization/derealization segment amnesia in situ amnesia	1, 2, 14, 15 , 16, 17, 18, 19, 20 , 21, 22, 23, 24 7, 11, 12, 13, 27, 28 5, 6, 8, 9 , 10, 25, 26 3, 4
Dillon (2008) 6 factor model Nonclinical Sample (N=395)	absorption & imaginative involvement segment amnesia Depersonalization in situ amnesia common dissociative experiences	1, 2, 14, 15 , 16, 17, 18, 19, 20, 23, 24 5, 6, 8, 9 , 10, 25, 26 7, 11, 12, 13, 27, 28 3, 4 21, 22

Table 3

Questionnaire of Experiences of Dissociation Factor Item Loadings

Study	Factors	Items
Wolfradt and Engelmann (1999)	Depersonalization	
Clinical and Nonclinical (N=200)	fantasies/daydreams	
Dillon (2008) 2 factor model Nonclinical sample (N=395)		1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 16, 19, 22, 26 7, 10, 15, 17, 18, 20, 21, 23, 24, 25
Ray and Faith (1995) Undergraduates (N=1090)	Depersonalization Process Amnesia Fantasy/daydream dissociated body behavior trance	1, 2, 4, 5, 6, 7 3, 8, 9, 17, 18 11, 15, 19, 20, 21 10, 12, 13, 14, 16 22, 23, 24, 25, 26
Gleaves et al. (1995) Clinical and Nonclinical (N= 170 nonclinical & 30 clinical)	Depersonalization/derealization Memory and communication deficits Hypnotizability Mental Blocking Daydreaming	1, 4, 5, 6 8, 9, 16, 17 23, 25 3, 18, 20 15, 21
Dillon (2008) 5 factor model Nonclinical sample (N=395)	Depersonalization/derealization Fantasy/daydream Hypnotizability dissociated body behavior Cognitive Deficits	1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 16, 19 15, 18, 20, 21, 26 10, 23, 24, 25 14, 22 7, 17
Dillon (2008) 6 factor model Nonclinical sample (N=395)	Depersonalization/derealization Fantasy/daydream Hypnotizability Trance/amnesia dissociated body behavior Cognitive Deficits	1, 2, 4, 5, 6, 12, 13, 19 15, 18, 20, 21, 26 10, 23, 24, 25 3, 8, 9, 11, 16 14, 22 7, 17

Table 4

Dissociation Questionnaire Factor Item Loadings

Study	Factors	Items
Bernstein et al. (2001) Nonclinical Sample (N=405)	1 factor	
Vanderlinden et al. (1993) Nonclinical Sample (N=374)	Identity confusion and fragmentation loss of control amnesia absorption	2, 3, 7, 9, 10, 11, 12, 16, 20, 22, 27, 28, 29, 30, 34, 36, 39, 40, 41, 50, 57, 59, 61, 62, 63 1, 4, 5, 6, 8, 14, 15, 17, 23, 24, 38, 43, 44, 46, 48, 49, 54, 60 13, 18, 19, 21, 25, 26, 31, 32, 35, 37, 45, 47, 55, 58 33, 42, 51, 52, 53, 56
Dillon (2008) 4 Factor Model Nonclinical Sample (N=395)	cognitive deficits/daydreaming derealization identity confusion/loss of control absorption	1, 5, 6, 8, 14, 18, 22, 23, 25, 31, 32, 33, 35, 38, 43, 44, 45, 47, 48, 49, 54, 55 2, 3, 7, 9, 19, 20, 21, 26, 27, 28, 29, 30, 34, 39, 57, 59, 61, 62, 63 4, 10, 11, 12, 13, 16, 17, 24, 36, 37, 40, 41, 46, 50, 58, 60 15, 42, 51, 52, 53, 56
Dillon (2008) 12 Factor Model Nonclinical Sample (N=395)	memory/cognitive deficits self regulation daydreaming trance mind/body disconnect Derealization Depersonalization Disjointed sense of self Identity confusion loss of control absorption Self Awareness	5, 8, 14, 18, 25, 31, 32, 47, 48 6, 22, 23, 33, 35, 38, 43, 54, 55 1, 49 44, 45 3, 7, 9, 26, 34, 39, 61 2, 21, 29, 62, 63 19, 27, 28, 30 20, 57, 59 4, 11, 12, 16, 17, 36, 40, 41, 46, 50 10, 13, 24, 37, 58, 60 15, 42, 52, 56 51, 53

