

PREDICTORS OF TONIC IMMOBILITY IN
SEXUAL ASSAULT SURVIVORS

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ABSTRACT

Tonic immobility is a temporary state of motor inhibition that occurs while an individual is fully conscious, thought to develop as a result of extreme panic or fear. Studies of sexual assault have often found that survivors of sexual trauma report experiencing some level of tonic immobility during their assaults. Research has posited many potential predictors of this intense response, including assault severity, age difference and relationship between survivor and perpetrator, peritraumatic assault characteristics, prior victimization, and survivor substance use.

This study examined the predictors of tonic immobility in 41 female sexual assault survivors through the use of an online survey. Assessments included the Tonic Immobility Scale, Sexual Experiences Survey, Childhood Trauma Questionnaire, Sexual Assault Severity Scale, Peritraumatic Dissociation Experiences Questionnaire, and the Posttraumatic Stress Disorder Checklist. The relationship between the survivor and perpetrator, sexual assault severity, and certain assault characteristics were found to significantly predict the emergence of tonic immobility. However, age difference between survivor and perpetrator, prior victimization, and substance use did not significantly predict the tonically immobile response. Future directions include the collection of additional data assessing the relationships between tonic immobility and individual difference variables and the replication of this study using an interview format.

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CHAPTER 1

INTRODUCTION

Prevalence and Impact of Sexual Assault

Sexual assault is a pressing social issue in the United States affecting substantial numbers of girls and women. According to the National Intimate Partner and Sexual Violence Survey (NISVS), 18.3% of women in the United States experienced forcible rape during their lifetimes, which translates to approximately 22 million women in the U.S. (Black et al., 2011). In addition to forcible rape, 44.6% of women in the U.S. have experienced sexual assaults other than rape (e.g., sexual coercion, unwanted sexual contact, etc.) during their lifetime (Black et al., 2011). Sexual assault has many deleterious mental health consequences, including Posttraumatic Stress Disorder (PTSD), anxiety, and depression (Au, Dickstein, Comer, Salters-Pedneault, & Litz, 2013; Breslau, 2009; Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley, 2007; Ullman, Relyea, Peter-Hagene, & Vasquez, 2013). Suicidal ideation and behavior are also byproducts of sexual assault (Au et al., 2013; Ullman & Brecklin, 2002). Negative physical health outcomes, including somatic symptoms, general declines in physical health, and sexual functioning problems are also documented (Stein et al., 2004; Ullman & Brecklin, 2003; Wasco, 2003). Sexual assault increases the risk of developing substance abuse disorders (McCauley, Kilpatrick, Walsh, & Resnick, 2013; Ullman et al., 2013) and for engaging in risky sexual behaviors post-assault (Deliramich & Gray, 2008; Gilmore et al., 2014).

Sexual assault survivors are also significantly more likely to be sexually revictimized, particularly women whose first assault occurred prior to age 18 (Black et al., 2011; Classen, Palesh, & Aggarwal, 2005; Tjaden & Thoennes, 2000). Researchers have hypothesized that this increased revictimization risk may be due to certain maladaptive coping techniques often utilized by trauma victims, distortions in cognitive schemas, engaging in risky behaviors, and difficulties accurately perceiving rape risk (Bell & Naugle, 2008; Fortier et al., 2009; Lalor & McElvaney, 2010). Taken together, these studies illustrate the profound impact that sexual assault can have on survivors.

While there is no singular response to sexual assault victimization, there are commonly reported behavioral and emotional responses to sexual trauma during (i.e. peritraumatic responses) and after an assault (i.e. posttraumatic responses). Peritraumatic and posttraumatic responses are complex and multidimensional, influenced by a variety of individual difference variables, such as prior trauma history and assault characteristics such as assault severity and the nature of the victim-offender relationship.

Peritraumatic Sexual Assault Responses

Research on resistance to sexual assault indicates that the majority of sexual assault survivors engage in some type of self-protective or resistant behavior in response to an assault (Clay-Warner, 2002; Greenfeld, 1997). Only 20% to 30% of women engage in aggressive or forceful resistance (Kaysen, Morris, Rizvi, & Resick, 2005; Ullman, 2007), such as physically fighting, hitting, biting, scratching, or using a weapon against their attacker. While research on the effectiveness of resistance strategies and the circumstances surrounding their use is multifaceted and complex, at times yielding conflicting results, the general consensus of the literature is that active resistance

strategies are the most effective self-protective strategies for successful rape avoidance (Clay-Warner, 2002; Guerette & Santana, 2010; Rozee & Koss, 2001; Tark & Kleck, 2014; Ullman, 1997; Ullman, 2007). Active resistance strategies also include non-forceful behaviors, such as fleeing, struggling, or guarding one's body (Clay-Warner, 2002; Tark & Kleck, 2014). Use of active and forceful resistance strategies to repel a threatened sexual assault do not appear to increase the risk of physical injuries (Guerette & Santana, 2010; Tark & Kleck, 2004; Ullman, 1997; Ullman, 2007). While some studies have found that forceful resistance leads to further injury, confounding of forceful resistance with the timing of resistance strategy deployment made it impossible to discern whether injuries were sustained before or after utilizing forceful resistance strategies, thus obscuring the directionality of the relationship between those constructs (Atkeson, Calhoun, & Morris, 1989; Brecklin & Ullman, 2001; Prentky, Burgess, & Carter, 1986). In addition, these studies did not take into account that offenders who begin crimes violently, which can cause greater injury at the outset of the attack, are more likely to react with greater violence in response to victim resistance (Balemba, Beauregard, & Mieczkowski, 2012).

Despite the fact that active resistance is the most effective strategy for stopping or preventing a sexual assault, most women do not forcefully resist their attackers, alternatively relying on more passive actions, including verbal strategies, such as yelling, crying, pleading, or trying to reason with their attacker (Edwards et al., 2014; Kaysen et al., 2005; Stoner et al., 2007; Turchik, Probst, Chau, Nigoff, & Gidycz, 2007; Ullman, 2007). Passive resistance strategies yield varied rates of success in fending off a sexual assault, based on strategy type, with more aggressive forms of verbal strategies (e.g.,

screaming, yelling) evidencing greater effectiveness than more passive verbal strategies (e.g., crying, pleading) at avoiding rape completion (Ullman, 1997; Ullman, 1998).

Overall, more passive resistance is associated with a greater likelihood of sexual assault completion, compared to more forceful resistance (Clay-Warner, 2002; Ullman, 2007).

The likelihood of deploying active versus passive resistance strategies is influenced by a complex interaction of behavioral, situational, and socio-emotional factors. However, several known factors increase the likelihood that one strategy over another will be employed (Clay-Warner, 2003; Stoner et al., 2007; Turchik et al., 2007; Ullman, 2007). Specifically, the forcefulness of a woman's resistance tends to match the level of perpetrator aggression during the assault (Balemba et al., 2012; Edwards et al., 2014; Norris et al., 2006; Nurius, Norris, Young, Graham, & Gaylord, 2000; Turchik et al., 2007; Ullman, 1997). For example, a survivor is more likely respond to verbal coercion or threats with verbal resistance strategies, whereas a survivor attacked with physical violence is more likely to respond with greater force. However, even in the face of perpetrator physical aggression, not all women respond with forceful resistance. Edwards et al. (2014) found that only one third of women who were sexually assaulted with physical force reported using physical or forceful resistance strategies, relying instead on more passive forms of resistance (e.g., pulling away, pretending to sleep) or verbal tactics. Thus, other factors also influence victim use of aggressive, active or passive resistance strategies.

The victim-offender relationship significantly influences victim's deployment of various rape resistance strategies (Feinstein, Humphreys, Bovin, Marx, & Resick, 2011; Norris et al., 2006; Ullman, 2007). In general, there is an inverse relationship between the

degree of victim-perpetrator closeness and the level of forceful resistance utilized in response to a sexual assault. Specifically, survivors who have a prior intimate relationship with their attackers are less likely to employ assertive or forceful resistance strategies, whereas survivors assaulted by strangers are more likely to assertively resist (Clay-Warner, 2003; Edwards et al., 2014; Turchik et al., 2007; VanZile-Tamsen, Testa, & Livingston, 2005). Concerns about relationship preservation, feelings of self-consciousness or embarrassment, feelings of uncertainty, difficulties with the appraisal of risk and danger levels, among others, explain why women assaulted by current or former romantic partners elect passive over more forceful rape resistance strategies (Nurius et al., 2000; Nurius, Norris, Macy, & Huang, 2004; Stoner et al., 2007; Turchik et al., 2007; VanZile-Tamsen et al., 2005). However, the association between the degree of intimacy in the relationship and the use of active resistance is not a universal finding, as Feinstein et al. (2011) discovered in the first empirical study examining the impact of victim-offender relationship status on the association between peritraumatic fear and survivor's use of active resistance. Feinstein et al. (2011) found that survivors of intimate partner sexual assault may actually respond more assertively, but only when they experience lower levels of peritraumatic fear, due to greater familiarity with the attacker and higher levels of confidence that their partner will not seriously injure or kill them. These results suggest the need for more nuanced examinations of the potential moderating effects of victim-offender relationship on other assault related characteristics.

As alcohol inhibits motor function and clouds risk perception, victim alcohol use may also influence employment of resistance strategies. Pre-assault victim alcohol use is associated with greater use of passive or polite resistance strategies (e.g., verbal

resistance, negotiating), and less employment of active or forceful responses (Nurius et al., 2004; Stoner et al., 2007), particularly in the context of an established romantic or intimate relationship between the victim and offender (Norris et al., 2006). Finally, prior victimization history is associated with greater utilization of passive strategies in response to rape threat, although this relationship is also influenced by additional factors, such as assault severity (Norris et al., 2006; VanZile-Tamsen et al., 2005). Responses to sexual assault are complex and multiply determined. Taken together, this body of research advocates the need for more research on the complex associations and interactions between individual and assault-related characteristics and the use of active versus passive sexual assault resistance strategies.

While active resistance strategies appear to be the most successful techniques to stop rape without concomitant risk injury, the majority of survivors do not engage in forceful resistance, instead opting for more passive resistance. Despite this empirical reality, laypersons and professionals alike expect that women actually or ought to use as much force as possible to resist a potential sexual assault (Edwards, Turchik, Dardis, Reynolds, & Gidycz, 2011; Ryan, 2011). Failure to respond to sexual assault in expected ways results in a greater apportionment of responsibility and blame for sexual assault attributed to the victim than the offender and ratings of victim accounts as lacking credibility (Ellison & Munro, 2009a; 2009b; Flood & Pease, 2009; Hockett, Saucier, Hoffman, Smith, & Craig, 2009; Yamawaki, 2007).

Rape Myths, Scripts and Biases

Studies and measures of rape myths have, with little variation, concluded that rape myths are defined as “attitudes and beliefs that are generally false, but are widely

believed and persistently held, and that serve to deny and justify male sexual aggression against women” (Lonsway & Fitzgerald, 1994, p. 134). In other words, rape myths remove blame for sexual assaults from prototypical male perpetrators, instead allocating blame to female survivors. While there are countless socially accepted sexual assault myths and biases, research consistently finds pervasive acceptance of the following myths: 1) husbands cannot rape their wives; 2) women enjoy rape; 3) women ask to be raped; 4) women lie about being raped; 5) men cannot stop themselves once they become sexually aroused; and 6) rapists are qualitatively different from non-sexually aggressive men (Bohner, Eyssel, Pina, Siebler, & Viki, 2009; Edwards et al., 2011; Kirkwood & Cecil, 2001; Lonsway & Fitzgerald, 1994; Ryan, 2011). While rape myth acceptance is widespread even across genders, men typically endorse rape myths more often and to a greater extent, compared to women (Clark & Carroll, 2008; Ewoldt, Monson, & Langhinrichsen-Rohling, 2000; Suarez & Gadalla, 2010). Individuals who do not have personal experience with sexual victimization, particularly males, may be especially prone to rely on culturally accepted rape myths to fill in this experiential gap (Crome & McCabe, 2001). Rape myth acceptance is closely tied to the development of rape scripts, defined as prototypes or models depicting the ways in which sexual assaults are usually transacted, including beliefs about where rapes typically occur, perpetrator and victim gender, the roles of the perpetrator and victim, the victim’s emotional, behavioral and strategic responses during and post-assault, among others (Crome & McCabe, 2001; Ryan, 2011). One of the most prevalent rape scripts is the phenomenon known as the “real rape” script (i.e., the “stranger danger” script), involving a sudden and unexpected attack perpetrated by a strange, crazy man against an attractive, young woman walking

alone, typically involving a violent struggle in which the woman vigorously and aggressively resists, but is unable to escape or overcome her attacker (Horvath & Brown, 2009; Krahe, Bieneck, & Scheinberger-Olwig, 2007a; Littleton & Axsom, 2003; Littleton, Breitkopf, & Berenson, 2007a; Ryan, 2011). One implication of the ‘stranger danger’ or ‘real rape’ script is that the victim is presumed to be physically injured and psychologically devastated following the assault, because of the violent and unexpected nature of the crime, and that her responses do or ought to display a surfeit of emotions, notably excessive levels of fear or hysteria (Frese, Moya, & Megias, 2004; Littleton et al., 2007a; Littleton, Canales, & Backstrom, 2009). This “real rape” script is inextricably tied to the pervasive rape myths listed above insinuating that the only men who rape are mentally deranged weapon-wielding strangers. The rape myth, “women ask to be raped,” holds women accountable for being sexually assaulted for having placed themselves in risky situations, such as walking alone at night, wearing provocative clothing, drinking alcohol, or engaging in other consensual sexual acts preceding the sexual assault, such as kissing or petting.

While these rape myths and scripts are commonly endorsed, research has found that they are often highly inaccurate (Edwards et al., 2011; Littleton, 2011). Countless studies document that women are more often assaulted by perpetrators known to them than by strangers (Abbey, BeShears, Clinton-Sherrod, & McAuslan, 2004; McMullin & White, 2006; Ryan, 2011; Tjaden & Thoennes, 2000). In the NISVS, 51.1% of women reported being raped by an intimate partner, and 40.8% by an acquaintance; men who were not strangers, nor mentally ill (Black et al., 2011). While sexual assaults can be violent, the majority produce minimal physical injuries (Ullman, 1997) and, typically

involve passive or nonassertive victim resistance. In contrast to the real rape script, women do not have to experience a violent rape to experience high levels of psychological distress. Many women who experience assaults outside the boundaries of the “real rape” script also report high levels of symptomatic distress (Bennice & Resick, 2003; Littleton, Rhatgigan, & Axsom, 2007b). Lastly, in contrast to myths purporting that women lie about being raped as retribution for being scorned or for other vengeful motives, research suggests that false rape allegations are rare and no different from false allegations associated with other crimes (Ferguson & Malouff, 2016; Lisak, Gardinier, Nicksa, & Cote, 2010; Lonsway, Archambault, & Lisak, 2007).

Rape myth acceptance is so prevalent that even women are prone to accept them as true. Consequently, the greater the discrepancy between a woman’s experience of sexual assault and the ‘stranger danger’ script, the less likely she will label an experience of unwanted sex as an assault (Bondurant, 2001; Littleton et al., 2007b; McMullin & White, 2006). Likewise, the more an assault deviates from the ‘real rape’ script, the less credible the victim is perceived to be, and the less veracity accorded to her account (Clark & Carroll, 2008; Frese et al., 2004). This may be due to the fact that many individuals, especially men, tend to believe that a sexual assault has not occurred and are more likely to victim blame if the assault involves details that are inconsistent with accepted rape myths and scripts (Eyssel & Bohner, 2011; Frese et al., 2004; Temkin & Krahé, 2008). For example, Clark and Carroll (2008) found that, when participants were given details regarding a fictitious acquaintance rape scenario, men were significantly more likely to explicitly state that the female was not raped, that a false accusation had been made, and that some responsibility should be placed on the victim. In fact, some individuals do not

believe that sexual assault can even occur during casual sexual encounters, like a hook up (Littleton et al., 2009). Even individuals who endorse low levels of rape myth acceptance expressed doubts about victims' complicity and responsibility when a rape scenario included acquaintance rape, victim alcohol use, and a provocatively dressed victim (Frese et al., 2004).

These studies suggest that the more sexual assaults deviate from the "real rape" script, the less credible the survivor is presumed to be and the less veracity attached to her story. One important aspect of this deviation involves the level and types of resistance strategies deployed by sexual assault survivors. Because most survivors use passive resistance strategies, which does not comport with the forceful, violent resistance expected according to the "stranger danger" rape script (Krahé et al., 2007a; Littleton & Axsom, 2003; Ryan, 2011), rape victims who do not forcefully resist their assailants are often perceived as lacking credibility, and their assaults dismissed as lacking legitimacy.

In summary, active resistance is the most effective strategy to avoid sexual assault, but most women instead utilize more passive resistance strategies, especially in response to non-stranger sexual assaults. Women who respond to sexual assault in more passive ways are less likely to be believed when reporting sexual assaults to others, as this resistance method is inconsistent with prevailing rape scripts. For this reason, these types of resistance strategies appear to be counterintuitive, i.e., they do not match the stereotypic response styles depicted in common rape scripts, are less likely to prevent rape, and can result in additional post-assault difficulties for the survivors.

Among survivors who deploy more passive resistance strategies, there exists a subgroup who offer minimal or no resistance. Among this subgroup, those who react

more passively (e.g., pretending to sleep, pleading, crying, negotiating) can be differentiated from those whose reactions are characterized as frozen and immobile, i.e., tonic immobility (Fusé, Forsyth, Marx, Gallup, & Weaver, 2007; Galliano, Noble, Travis, & Puechl, 1993; Heidt, Marx, & Forsyth, 2005). Tonic immobility was first documented in ethology studies with animals; to date, relatively little is known about tonic immobility in human beings. Thus, empirical research on this counterintuitive sexual assault response is needed to better understand this phenomenon among humans. The remainder of this review will focus on tonic immobility.