Table 5
 DES Confirmatory Factor Analysis Fit Statistics Comparing One, Three and
 Five First-Order Factor Models

Model	χ^2	df	CI RMSEA	RMSEA	GFI	CFI
Independence	5171.55	378	.175 - .184	0.179	0.24	0.00
One Factor	1595.07	350	.090 - .100	0.095	0.76	0.74
Three Factor	1290.03	347	.078 - .088	0.083	0.81	0.80
Three Factor Modified	1193.94	347	.074 - .084	0.079	0.83	0.82
Five Factor	1107.06	340	.071 - .081	0.076	0.84	0.84
Five Factor Modified	966.4	332	.065 - .075	0.07	0.86	0.87

Note. DES=Dissociative Experiences Scale; CI RMSEA= Confidence Interval of Root Mean Square Error of approximations; RMSEA=root mean square error of approximations; GFI= goodness of fit index; CFI=Comparative fit index

Table 6

Standardized Regression Weights and Item Loadings for the DES 5 Factor Model

DES Items	Item Standardized Regression Weights
Absorption and Imaginative Involvement	
1. Driving a car and realizing they don't remember what has happened during all or part of the trip	0.50
2. Listening to someone talk and they suddenly realizing they did not hear all or part of what was said	0.63
14. Remembering a past event so vividly they feel they were reliving that event	0.68
15. Not being sure whether things that they remember happening really did happen or whether they just dreamed them	0.80
16. Being in a familiar place but finding it strange and unfamiliar	0.69
17. Watching television or a movie and becoming so absorbed in the story that they are unaware of other events happening around them	0.67
18. They become so involved in a fantasy or daydream that it feels as though it were really happening to them	0.77
19. Some people find that they are sometimes able to ignore pain.	0.48
20. They sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time	0.71
23. in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them	0.59
24. Cannot remember whether they have done something or have just thought about doing that thing	0.71
Segment Amnesia	
5. Finding new things among their belongings that they do not remember buying.	0.65
6. Approached by people that they do not know who call them by another name or insist that they have met them before	0.63
8. Some people are told that they sometimes do not recognize friends or family members	0.47
9. Having no memory for some important events in their lives	0.44
10. The experience of being accused of lying when they do not think that they have lied	0.63
25. Some people find evidence that they have done things that they do not remember doing	0.77
26. Finding writings, drawings, or notes among their belongings that they must have done but cannot remember doing	0.65
Depersonalization	
7. Feeling as though they are standing next to themselves or watching themselves dosomething as if they were looking at another person	0.60
11. Looking in a mirror and not recognizing themselves	0.66
12. Feeling that other people, objects, and the world around them are not real	0.72
13. Feeling that their body does not belong to them	0.59
27. Hear voices inside their head that tell them to do things or comment on things that they are doing	0.49
28. Feels as if they are looking at the world through a fog so that people or objects appear far away or unclear	0.73
In Situ Amnesia	
3. Finding themselves in a place and having no idea how they got there.	0.81
4. Finding themselves dressed in clothes that they don't remember putting on	0.69
Common dissociative experiences	
21. When they are alone they talk out loud to themselves	0.48
22. In one situation they may act so differently compared with another situation that they feel almost as if they were different people	0.85

Table 7
 QED Confirmatory Factor Analysis Fit Statistics Comparing One, Three, Five and Six First-Order Factor Models