Tonic Immobility

Definition of Tonic Immobility

Tonic immobility is best understood as a complex, survival-based defensive response to danger, as part of the four stages threat response system: freeze, flight, fight, and tonic immobility (Bracha, 2004; Marx, Forsyth, Gallup, Fusé, & Lexington, 2008). This established biological response to threat was first identified and researched in the ethology literature (Maser & Gallup, 1977; Ratner, 1967), but has since been extended to explain complex survival-based reflexes to threat of harm among humans (Marx et al., 2008; Volchan et al., 2011). According to Ratner (1967), organisms move somewhat sequentially through the four stages of the threat response system, as perceived threat becomes more proximal, and therefore more dangerous. During the first stage, or the freezing stage, the organism has perceived, but not yet encountered the threat. To increase the probability of remaining undetected, the prey halts all movement, which is accompanied by a decrease in heart rate and an increase in hypervigilance and attentional responses (Gallup, 1977; Volchan et al., 2011). If the freezing response does not

successfully avoid the threat, the organism then moves into the second and/or third stages, “flight or fight.” Marx et al. (2008) describes this as the “post-encounter stage,” as the organism is now in direct contact with its predator and attempts to flee. Flight is then followed by attempts to fight or resist the predator. In contrast to the biology of the freezing stage, the now physiologically aroused organism experiences increased heart rate and additional startle responses (Ratner, 1967; Volchan et al., 2011).

If the prey is unable to outrun (i.e., flee) or overpower its predator (i.e., fight), the organism is left with one final defense strategy: tonic immobility. Tonic immobility is the fourth and final stage of the defensive response to danger, which is characterized by a state of significant motor inhibition occurring even when an organism is fully conscious (Cantor, 2009). Tonic immobility involves nearly complete immobility accompanied by very little response to external stimulation, decreased nervous system responses, and increased heart rate (Cantor, 2009; Gallup, 1977; Marx et al., 2008; Volchan et al., 2011). This absence of movement is differentiated from the freezing response in the first stage, as the biological correlates of the two stages are typically exactly opposite. Tonic immobility involves the absence of responsiveness to external stimuli and a rigid-like posture, whereas the freezing stage is differentiated by increased hypervigilance to external stimuli, accompanied by alert posture allowing for volitional movement in an attempt to avoid the predator (Marx et al., 2008; Volchan et al., 2011). From a biological perspective, tonic immobility, while at first may seem like a counterintuitive or potentially maladaptive response to danger, is conceptualized as a survival enhancing response once contact with a predator has been made. Sudden and complete immobility may confuse or trick the predator into perceiving its victim as deceased, which halts the

predator's attack reflexes (Cantor, 2005; Marx et al., 2008), i.e., 'playing possum.' More so, the decrease in blood pressure that accompanies tonic immobility can prevent excessive bleeding resulting from injury, thereby increasing the probability of eventual escape (Cantor, 2005; Marks, 1987). Tonic immobility can continue for as long as an organism remains in danger (from several seconds to several hours) and appears to end abruptly. Circumstances leading to tonic immobility cessation depend greatly on the context and the species in question, as certain cues, such as a sudden noise or bright light, successfully terminated tonic immobility in animal studies (Marx et al., 2008). Tonic immobility is typically followed by whatever circumstances are necessary for continued survival, e.g., escape, renewed fighting, etc. (Gallup, 1977; Ratner & Thompson, 1960), demonstrating that the four stages do not necessarily occur in the same particular order in every instance. Prey can attempt to fight, then experience tonic immobility in response to the magnitude of the threat, and then flee when the immobility subsides, an option that may not have been initially perceived as available.

Theoretical Explanations of Tonic Immobility

There are various proposed explanations as to why tonic immobility occurs in both animals and humans. The theoretical framework that appears to be the most widely accepted in the recent psychological literature is known as the fear hypothesis (Marx et al., 2008). The fear hypothesis states that there is a direct relationship between a potential prey's level of perceived fear and its' susceptibility to tonic immobility (Gallup, 1977). Animal research reveals that organisms can only exhibit tonic immobility if they have the biological capacity to experience fear, or have reached the appropriate level of developmental maturity in order to respond fearfully to threatening stimuli (Marx et al.,

2008; Ratner & Thompson, 1960). If, for example, an animal's neurobiological fear response was altered, either through lesions to the limbic system or through the administration of pharmaceuticals, both the emergence of tonic immobility and its duration was greatly reduced (Davies, Martinez-Garcia, & Lanuza, 2002; Gallup, Nash, & Brown, 1971; Marx et al., 2008). However, Marx et al. (2008) caution that fear is not the only cause or condition that may elicit tonic immobility, rather, it is the feeling of fear combined with the perception of restraint or entrapment that is likely to lead to tonic immobility. If a prey is experiencing high levels of fear but does not perceive itself as entrapped without means of escape, then it is unlikely to experience complete immobility (Marx et al., 2008).

Tonic immobility can also be examined from an evolutionary perspective as an automatic, involuntary response to predation. Tonic immobility is a fear response involving numerous neurotransmitters and brain structures, including the amygdala, hypothalamus, anterior cingulate, periaqueductal gray matter and many others (Volchan et al., 2011). This elaborate fear response is controlled by the autonomic nervous system and appears to involve various biological networks, including two different vagal networks. The poly-vagal theory postulates that human beings have two distinct vagal motor systems, one called the *vegetative vagus* and the other the *smart vagus* (Porges, 1995). The vegetative vagus is evolutionarily "older" than the smart vagus, and functions to employ basic survival instincts, while the smart vagus, found only in mammals, is primarily used to react to social environments and communication. The poly-vagal theory postulates that, when exposed to a new threat or an intense stressor, humans revert back to the "older" response strategies controlled by the vegetative vagus when the newer

pathways, which include emotional and communicative responses, fail (Porges, 1995).

This theory, which in its most basic form states that human beings respond to trauma using our most primitive neural structures, might explain why some individuals become completely immobilized and unable to communicate in the midst of a traumatic event.

Tonic Immobility in Sexual Assault Survivors

While the first three stages of the threat response system (freeze, flight, and fight) have been frequently observed, studied, and replicated with human research participants (Barlow, Chorpita, & Turovsky, 1996; Fanselow, 1994), tonic immobility has been difficult to study and replicate in humans. As tonic immobility is the last stage of the fear response and typically only occurs under extraordinary circumstances, it is challenging to elicit this response with humans in laboratory settings (Volchan et al., 2011). Tonic immobility has been even more problematic to study in sexual assault survivors, as the nature of this construct requires the use of retrospective reports of individuals who have experienced incredibly traumatic events (Bovin, Jager-Hyman, Gold, Marx, & Sloan, 2008; Fusé et al., 2007). Nonetheless, the emergence of tonic immobility, when there is no perceived opportunity of escape or overpowering a predator, may be the very best explanation for this counterintuitive behavior reported to occur during some sexual assaults (Brancha, 2004). One of the first examinations of tonic immobility in female rape survivors found that, instead of resisting rape, 37% of survivors reported becoming paralyzed during the attack, unable to move even when opportunities to escape were made available (Galliano et al., 1993). The term “rape paralysis” became prominent in the early literature, attempting to describe the plethora of anecdotal evidence from rape

survivors recounting being unable to move or speak during a sexual assault, even when movement or calling out for help could have ended the attack (Marx et al., 2008).

Heidt, Marx, & Forsyth (2005), utilizing the first validated measure of tonic immobility, the Tonic Immobility Scale-Child Abuse Form (TIS-C; Forsyth, Marx, Heidt, Fusé, & Gallup Jr., 2000), found that over 52% of individuals who were sexually assaulted as children reported experiencing tonic immobility during their assaults. In addition, Fusé et al. (2007) found that 54% of participants from one study and 52% from a second study reported either significant or extreme immobility during their most recent sexual assault. While these studies provide empirical support for the theory that tonic immobility occurs during human sexual assault, nearly all studies on this topic have been based on participant self reports, increasing the possibility of bias and human reporting error (Marx et al., 2008). However, Volchan and his colleagues (2011) published the first study examining tonic immobility in humans in a laboratory setting. This study elicited tonic immobility in participants with and without PTSD in a controlled setting, while measuring biological correlates of differing inhibitory responses. This emergence of tonic immobility, accompanied by restricted blood pressure and increased heart rate elicited after exposure to a threat provides the strongest support for the theory that tonic immobility occurs in human beings, and is the last stage in an evolutionarily adaptive response to trauma (Volchan et al. 2011).