Model	χ^2	df	CI RMSEA	RMSEA	GFI	CFI
Independence	2952.27	325	.139 - .148	0.143	0.45	0.00
One Factor	1328.49	299	.088 - .099	0.093	0.75	0.61
Two Factor	932.4	298	.068 - .079	0.074	0.81	0.76
Five Factor	582.07	289	.045 - .057	0.051	0.90	0.89
Six Factor	531.47	284	.041 - .053	0.047	0.90	0.91

Note: DES=Dissociative Experiences Scale; CI RMSEA= Confidence Interval of Root Mean Square Error of approximations; RMSEA=root mean square error of approximations; GFI= goodness of fit index; CFI=Comparative fit index

Table 8
Standardized Regression Weights and Item Loadings for the QED 5
Factor Model

QED Items	Item Standardized Regression Weights
Depersonalization/Derealization/Amnesia	
1. I often feel as if things are not real	0.66
2. Occasionally, I feel like someone else.	0.68
3. Sometimes my mind blocks, goes totally empty	0.64
4. I often wonder who I really am.	0.58
5. At one or more times, I have found myself staring intently at myself in the mirror as though looking at a stranger.	0.63
6. I often feel that I am removed from my thoughts and actions.	0.74
8. I have had periods where I could not remember where I had been the day (or days) before.	0.51
9. When I try to speak words, they do not come out right.	0.58
11. As I was growing up, people often said that I seemed to be off in a world of my own.	0.51
12. Sometimes I feel like my body is undergoing a transformation.	0.53
13. Sometimes I feel as if there is someone inside of me directing my actions.	0.53
16. Sometimes I have problems understanding other's speech.	0.41
19. I have a rich and exciting fantasy life.	0.39
Fantasy/Daydream	
15. When I was a child, I rarely sat and daydreamed in school.	0.57
18. My mind has never gone blank on me.	0.66
20. I never find myself staring off into space without thinking of anything.	0.63
21. I daydream very little.	0.60
26. I have never had periods of déjà vu	0.24
Hypnotizability	
10. I have never come to without knowing where I was or how I got there.	0.44
23. I do not think I would be able to hypnotize myself	0.75
24. When I was a child I never had imaginary companions.	0.58
25. I have never gone into a trance, like hypnosis.	0.87
Dissociated body behavior	
14. Sometimes my limbs move on my own.	0.67
22. My soul sometimes leaves my body.	0.60
Cognitive Deficits	
7. I rarely feel confused, like in a daze.	0.62
17. I am rarely bothered by forgetting where I put things.	0.43

Tabel 9
Standardized Regression Weights and Item Loadings for the QED 6 Factor
Model

QED Items	Item Standardized Regression Weights
Depersonalization/Derealization	
1. I often feel as if things are not real	0.67
2. Occasionally, I feel like someone else.	0.69
4. I often wonder who I really am.	0.58
5. At one or more times, I have found myself staring intently at myself in the mirror as though looking at a stranger.	0.65
6. I often feel that I am removed from my thoughts and actions.	0.75
12. Sometimes I feel like my body is undergoing a transformation.	0.54
13. Sometimes I feel as if there is someone inside of me directing my actions.	0.54
19. I have a rich and exciting fantasy life.	0.38
Fantasy/Daydream	
15. When I was a child, I rarely sat and daydreamed in school.	0.57
18. My mind has never gone blank on me.	0.67
20. I never find myself staring off into space without thinking of anything.	0.63
21. I daydream very little.	0.60
26. I have never had periods of déjà vu	0.23
Hypnotizability	
10. I have never come to without knowing where I was or how I got there.	0.44
23. I do not think I would be able to hypnotize myself	0.76
24. When I was a child I never had imaginary companions.	0.58
25. I have never gone into a trance, like hypnosis.	0.87
Trance/Amnesia	
3. Sometimes my mind blocks, goes totally empty	0.69
8. I have had periods where I could not remember where I had been the day (or days) before.	0.52
9. When I try to speak words, they do not come out right.	0.63
11. As I was growing up, people often said that I seemed to be off in a world of my own.	0.57
16. Sometimes I have problems understanding other's speech.	0.45
Dissociative Body Behavior	
14. Sometimes my limbs move on my own.	0.67
22. My soul sometimes leaves my body.	0.60
Cognitive Deficits	
7. I rarely feel confused, like in a daze.	0.60
17. I am rarely bothered by forgetting where I put things.	0.44

Table 10
 DIS-Q Confirmatory Factor Analysis Fit Statistics Comparing One, Four and
 Twelve First-Order Factor Models

Model	χ^2	df	CI RMSEA	RMSEA	GFI	CFI
Independence Model	13433.55	1953	.120 - .124	0.120	0.140	0.000
One Factor	5587.36	1890	.068 - .073	0.070	0.65	0.68
Four Factor	4930.90	1884	.062 - .066	0.064	0.71	0.73
Twelve Factor	4095.28	1824	.054 - .059	0.056	0.75	0.80
Twelve Factors Modified	3942.87	1816	.052 - .057	0.055	0.76	0.81

Note: DES=Dissociative Experiences Scale; CI RMSEA= Confidence interval root mean square error of approximations; RMSEA=root mean square error of approximations; GFI= goodness of fit index; CFI=Comparative fit index

Table 11

Standardized Regression Weights and Item Loadings for the DISQ 12 Factor Model	Item Standard Regression Weights
DISQ Item	
Memory/Cognitive Deficits	
5. While driving and/or bicycling, I suddenly realize that I cannot remember what happened on the way.	0.67
8. It happens that I am listening to someone and suddenly realize that I have not heard part or the whole story.	0.62
14. I regularly feel an urge to eat something, even when I am not hungry.	0.48
18. At moments I cannot remember where I was the day (or days) before.	0.60
25. I immediately forget what other people tell me.	0.67
31. When I watch television, I do not notice anything that goes on around me.	0.58
32. It happens that entire blocks of time drop out and I cannot remember what I did then.	0.67
47. I sometimes forget where I have put something.	0.64
48. When eating, I do so without thinking about it.	0.54
Self Regulation	
6. I can, without reason or without wanting to, burst out laughing or crying.	0.54
22. It happens that I am about to say something but something quite different crosses my lips.	0.66
23. There can be a sudden, complete change in my mood.	0.69
33. I can remember so vividly something that happened formerly, that I have the feeling that I am reliving it.	0.57
35. Sometimes I discover that I have done something without remembering anything about it.	0.66
38. It happens that I am not sure whether certain memories have really taken place or if I merely dreamed about them.	0.62
43. I can enclose myself in fantasies or daydreaming so much so that it seems to be really happening.	0.65
54. I lose every notion of time.	0.58
55. It happens that I cannot remember whether I have really done something or if I merely planned it.	0.65
Daydreaming	
1. At times I have the feeling that I am daydreaming.	0.80
49. It happens that I catch myself daydreaming.	0.90
Trance	
44. It happens that I stare aimlessly without thinking about everything.	0.90
45. I often think about nothing.	0.68
Mind/Body Disconnect	
3. At times it seems that I have lost contact with my body.	0.64
7. It happens that I have the feeling that I am somebody else.	0.47
9. When I am tired, it seems as if a strange power from outside takes possession of me and decides for me what to do.	0.58
26. It happens that I am doing something and I am suddenly struck by a blackout.	0.55
34. At times it seems as if someone inside me decides what I do.	0.70
39. Sometimes I find myself in a well-known place that appears strange and unknown to me.	0.61
61. It happens that I hear voices in my head telling me what I am doing or making comment on what I am doing.	0.57
Derealization	
2. I regularly have the feeling that everything is unreal.	0.61
21. It happens that I cannot remember anything about certain important events in my life, such as my final examinations or wedding-day.	0.51
29. It happens that I have the feeling that other people, other things and the world surrounding me, are not real.	0.58
62. I see myself differently from the way other people see me.	0.64
63. It happens that I am looking at the world through a haze, so that people and things surrounding me appear remote or vague.	0.71
Depersonaliation	
19. It happens that I am told that I act as if friends or family members were strangers to me.	0.49
27. It happens that I look in the mirror without recognizing myself.	0.73