Because sexual assault victims are expected to engage in overt resistance, survivors who instead experience immobility may be at an increased risk for self-blame and feelings of shame related to the assault (Heidt et al., 2005; Suarez & Gallup, 1979), in addition to blame by others. As tonic immobility is not well understood, survivors may

have difficulty finding social support for their experience of it, as there is a significant societal tendency to blame survivors who did not forcefully resist, or who resisted only minimally (Littleton, Axsom, Radecki, Breitkopf, & Berenson, 2006; Littleton et al., 2007b) and to doubt those who seem numb, shut down, or frozen instead of visibly upset. In addition, much of the literature examining tonic immobility in sexual assault survivors has focused on the relationship between tonic immobility and posttraumatic stress disorder (PTSD) symptomology following the assault. While the findings from this line of inquiry have been mixed, and to some extent, contradictory (Abrams, Carleton, & Asmundson, 2012), there appears to be a positive relationship between tonic immobility and greater posttraumatic stress symptoms. However, the intricacies and mechanisms of this relationship are not well understood (Abrams, Hons, Carleton, Taylor, & Asmundson, 2009; Bovin et al., 2008) because the construct of tonic immobility, as a relatively new phenomenon studied in human trauma survivors, is still being defined and differentiated from other forms of peritraumatic responses, such as dissociation (Abrams et al., 2012). A review of the literature linking tonic immobility to posttraumatic stress symptoms is beyond the scope of the current review. Interested readers can refer to Abrams et al. (2012) and Lima et al. (2008).

Tonic Immobility and the Legal System

The relatively small, but ever expanding body of research on tonic immobility in sexual assault survivors may be necessary to explain the absence of physical or verbal resistance observed in many sexual assault cases. The absence of expected responses often leads law enforcement, criminal justice system personnel, or laypersons to cast doubt on the credibility of rape allegations made by non-resisting victims (Temkin &

Krahé, 2008). The traditional route of investigation by law enforcement and the judicial system following a sexual assault often includes a physical examination of the survivor for signs of resistance or struggle, such as evidence of injury or subjective reports of trying to escape (Bryden, 2000; Temkin & Krahé, 2008; Marx et al., 2008) to corroborate their allegations. This is largely due to continued acceptance of rape myths and scripts, the most pertinent to tonic immobility being that women who do not actively resist were not really raped. Rape myth acceptance is consistently documented in samples of police officers, potential jurors, and lawyers, high levels of which predict victim blaming and the minimization of perceived perpetrator responsibility (Caringella, 2008; Eyssel & Bohner, 2011; Krahé, Temkin, & Bieneck, 2007b; Krahé, Temkin, Bieneck, & Berger, 2008; Page, 2008; Page, 2010). As such, signs of overt resistance, over and above the use of verbal resistance, are typically necessary for successful sexual assault prosecutions, as this evidence is the most convincing way to prove to a judge or jury that an assault was nonconsensual (Bryden, 2000; Caringella, 2008; Konradi, 2007). The substantial disparity between the number of reported sexual assault and rates of successful prosecutions leading to convictions (Lonsway & Archambault, 2012) is undoubtedly impacted by problems associated with lack of strenuous resistance. While official governmental sources claim that approximately half of individuals arrested and prosecuted for rape will be convicted (Bureau of Justice Statistics [BJS], 2008) and that a rape conviction inevitably results in incarceration, a review of the literature suggests that, for every 100 rapes committed, only 5 to 20% are reported to the police and only between 0.02 and 5.2% will result in a conviction and/or incarceration (Campbell, 2005; Kyckelhahn & Cohen, 2008; Lonsway & Archambault, 2012; Reaves, 2013). This

“justice gap” exists, in part, because of the criminal justice system’s propensity to prosecute cases exclusively or most closely resembling the “real rape” scenario (Lonsway & Archembault, 2012, Temkin & Krahé, 2008).

Although active resistance is the most effective way to avoid rape and decrease injury, from an evolutionary and biological perspective, tonic immobility may also decrease the likelihood of lethal injury during an attack (Marx et al., 2008). In fact, Edwards et al. (2014) commented about one research participant who described her perpetrator noticing that she tensed and froze and he responded to her freezing by halting his attack. Thus, tonic immobility might function as a protective factor, decreasing the risk of rape completion; the ethology literature supports this proposition. However, until the criminal justice, judicial systems, and the public at large, come to understand tonic immobility as an involuntary, evolutionarily based, adaptive response to trauma that may serve a survival function, active resistance will continue to be the litmus test for whether or not a sexual assault occurred and whether a victim’s report ought to be deemed credible (Temkin & Krahé, 2008).

Possible Predictors of Tonic Immobility

Although most of the research on tonic immobility has examined the relationship between tonic immobility and post-assault PTSD, there is a paucity of research exploring factors influencing tonic immobility risk as a peritraumatic response to trauma. Research on sexual assault survivors demonstrates individual variability in peritraumatic responses, such that only a small to moderate percentage of individuals report experiencing tonic immobility during their assault (Fusé et. al, 2007; Heidt et al., 2005). Extant studies on tonic immobility have failed to systematically explore a range of potential individual

differences in reports of tonic immobility among sexual assault survivors. Nonetheless, several potential predictors of tonic immobility among sexual assault survivors can be gleaned from the literature.

First, an older perpetrator, as well as a greater age difference between the perpetrator and the survivor, may influence both tonic immobility likelihood and severity, particularly when the survivor is a child (Heidt et al., 2005; Marx, 2008). Researchers suggest that a perpetrator who is substantially older than a victim may be perceived as wielding more power and control, which in turn could increase levels of fear and perceived inescapability for the survivor (Heidt et al., 2005). The relationship between the survivor and the perpetrator, as well as the severity of the assault, may also influence the likelihood of the tonic immobility response. Marx et al. (2008) suggested that survivors assaulted by a stranger, with greater force, and in unfamiliar locations or contexts may be more likely to experience higher levels of tonic immobility, due to the associations of these factors with fear and inescapability. However, research has yet to fully support these hypotheses, most likely due to methodological issues, including: 1) insufficient data to classify and describe perpetrator and assault characteristics (Heidt et al., 2005); 2) failure to conduct separate analyses to identify homogenous subgroups of survivors grouped according to similar assault-related experiences (Fusé et al., 2007); and 3) omission of critical variables, such as victim-perpetrator relationship or assault severity (Bovin et al., 2008), factors expected to influence the risk of tonic immobility in response to sexual trauma. In fact, Humphreys, Sauder, Martin, and Marx (2010) failed to find a clear link between assault severity and degree of tonic immobility, although both variables were significantly associated with higher PTSD scores. However, this study

exclusively examined these associations in child sexual assault survivors. Future research evaluating hypothesized associations between age, assault severity and tonic immobility is needed to better understand what factors influence the tonic immobility response to sexual trauma.

Survivor alcohol use may also be related to tonic immobility in sexual assault survivors. Marx et al. (2008) suggested that alcohol and other sedatives may affect natural neurobiological fear mechanisms, in addition to potentially decreasing the likelihood of engaging in inhibitory behaviors, both of which would result in a decrease in the likelihood of tonic immobility. In addition, the sexual assault resistance literature indicates that when victims are intoxicated, less force is required by the perpetrator in order to complete a sexual assault (Abbey, Clinton, McAuslan, Zawacki, & Black, 2002; Brecklin & Ullman, 2010). As greater sexual assault severity and increased use of force may increase the emergence of tonic immobility, it is posited that victim alcohol decreases the emergence of tonic immobility.

Prior victimization history is another potentially important predictor of tonic immobility in sexual assault survivors. Individuals who experience childhood sexual abuse (CSA) are significantly more likely to be sexually revictimized as adults, compared to those without CSA histories (Classen et al., 2005; Tjaden & Thoennes, 2000). While research suggests that prior victimization is sometimes associated with passive responding in the context of an adult sexual assault (Norris et al., 2006), this relationship has not been systematically studied, although it has been evaluated as a potential covariate in one study which found tonic immobility mediated the relationship between peritraumatic fear and PTSD severity (Humphreys et al., 2010). In this study, the

relationship between peritraumatic fear and PTSD symptom severity was mediated by tonic immobility when revictimization status was controlled for in the analysis, indicating that prior victimization may affect the emergence of these constructs.

In a laboratory study, Hagedaars, Stins, & Roelofs (2012) found that prior aversive life events, such as assaults, accidents, or deaths of loved ones, increased participants' freezing responses in the context of unpleasant stimuli. For example, participants who experienced one or more prior aversive life events exhibited greater heart deceleration and reduced body sway when shown an unsettling photograph, as compared to participants who had never experienced a trauma. Such physiological responses are indicative of a freezing response. There were also subtle differences between participants who had experienced one aversive life event and those who experienced multiple aversive life events, particularly in terms of how the second group responded to pleasant and neutral pictures (Hagedaars et al., 2012). While the participants who experienced one negative event demonstrated reduced body sway in response to unpleasant pictures, participants in the multiple aversive events group also displayed reduced body sway in response to the pleasant and neutral pictures, suggesting the deleterious impact of cumulative trauma. These results indicate that cumulative traumatic event exposure may cause significant changes to even the most basic ways the automatic nervous system processes fear-related stimuli in neural networks. While it is clear that prior experiences of sexual assault can affect the fear reactions to future assaults, this relationship remains poorly understood due to inadequate study. Future research would profit from a more thorough assessment of the contributions of perpetrator, victim, and assault characteristics to tonic immobility risk among sexually assaulted women.

The Current Study

The purpose of the current study was to expand and improve upon the current literature on tonic immobility in sexual assault survivors. Specifically, the present study aimed to be one of the first systematic and theoretically driven examinations of individual difference variables influencing the emergence of tonic immobility during a sexual assault, thereby contributing to a deeper understanding of the risk factors associated the tonically immobile response during sexual assault.