Table 11 (continued)

DISQ 12 Factor Model	Item Standardized Regression Weights
28. It happens that I have the feeling that my body undergoes an alteration.	0.72
30. I have the feeling that my body is not (really) mine.	0.64
<hr/> Disjoined sense of self <hr/>	
20. In particular situations I experience myself as a split personality.	0.75
57. It happens that I have the feeling that my mind is split up.	0.79
59. I have the feeling that I am made up of two (or more) people.	0.68
<hr/> Identity Confusion <hr/>	
4. I gorge myself with food without thinking about it.	0.55
11. At times I feel a great distance between myself and the things I think and do.	0.68
12. At times I wonder who I am exactly.	0.55
16. It happens that I am determined to do something, but my body acts quite differently against my own will.	0.60
17. It happens that I feel confused.	0.59
36. I wonder how I can prevent myself from doing certain things.	0.69
40. I have the feeling that I do certain things without knowing why.	0.73
41. Sometimes I think or do something against my liking in a way that does not suit me at all.	0.70
46. I find it very hard to resist bad habits.	0.57
50. I wish I had more control of myself.	0.65
<hr/> Loss of Control <hr/>	
10. I get into situations in which I do not want to be.	0.63
13. It happens that I find new articles among my things without being able to remember ever having purchased them.	0.50
24. It happens that I do something without thinking about it.	0.73
37. Sometimes I suddenly notice that I find myself in a place that is unknown to me, without knowing how I got there.	0.45
58. It happens that I find notes, drawings, or annotations of my own, without remembering having ever made these.	0.53
60. I often do something without thinking about it.	0.77
<hr/> Absorption <hr/>	
15. It happens that I feel angry without wanting to be at all.	0.64
42. I notice that I watch myself closely in everything I do.	0.54
52. In particular situations, I notice that I am able to do certain things with the greatest ease, that I find hard to do in others (e.g. sports, work, social contacts).	0.46
56. It happens that I want to do two things at the same time and that I notice that I am arguing with myself the pros and cons.	0.55
<hr/> Self Awareness <hr/>	
51. When I walk, I am aware of each step I take.	0.70
53. When eating, I am aware of every bite I take.	0.69

Table 12

DES, DISQ, and QED Factor Correlations

	DES F1	DES F2	DES F3	DES F4	DES F5	QED F1	QED F2	QED F3	QED F4	QED F5	QED F6	DISQ F1	DISQ F2	DISQ F3	DISQ F4	DISQ F5	DISQ F6	DISQ F7	DISQ F8	DISQ F9	DISQ F10	DISQ F11	DISQ F12	
DES F1																								
DES F2	.57**																							
DES F3	.67**	.54**																						
DES F4	.52**	.41**	.56**																					
DES F5	.52**	.42**	.40**	.32**																				
QED F1	.58**	.68**	.54**	.33**	.42**																			
QED F2	.32**	.28**	.18**	.26**	.25**	.32**																		
QED F3	.001	.003	.002	.002	-.003	.000	.19**																	
QED F4	.63**	.49**	.56**	.40**	.47**	.65**	.37**	-.004																
QED F5	.38**	.46**	.35**	.27**	.30**	.45**	.19**	-.003	.40**															
QED F6	.16**	.15**	.12**	.14**	0.10	.17**	.30**	.24**	.14**	.13*														
DISQ F1	.72**	.48**	.56**	.43**	.44**	.58**	.32**	-.008	.72**	.31**	.16**													
DISQ F2	.76**	.55**	.61**	.41**	.50**	.67**	.32**	-.005	.71**	.41**	.16**	.74**												
DISQ F3	.52**	.33**	.31**	.26**	.35**	.43**	.39**	-.002	.53**	.27**	0.08	.60**	.58**											
DISQ F4	.57**	.34**	.47**	.34**	.39**	.39**	.25**	-.006	.58**	.31**	.12*	.60**	.58**	.54**										
DISQ F5	.57**	.68**	.54**	.37**	.43**	.67**	.26**	0.06	.59**	.48**	.19**	.59**	.69**	.41**	.44**									
DISQ F6	.57**	.68**	.51**	.34**	.40**	.72**	.30**	-.011	.64**	.32**	.15**	.66**	.69**	.44**	.40**	.66**								
DISQ F7	.39**	.75**	.44**	.21**	.32**	.66**	.22**	0.00	.43**	.42**	.15**	.40**	.48**	.26**	.22**	.62**	.60**							
DISQ F8	.48**	.57**	.48**	.26**	.48**	.55**	.20**	0.01	.50**	.35**	.17**	.47**	.61**	.33**	.41**	.62**	.60**	.55**						
DISQ F9	.57**	.55**	.56**	.39**	.45**	.71**	.30**	-.004	.68**	.42**	.16**	.68**	.70**	.48**	.50**	.65**	.70**	.54**	.56**					
DISQ F10	.55**	.42**	.67**	.44**	.32**	.57**	.22**	-.003	.62**	.34**	.18**	.63**	.66**	.45**	.49**	.59**	.55**	.43**	.44**	.72*				
DISQ F11	.55**	.41**	.37**	.21**	.41**	.56**	.14**	-.011	.50**	.31**	0.08	.55**	.66**	.38**	.4**	.53**	.57**	.42**	.52**	.65**	.48**			
DISQ F12	.11*	0.07	0.08	0.00	0.05	.11*	-.002	0.03	0.04	0.00	0.05	-.002	.14**	0.03	0.02	.11*	0.08	0.09	.14**	.13*	0.10	.30**		

Note. ** = >.001, * = >.05.

APPENDIX B

FIGURES

Figure 1. Dissociative Experiences Scale 5 factor model modified.