Hypothesis 1

The age difference between the perpetrator and the victim of sexual assault is related to the emergence of tonic immobility during the assault, such that a greater age difference between the perpetrator and the victim is associated with a higher likelihood of peritraumatic tonic immobility.

Hypothesis 2

The relationship between the perpetrator and the victim is related to the emergence of tonic immobility, such that individuals who were sexually assaulted by a stranger or an unfamiliar acquaintance are more likely to experience tonic immobility during an assault than an individual assaulted by a known acquaintance or intimate partner.

Hypothesis 3

Sexual assault severity is related to the emergence of tonic immobility, such that an increase in assault severity (e.g., penetration, physical injury etc.) is associated with an increased likelihood of tonic immobility.

Hypothesis 4

Sexual assault type is related to the emergence of tonic immobility, such that certain perpetrator tactics (e.g., physical coercion) and victim resistance strategies (e.g., active resistance) are associated with an increased likelihood of tonic immobility.

Hypothesis 5

Prior victimization of the survivor of the sexual assault is related to the emergence of tonic immobility, such that prior victimization is associated with an increased likelihood of tonic immobility during the assault.

Hypothesis 6

Victim substance use at the time of the assault is related to the emergence of tonic immobility, such that substance use is associated with a decreased likelihood of peritraumatic tonic immobility.

CHAPTER 2

METHODS

Participants

Participants in this study were 41 female sexual assault survivors over the age of 18 who have experienced at least one incident of rape or non-forceful sexual assault as an adult. A total of 109 participants began the screening items, however, eight participants were male or declined to report their gender, 15 participants had not experienced a sexual assault as an adult, and eight participants did not finish the screening items. Of the remaining participants, 62 participants consented to participate in this study: 53 participants answered only the first question and 41 participants completed the entire battery of measures. The average age of the survivors who completed the survey was 25.78 ($SD = 7.59$) and these survivors ranged between 20 and 60 years old. These participants identified as White/Caucasian (51.2%), Hispanic (34.1%), Black/African American (2.4%), Asian American (7.3%), Native American (2.4%), and other ethnicities (2.4%).

Survivors were recruited from rape crisis centers in the southern California region and a university-based Women's Center. Participants were also recruited through clinicians and therapists in the southern California region who work with survivors of sexual assault. Lastly, participants were recruited through an online post in a Facebook group dedicated to providing resources to sexual assault survivors. Participants were

limited to proficient English speakers, as translations of the survey were not available. Participants were recruited from rape crisis centers, the Women's Center, and clinicians using flyers placed in the waiting rooms and with the assistance of the staff, who handed flyers directly to survivors and/or directly presented research participation as another community resource available to them. The flyers included a short description of the study and a link to access the study information. Participants were recruited on Facebook through an online post that included the link to the survey along with the descriptions of the survey and exclusionary criteria.

Procedures

Data for this study were collected via an anonymous online survey. Research indicates that when collecting data on sensitive topics, such as women's sexual victimization and alcohol use, anonymous online surveys provide a sense of safety, anonymity to participants, and increased participation rate over interviewer administered surveys (Parks, Pardi, & Badizza, 2006). After prospective participants received a recruitment flyer or the online survey link, they were able to access the survey at their own leisure at a private location. Once a participant opened the survey link, they completed a short screening to ensure that the participant was 18 years of age, female, and had experienced a sexual assault as an adult. If the participant did not meet these requirements, the participant was informed that they would be unable to continue with the survey.

If a participant did meet the study requirements, the participant was then provided a consent form to inform them that this study was voluntary, all survey responses were confidential, and participants were informed that they could withdraw from the study at

any time without penalty. This consent included a warning that this study would involve recalling possibly upsetting details regarding their sexual assault. The consent form included referrals to various organizations that specialize in the assistance of sexual assault survivors (e.g., RAINN, Women's Centers). Participants were informed that they would still have an opportunity to receive compensation for their participation in the study even if they were unable or unwilling to complete the entire survey. Participants were asked to read the informed consent and to continue to the survey only if they have read and understood the consent form. Participants were then asked to answer survey questions in relation to their sexual assault history, particularly their most recent sexual assault as an adult. The survey was expected to take approximately 30 to 45 minutes to complete.

Once participants finished answering the survey items, they were thanked for their participation and asked to type in two codes that were distributed throughout the survey to ensure that the participants had diligently completed the entire survey. Once the correct code was entered, participants were given instructions to send an email to a Gmail account set up for this study to receive compensation. Participants were then emailed a \$40.00 Amazon gift card. If a participant did not enter the correct code or was unable to complete the survey for any reason, participants were instructed to email the researcher directly to determine if further action was required.

Measures

Tonic Immobility Scale-Adult Form

The Tonic Immobility Scale (TIS) (Forsyth, Marx, Fusé, Heidt, & Gallup, 2000) is a two-part, 30-item self report measure designed to assess the presence and severity of

the features of tonic immobility in adult survivors of sexual assault. Participants were asked to answer the scale items in reference to their most recent adult sexual assault and were given instruction to describe an experience when they were “coerced or forced to engage in an unwanted sexual activity without (their) consent.” The first part of the TIS contained 13 items designed to measure the core components of tonic immobility, which are assessed using a seven point Likert type scale (range one-seven). Sample items included “rate the degree to which you froze or felt paralyzed during your most recent experience,” from one (not at all frozen or paralyzed) to seven (completely frozen or paralyzed) and “rate the degree to which you were unable to call out or scream during the event,” from one (felt able to scream) to seven (wanted to scream but felt unable to). A scale score for Part 1 was obtained by adding together the scores on the individual items (TI score between 13 and 91). The last item of Part 1 (item 14) asked whether participants have ever experienced any component of tonic immobility described in the prior 13 items during a previous assault and participants were asked to indicate “yes” or “no” to each item.

Part 2 of the TIS measured additional assault details that are believed to be associated with tonic immobility, including the presence of active resistance, attempts to flee, and perpetrator behavior. Part 2 was completed by only those participants who reported having suffered a loss of the ability to move or resist during their assault. Part 2 of the TIS included seven items measured using a seven point Likert type scale (range one-seven) and 10 items measured using a yes/no format, along with the opportunity to write out a response. Sample items included “rate the degree to which you attempted to run away or flee after you regained your ability to move,” from one (no attempt to

run/flee) to seven (really tried to run/flee), and “did the perpetrator’s behavior change after you lost your ability to resist,” using a yes/no response format.

The TIS is a relatively new scale, but exploratory analyses have demonstrated promising psychometric properties. While assessing for tonic immobility in samples of female sexual assault survivors, factor analyses of Part 1 of the TIS have revealed two independent factors, a tonic immobility factor, with an estimated internal consistency of .94 and reliability estimate of .86, and a peritraumatic fear factor, with an estimated internal consistency of .90 and reliability estimate of .65 (Fusé et al., 2007). As only Part 1 of the TIS is used to measure the presence and severity of tonic immobility, psychometric information on Part 2 of the TIS is currently unavailable.

Tonic Immobility Demographic Data Form

The TIS Demographic data form (Forsyth et al., 2000) assessed basic demographic information, such as participant age, gender and ethnicity, and assault characteristics, such as the presence of ejaculation and length of the assault. For the purposes of this study, items that measured assault characteristics that were assessed by other measures were removed (e.g., number of assailants, coercion methods) and one item was added (Please approximate the age of the assailant(s) at the time of the unwanted sexual experience).

Sexual Experiences Survey-Short Form Victimization (SES-SFV)

The SES-SFV (Koss et al., 2006) is a 10 item self report assessment of the victimization of unwanted and coerced sexual experiences. Participants were asked to indicate whether certain sexual experiences have happened to them, how many times the experiences have occurred, and what types of coercion methods were used during the

unwanted sexual experiences. Sample items included “someone fondled, kissed, or rubbed up against the private area of my body (lips, breast/chest, crotch, or butt) or removed some of my clothes without my consent (*but did not attempt sexual penetration*)” and “someone had oral sex with me or made me have oral sex with them without my consent.” For each sexual act, participants were asked to select one or more response options, from a (by telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually pressuring me after I said that I didn’t want to) to e (by using force, for example, holding me down with their body weight, pinning my arms, or having a weapon). Participants were then asked to indicate how many times these experiences have occurred within two time frames (in the past 12 months and since age 18) from zero to three or more times. The SES-SFV was scored by placing participants in one of six categories of increasing severity based on their affirmative answers (non-victim, sexual contact, attempted coercion, coercion, attempted rape, and rape) for each time frame. For the purposes of this study, the age limit was increased from 14 to 18 years of age and the demographic questions were removed. While psychometric properties for the SES-SFV are currently unavailable, the SES-SFV was modeled on the original Sexual Experiences Survey (SES; Koss & Ggidycz, 1985), which has consistently demonstrated appropriate internal consistency ($> .70$), good test-retest reliability (.93), and good validity when compared to results obtained from survivor interviews and measures of relevant constructs (i.e., self-esteem, depression, etc.) (Cecil & Matson, 2006; Koss et al., 2007; Koss & Ggidycz, 1985).