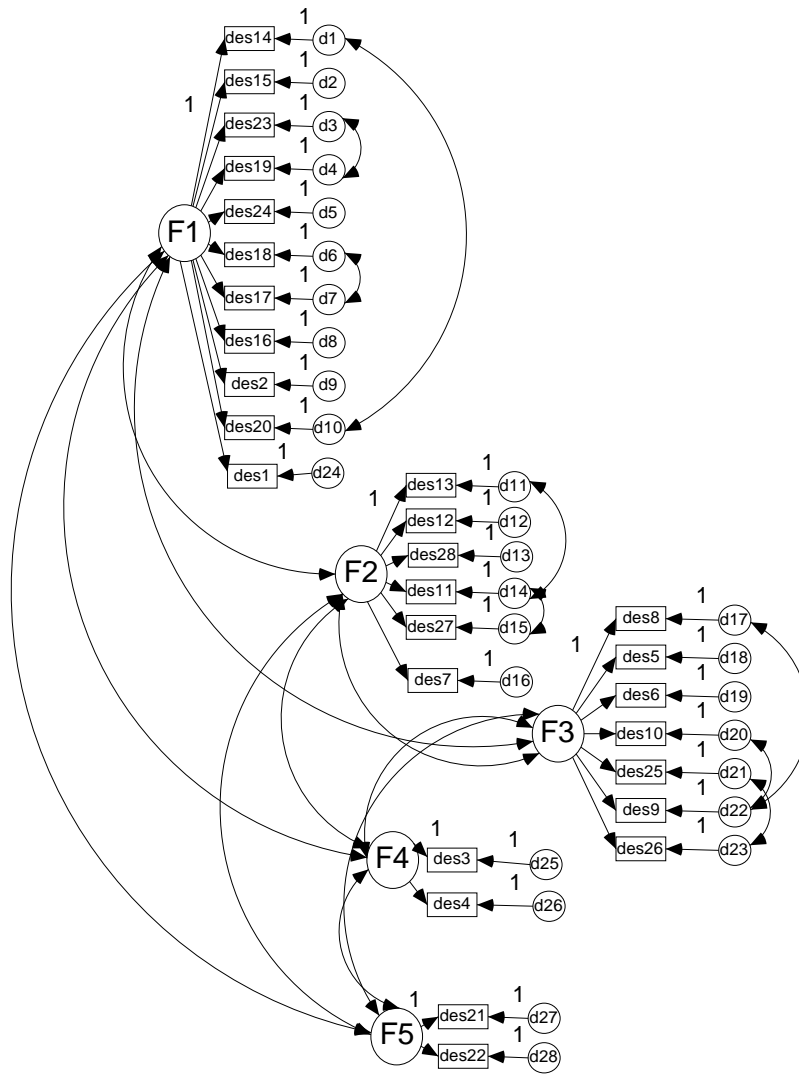


Figure 2. Questionnaire of Experiences of Dissociation 5 factor model.

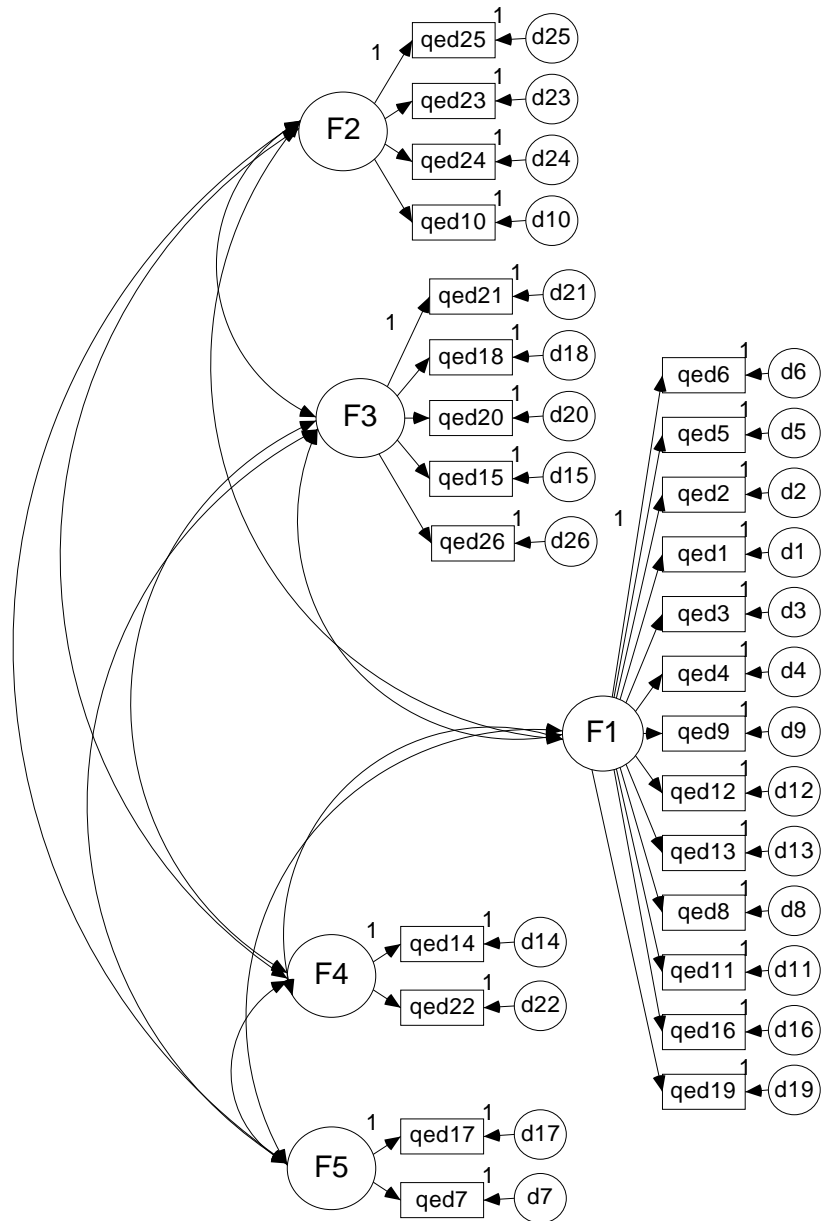


Figure 3. Questionnaire of Experiences of Dissociation 5 factor model.

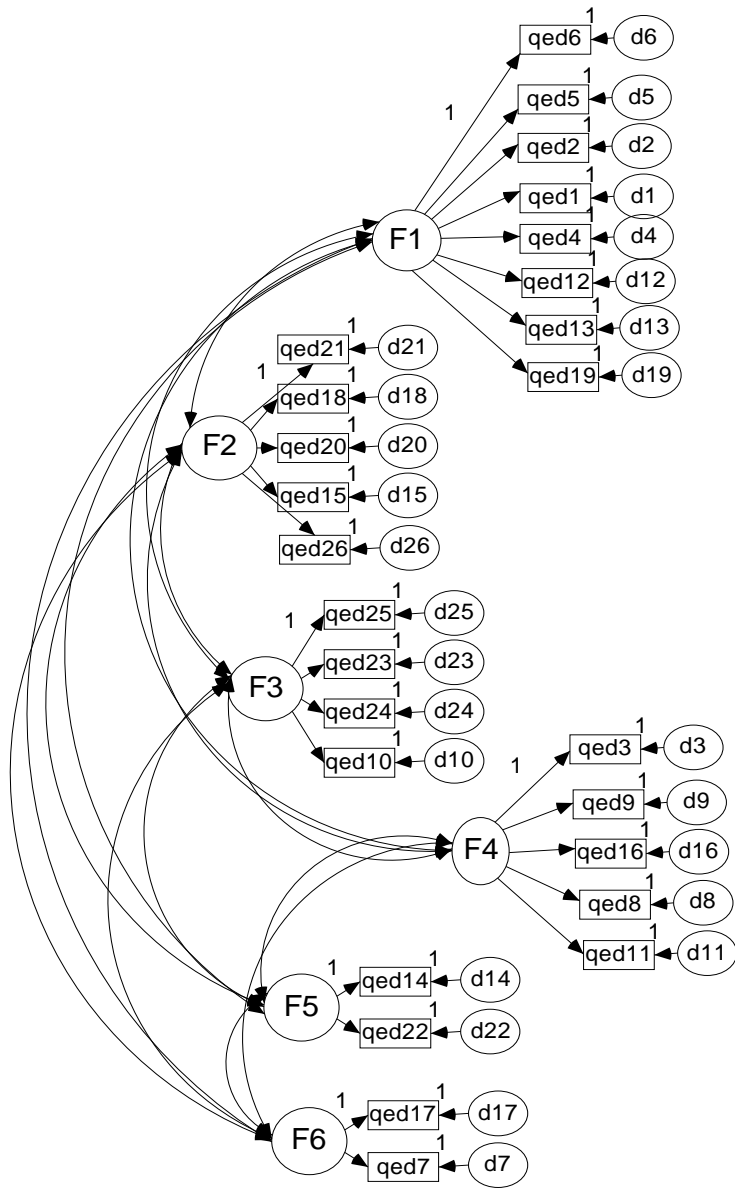


Figure 4. Higher order confirmatory factor analysis with factors from the Dissociative Experiences Scale and the Questionnaire of Experiences of Dissociation