Childhood Trauma Questionnaire-Short Form (CTQ-SF)

The CTQ-SF (Bernstein et al., 2003) is a 28 item self report assessment that measures adults' histories of child abuse and neglect. The CTQ-SF includes five clinical scales that assess physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect, in addition to three validity items. Participants were asked to indicate the frequency of events during childhood and adolescence using a five point Likert scale, ranging from zero (never true) to four (very often true). Sample items included "I didn't have enough to eat" and "someone tried to make me do sexual things or watch sexual things." A score for each clinical scale, ranging from zero to 20, was obtained by added the scores of the items together. The CTQ has exhibited strong psychometric properties, demonstrating good test-retest reliability (.79 to .86), internal consistency (.66 to .92), and criterion related validity (Bernstein et al., 2003; Paivio & Cramer, 2004; Scher, Stein, Asmundson, McCreary, & Ford, 2001).

Sexual Assault Severity Scale (SASS)

The SASS (Swinson, 2013) is a 74-item self report assessment that measures many constructs related to sexual assault severity. The SASS assesses for offender(s) gender, location of the assault, types of coercive methods use, types of physical injuries obtained and types of substances used, in addition to allowing for the calculation of a comprehensive sexual assault severity score by combining victimization severity, perceived severity, victim-offender relationship, severity of physical injuries, victim and offender substance use, and effectiveness of coercion methods. Participants were asked to answer these items using a variety of formats, including 10-point Likert type scales, multiple choice questions, yes/no questions, and fill in the blank questions. Sample items

included “how close of a relationship did you have with the person you had the sexual experience with” and “if the person threatened to end the relationship, how much did you believe the threat.” For the purposes of this study, the assessment of victimization severity was changed from asking participants “how many times, since the age of 18, have any of the following sexual behaviors happened to you without your permission or consent” to “please indicate which of the following sexual behaviors happened to you without your permission or consent during your most recent unwanted sexual experience” in order to assess for assault information during a particular unwanted sexual experience. In addition, for the purposes of this study, survey items that assessed for peritraumatic and posttraumatic schema disruptions were removed. The SASS is a very new assessment tool that has not yet been reviewed by researchers aside from the original author in order to validate psychometric properties. However, this assessment is the only comprehensive measurement of assault severity that exists in the psychological literature and the SASS has demonstrated favorable psychometrics thus far, as Swinson (2013) found the scale to be reliable (Cronbach’s alpha of .92) and valid, as SASS scores are significantly related to other measures of assault severity.

Peritraumatic Dissociation Experiences Questionnaire (PDEQ)

The PDEQ (Marmar, Weiss, & Metzler, 1997) is a 10-item, self-report assessment that measures dissociative experiences (e.g., derealization, altered time perception, etc.) that may have occurred during a traumatic event. Participants were asked to indicate the extent to which various dissociative phenomena occurred using a five point Likert scale, ranging from one (not at all true) to five (extremely true). Sample items included “my sense of time changed-things seemed to be happening in slow motion” and “what was

happening seemed unreal to me, like I was in a dream or watching a movie or play.” The PDEQ was scored by adding up scores of the individual items. The PDEQ has demonstrated consistent psychometric properties, with internal consistency estimates ranging between .75 and .85 (Marmar et al., 1994; Marshall, Orlando, Jaycox, Foy, Belzberg, 2002). As tonic immobility and dissociation are believed to be similar yet distinct constructs, the PDEQ was used to test for the degree of overlap between the two variables.

Posttraumatic Stress Disorder Checklist for the DSM 5 (PLC-5)

The PLC-5(Weathers et al., 2013) is a 20 item, self report assessment that measures symptoms of PTSD according to the criteria described in the DSM 5 (American Psychiatric Association, 2013). Participants were asked how much they were bothered by various symptoms in the past month using a five-point Likert scale, ranging from zero (not at all) to four (extremely). Sample items included “repeated, disturbing, and unwanted memories of the stressful experience” and “avoiding memories, thoughts, or feelings related to the stressful experience.” A scale score, which ranges from zero to 80, was obtained by adding together the scores of the individual items for the total scale score, and for each of the four symptom clusters separately.

CHAPTER 3

RESULTS

Tests of Assumptions

All 41 participants accurately answered the two quality control questions placed throughout the survey. As such, all participants who completed the survey were included in the analyses. One participant incorrectly typed in the final code in order to receive study payment, though this data was included in the final dataset, as this participant contacted the researcher to explain the error. The only missing data that occurred in the dataset is related to questions that were shown only to participants who answered affirmatively to a particular scale item. For example, only participants who reported some level of paralysis during their assault were shown certain additional questions related to tonic immobility.

Tests of normality, skewness, and kurtosis revealed that the variables of age difference and the survivor's use of illicit substances did not demonstrate normal distributions. The use of the illicit substances variable was not included in additional analyses, as only three participants reported using drugs during their assault. A test of univariate outliers revealed that the variable age difference included two outliers (17 and 18 year differences between survivor and perpetrator). However, as large age differences between perpetrators and survivors are of particular interest to this study, these cases

were included in subsequent analyses. There were no instances of multicollinearity or singularity in the dataset.

Descriptive Variable Information

Descriptive variable information can be found in Table 1. Of the 41 sexual assault survivors in this dataset, 7.3% were assaulted by a stranger, 17.1% by someone they had just met, 22% by an acquaintance, 12.2% by a close friend or confidant, 22% by a previous sexual partner, and 19.5% by a significant other or a spouse. The majority of these survivors experienced a vaginal assault with either a penis or an object (65.9%). Additionally, 9.8% of survivors reported being touched, kissed or rubbed in a sexual manner, 9.8% reported that someone tried to vaginally rape them (but it did not happen), 2.4% reported that someone performed oral sex on them, 4.9% reported that they were made to perform oral sex, and 7.3% of participants reported being anally raped. These categories are mutually exclusive. If a participant reported that she was both fondled and vaginally raped, she was categorized as being vaginally assaulted (in the more severe category).

36.6% of survivors reported that they were either not physically injured or their injuries were not severe at all. On the other hand, 14.6% of survivors reported that their injuries were severe enough to receive medical treatment following their attack. 78% of participants reported being verbally coerced in some manner, including coercion methods such as perpetrators trying to convince them to have sex or threatening to spread rumors about them. In addition, 43.9% of participants reported being threatened with physical force, while 75.6% of participants reported being physically coerced to have sex (held down, beaten, punched, etc.).

Table 1. Descriptive Variable Information

Variable	<i>M</i>	<i>SD</i>	Score Range	Min.	Max.
Tonic Immobility	60.22	10.46	13-91	34	82
PTSD	28.98	19.23	0-80	4	73
Dissociation	27.98	8.75	10-50	10	46
Age Difference	3.10	4.15	N/A	-1	18
Relationship	3.83	1.61	1-6	1	6
Victimization Severity	6.90	2.34	1-9	1	9
Severity of Physical Force ^c	6.20	2.80	0-11	1	11
Perceived Severity	7.90	2.19	0-11	3	11
Severity of Physical Injuries	3.63	3.05	0-11	0	11
Physical Force Effectiveness	7.06	4.32	0-11	0	11
Severity of Verbal Coercion ^c	3.52	3.14	0-11	0	11
Verbal Coercion Effectiveness	3.14	3.57	0-11	0	11
Effectiveness of Threats of PF	3.90	4.49	0-11	0	11
Survivor Intoxication	4.68	3.66	1-12	1	12
Childhood Sexual Assault	9.78	5.63	5-25	5	24

Note: c = composite score of variables indented below; PF = Physical Force

A sizable majority of participants reported some history of childhood sexual trauma before the age of 18 (61%), with 24.4% of participants reporting either moderate or severe childhood sexual trauma. Furthermore, 78% of participants reported a previous sexual assault as an adult. Information on all dichotomous variables can be found in Table 2. Only four survivors (9.7%) in this study had experienced one single unwanted sexual experience in their lifetime. When questioned regarding alcohol and substance

use, 58.5% of survivors reported that they were drinking at the time of their assault, while 7.3% reported that they had been using an illicit substance (marijuana, ecstasy, OxyContin, etc.). 24.4% of survivors reported having one to two drinks, 24.4% reported having three to four drinks, and 12.2% reported having five to seven or more drinks.

Table 2. Dichotomous Variable Information

Variable	% Yes	% No
Prior Adult Sexual Assault	78.0	22.0
Survivor Illicit Substance Use	7.3	92.7
Use of Physical Force	75.6	24.4
Survivor Actively Struggled	51.3	48.7
Survivor Held Down	69.2	30.8
Use of Verbal Coercion	78.0	22.0
Use of Threats of Physical Force	43.0	56.1

Of all the sexual assault survivors in this study, 95.1% of participants reported some degree of feeling frozen or paralyzed during their assault (only two participants reported feeling not at all frozen/paralyzed). While cutoff scores vary depending on the study and researcher, guidelines suggested by Heidt et al. (2005) indicate that 80% of participants reported experiencing clinically significant tonic immobility, while 39% reported experiencing extreme tonic immobility. Of those who experienced some level of tonic immobility, 51.3% were actively struggling with their attacker at the time and 69.2% were being held down or restrained.

Correlations

Correlations between key variables and predictors can be found in Table 3.

Correlational analyses were conducted to test for convergent validity of the key variable of tonic immobility, as tonic immobility is still a relatively new construct in the psychological literature. The scores obtained from the Posttraumatic Stress Disorder Checklist for the DSM 5 (PLC-5) were compared to the tonic immobility scores to determine convergent validity, as much of the available research on tonic immobility suggests that the two concepts are closely related.

Table 3. Correlations of Key Variables

	1	2	3	4	5	6	7	8	9	10
1	--									
2	0.47**	--								
3	0.52**	0.49**	--							
4	0.01	-0.04	-0.09	--						
5	-0.36*	-0.19	-0.18	-0.43**	--					
6	0.29	-0.02	0.17	-0.35**	0.16	--				
7	0.46**	0.35*	0.17	0.01	-0.11	0.34*	--			
8	-0.05	0.02	-0.12	-0.08	0.34*	0.15	0.33*	--		
9	-0.07	0.03	0.32*	-0.22	-0.04	0.18	-0.13	-0.33*	--	
10	0.04	-0.24	-0.07	0.20	-0.09	0.02	-0.11	-0.20	-0.08	--
11	0.06	0.10	0.06	0.03	-0.07	0.10	0.02	0.06	0.18	-0.16

Note: $N = 41$. 1 = Tonic Immobility; 2 = Posttraumatic Stress Disorder; 3 = Dissociation; 4 = Age Difference; 5 = Relationship; 6 = Victimization Severity; 7 = Severity of Physical Force; 8 = Severity of Verbal Coercion; 9 = Survivor Intoxication; 10 = Prior Adult Sexual Assault; 11 = Child Sexual Assault. * $p < .05$, ** $p < .01$.

A correlation analysis conducted between tonic immobility and the PLC-5 revealed a significant positive correlation of 0.47, with a correlation of 0.49 with criterion B (intrusion or re-experiencing symptoms), correlation of 0.31 with criterion C (avoidant symptoms), correlation of 0.44 with criterion D (negative alterations in mood/cognition), and correlation of 0.42 with criterion E (increased arousal symptoms), $p < .05$.

The scores obtained from the Peritraumatic Dissociation Experiences Questionnaire (PDEQ) were correlated with the tonic immobility scores. A significant positive correlation of 0.52 ($p < .05$) was found, such that as the intensity of tonic immobility increases, the amount of reported dissociation during the assault also increases. As the correlation between tonic immobility and dissociation equals 0.52, there is 27% of shared variance between the two variables ($r^2 = 0.27$), indicating an variance overlap between the two constructs.

Hypothesis 1

The first hypothesis predicted that the age difference between the perpetrator and the sexual assault survivor would be significantly associated with the emergence of tonic immobility during a sexual assault. To test this hypothesis, the reported age of the survivor was first subtracted from the reported estimated age of the perpetrator to generate a variable describing the age difference. The age difference between survivor and perpetrator ranged from negative one (survivor was one year older than perpetrator) to 18 years, with a mean age difference of 3.1 years ($SD = 4.15$). A simple linear regression was then used to assess the relationship between age difference and tonic immobility. This regression model did not significantly fit the data, as the age difference between perpetrator and survivor did not significantly predict the emergence of tonic

immobility, $F(1, 39) = 0.0003, p > 0.05$. As such, the hypothesis that age difference would predict tonic immobility was not supported.

Hypothesis 2

The second hypothesis predicted that the degree of closeness in the relationship between the perpetrator and the survivor would be related to the emergence of tonic immobility. To test this hypothesis, a single item from the Sexual Assault Severity Scale, asking participants to rate their affiliation with their perpetrator from one (stranger) to six (a significant other or spouse) was used to operationalize degree of relationship affiliation. As only one participant reported that there was more than one perpetrator present during an assault, this analysis included only information on the first or primary perpetrator.

A simple linear regression found that the degree of relationship affiliation between the survivor and the perpetrator significantly predicted tonic immobility during the assault, $F(1, 39) = 5.69, p < .05$. In addition, it was hypothesized that the likelihood of experiencing tonic immobility would be higher for a stranger attack as opposed to an assault from a known assailant or previous sexual partner. The relationship regression coefficient in the regression analysis was negative ($b = -2.32$), indicating that the likelihood of experiencing tonic immobility decreased as relationship closeness increased, $p < .05$. As such, the hypothesis that the relationship status of survivor and perpetrator would predict tonic immobility was supported by the data.

Hypothesis 3

The third hypothesis predicted that the severity of a sexual assault would be related to the emergence of tonic immobility. Swinson's (2013) analysis of the Sexual

Assault Severity Scale was used as a basic guideline to determine which variables to include in the assessment of assault severity. The following variables were included in a multiple regression analysis to assess the relationship between assault severity and tonic immobility (TI): victimization severity, severity of physical force, severity of verbal coercion, survivor-perpetrator relationship, and survivor intoxication. The results of this multiple regression can be found in Table 4. In this analysis, victimization severity was defined by the degree of intrusiveness of the assault in terms of penetration. The variable ranged, on the low end of severity, from having private areas touched or groped (1) to being anally raped (9).

Table 4. Multiple Regression Analysis for Sexual Assault Severity Predicting TI

Predictors	R^2	B	<i>SE B</i>	<i>t</i> value
Sexual Assault Severity	0.378			
Victimization Severity		1.168	0.670	1.742
Relationship		-2.016	0.972	-2.075*
Severity of Physical Force		1.395	0.583	2.394*
Severity of Verbal Coercion		-0.517	0.540	-0.958
Survivor Intoxication		-0.387	0.419	-0.924

Note: $N = 41$

* $p < .05$.

The variable “severity of physical force” was a composite of the following variables: perceived severity, severity of physical injuries, and the perceived effectiveness of physical force used by the perpetrator. Items such as “how severe were your physical injuries” and “how much emotional harm to you believe you have dealt

with as a result of the sexual experience” were included in this composite. In addition, items related to the survivor’s beliefs regarding the effectiveness of physical coercion techniques used by the perpetrators were included (for example, “how afraid were you of this act of physical force” and “how effective was this act of physical force”). The variable “severity of verbal coercion” was also a composite of multiple items which assessed the effectiveness of verbal coercion techniques (how much the verbal coercion methods emotionally affected the survivors) such as “how much did you believe the threats” and “how effective was this method of persuasion.” The survivor’s use of illicit substances (aside from alcohol) was not included, as only three survivors reported using substances and being high at the time of their assaults.

A multiple regression analysis found that as a whole, assault severity, significantly predicted the emergence of tonic immobility during the sexual assault, $F(5, 35) = 4.25, p < .05$, predicting 38% of the variance in tonic immobility. An examination of the regression coefficients and significance of the individual variables revealed that the severity of physical force ($p = 0.02$) and relationship between the survivor and the perpetrator ($p = 0.05$) were the most significant predictors of tonic immobility in the model. Victimization severity is also approaching significance ($p = 0.09$). Some variables in this analysis correlated with one another, as the severity of physical force variable correlated with overall victimization severity ($r = 0.34$) and the severity of verbal coercion correlated with relationship status ($r = 0.34$) and severity of physical force ($r = 0.33$).

Hypothesis 4

The fourth hypothesis predicted that sexual assault type would be significantly associated with the emergence of tonic immobility. To test this hypothesis, a series of *t* tests were used to assess the relationship between sexual assault characteristics and tonic immobility. First, participants were asked “prior to losing your ability to move, were you actively struggling with the perpetrator.” A two sample *t* test found that there was not a significant difference between those who actively struggled with their attacker ($M = 63.9$) and those who did not actively struggle ($M = 57.7$) in level of tonic immobility reported, $t(33) = 1.94, p > 0.05$.

Participants were then asked “were you being held down and restrained at the time you lost your ability to move.” A second two sample *t* test found that there was no significant difference between those who reported being held down or restrained ($M = 61.9$) and those who did not report being held down or restrained ($M = 58.7$), in magnitude of tonic immobility experienced and reported, $t(28) = 1.01, p = 0.32$. It should be noted that these two analyses are related to sexual assault characteristics that occurred at the moment of feeling frozen or experiencing any symptoms related to tonic immobility.

To assess the use of physical coercion during the assault, participants were asked to indicate which physical acts were inflicted upon them when they did not engage or comply during their unwanted sexual experience: being held down or restrained, slapped, punched, kicked, beat, choked, or hurt with a weapon. Participants were able to choose as many options as applied to their assault. If participants were not physically coerced at all, they were asked to choose the option “none of the above.” The variable “use of physical

coercion” was formed using the above responses (1-physical coercion, 2-no physical coercion). A *t* test found that there was a significant difference between survivors who reported being physically coerced during the assault ($M = 62.2$) and those who did not report being physically coerced ($M = 54.2$), $t(15) = 2.17$, $p = 0.05$). As such, participants who reported being physically coerced by their perpetrator at some point during their assault experienced a significantly higher level of tonic immobility.

Hypothesis 5

The fifth hypothesis predicted that prior victimization would be related to an increased likelihood of experiencing tonic immobility during a sexual attack. To test this hypothesis, sexual victimization in childhood and adulthood was examined. To assess prior victimization in childhood, five items from the Childhood Trauma Questionnaire-Short Form (CTQ-SF) (Bernstein et al., 2003) were used to develop a childhood sexual victimization score. A simple linear regression found that childhood sexual trauma did not significantly predict tonic immobility in a later adult assault, $F(1, 39) = 0.131$, $p > 0.05$.

To examine the effects of prior adult sexual victimization, previous occurrences of all levels of sexual assault severity were assessed (e.g., inappropriate touching, oral sex, vaginal sex, anal sex.) using a variation of the Sexual Experience Survey (Koss et al., 2006). Participants were asked to indicate whether they had experienced any type of sexual assault in the past 12 months and since the age of 18. The variable “prior adult victimization” was formed based upon the above responses (1-prior victimization, 2-no prior victimization). A two sample *t* test found no significant difference in the magnitude

of tonic immobility for participants with a history of adult sexual assault ($M = 60$) and participants without a history of adult assault ($M = 61$), $t(15) = -0.27$, $p > 0.05$.

Hypothesis 6

The final hypothesis of the current study predicted that victim substance use at the time of the sexual assault would be associated with a decreased likelihood of tonic immobility. As few participants reported the use of illicit drugs during their attack, this analysis will focus on the consumption of alcohol. To examine the level of survivor intoxication, a measure of perceived degree of intoxication was used. A simple linear regression found that degree of survivor intoxication did not significantly predict the emergence of tonic immobility during an assault, $F(1, 39) = 0.21$, $p > 0.05$. In addition, a two sample t test found that there was no significant difference in the emergence of tonic immobility between participants who were drinking ($M = 61$) and participants who were not drinking at all ($M = 59.7$), $t(30) = 0.39$, $p > 0.05$.

To examine whether survivor alcohol use was related other assault characteristics, a series of simple linear regressions were conducted. One such regression analysis found that the degree of survivor intoxication did not predict whether survivors were physically coerced during their assault, $F(1, 39) = 0.83$, $p > .05$. Additionally, regression analyses found that survivor intoxication did not predict the perceived effectiveness of physical coercion, $F(1, 39) = 0.66$, $p > .05$, or the perceived effectiveness of threats of physical force, $F(1, 39) = 1.67$, $p > .05$. However, one regression analysis revealed that survivor intoxication did predict the perceived effectiveness of verbal coercion, $F(1, 39) = 4.34$, $p < .05$. The negative regression estimate ($b = -0.31$) indicates that the effectiveness of

verbal coercion (threatening to spread rumors, tried to be convinced, etc.) increased as survivor intoxication decreased, $p < .05$.

Hierarchical Regression

In order to further explore the effects of sexual assault variables on the emergence of tonic immobility, in a multivariate analysis able to isolate unique predictors, two hierarchical regressions were performed. Two three-stage hierarchical regression was conducted, with tonic immobility as the dependent variable. The results of these regression analyses are presented in Table 5. For the first hierarchical regression, the first stage included the sexual assault variables that can be considered more objective or measureable by the survivors, including age difference between survivor and perpetrator, relationship status, victimization severity (whether the assault was vaginal, anal, etc.), severity of injuries, and history of victimization (1-prior sexual assault, 2-no prior sexual assault). The second stage included the sexual assault variables that are subjective and more dependent on each individual survivor's interpretation of the event, such as perceived severity of the assault, survivor intoxication level, and effectiveness of coercion strategies. The third stage included the addition of the PDEQ score, or the measure of survivor dissociation during the sexual assault. The variables were entered in this particular order to examine whether the sexual assault variables could still predict tonic immobility even after certain variable's effects have been accounted for. Following this analysis, a second hierarchical regression was conducted by entering the above variables in reverse order (stage 1-dissociation, stage 2-subjective variables, stage 3-objective variables) to assess the distinctive variance associated with each stage.

The first hierarchical regression demonstrated that, at stage one, the objective variables significantly contributed to the model, $F(5, 35) = 3.17, p < .05$. These objective variables accounted for 31.1% of the variation in tonic immobility scores. At stage two, the subjective variables also significantly contributed to this model, $F(5, 30) = 3.00, p < .05$, explaining an additional 22.9% of the variation in tonic immobility. Lastly, at stage three, the addition of the dissociation score also significantly contributed to the model, $F(1, 29) = 6.23, p < .05$, explaining 8.1% of the variation in tonic immobility over and above the effects of the previously added variables. Together, all of these variables accounted for 62.2% of the variance of tonic immobility. In the full model, the variables relationship, perceived severity, and dissociation were individually significant.

When the entry order of variables were reversed, at stage one, dissociation significantly contributed to the model, $F(1, 39) = 14.65, p < .05$, and accounted for 27.3% of the variation in tonic immobility scores. At stage two, the subjective variables also significantly contributed to the model, $F(5, 34) = 3.50, p < .05$, explaining an additional 24.7% of the variation in tonic immobility. At stage 3, the addition of the objective variables did not significantly contribute to the model, $F(5, 29) = 1.56, p > .05$, unlike the first hierarchical regression analysis. With dissociation and subjective variables related to the prediction of tonic immobility controlled for, objective variables no longer contribute unique variance to the prediction of tonic immobility.

Table 5. Hierarchical Regression Analyses Predicting Tonic Immobility

Predictor	R^2 Change	R^2	Change F	p
Step 1: Objective Variables Age Difference Relationship ^a Victimization Severity Severity of Injuries Prior Victimization	0.311	0.311	3.166	< .05
Step 2: Subjective Variables Perceived Severity ^b Survivor Intoxication Severity of Verbal Coercion Physical Force Effectiveness	0.229	0.540	2.985	< .05
Step 3: Dissociation ^c	0.081	0.622	6.230	< .05
Step 1: Dissociation ^c	0.273	0.273	14.650	< .001
Step 2: Subjective Variables Perceived Severity ^b Survivor Intoxication Severity of Verbal Coercion Physical Force Effectiveness	0.247	0.520	3.497	< .05
Step 3: Objective Variables Age Difference Relationship ^a Victimization Severity Severity of Injuries Prior Victimization	0.102	0.622	1.556	<i>ns</i>

Note: $N = 41$.

a. Significant independent predictor in full model: $\beta = -2.26$, $t = -2.31$, $p < .05$

b. Significant independent predictor in full model: $\beta = 2.31$, $t = 2.24$, $p < .05$

c. Significant independent predictor in full model: $\beta = 0.42$, $t = 2.50$, $p < .05$

CHAPTER 4

DISCUSSION

Conclusions

Research has found that some sexual assault survivors experience tonic immobility, described as the feeling of being frozen or immobile during an unwanted sexual experience (Abrams et al., 2012; Fusé et al., 2007; Heidt et al., 2005) and that this emergence of feeling frozen may be influenced by various peritraumatic factors (Brecklin & Ullman, 2010; Heidt et al., 2005; Marx, 2008) and prior traumatic experiences (Humphreys et al., 2010; Norris et al., 2006). The current study proposed to add to the limited literature on tonic immobility in assault survivors and systematically determine the effects of individual difference variables and risk factors on the likelihood of tonic immobility during a sexual assault.

While previous studies suggested that a larger age difference between survivor and perpetrator may relate to more passive responses to a sexual assault, including tonic immobility (Heidt et al., 2005; Marx, 2008), the current study found that age difference did not predict a tonically immobile reaction. Several possible reasons might explain this unexpected finding. First, as 24.4% of survivors were assaulted by either a stranger or near-stranger, ie., someone they had just met, it is quite possible that some portion of participants were required to guess the exact age of their perpetrator, leading to inaccurate or approximate results. Also, the vast majority of the survivors in this study

were assaulted by perpetrators who were close in age to themselves (between one and three year age difference), while only a select few were assaulted by someone whom they either knew or believed to be over 10 years older. As such, this restricted range of responses likely contributed to the non-significant finding. A study sample with a greater range on the age difference variable would be necessary to explore this hypothesized relationship. Lastly, given that age difference can be considered a proxy variable reflecting disparities in power and control between a survivor and a perpetrator, it may be more prevalent among child sexual assault victims whose perpetrators are significantly older than they are. While the relationship between age and perceived influence and authority is typically very apparent between children and adults, this relationship may not be as clear when examining power dynamics between two adults. It may be that other factors aside from age are more closely related to power and control dynamics between an adult survivor and an adult attacker; factors that were unexplored in the present investigation.

The second hypothesis predicting that the relationship between survivor and perpetrator would be associated with the emergence of tonic immobility was supported by the current study, finding an inverse relationship between the degree of relationship closeness and the development of tonic immobility during a sexual assault. Survivors who are raped by a stranger or a new acquaintance were more likely to experience peritraumatic tonic immobility than survivors assaulted by a previous partner or a significant other. This finding is consistent with previous literature (Marx, 2008), which has suggested that a sexual assault perpetrated by an unknown assailant is more likely to evoke higher levels of fear and panic during the assault, which are key components of the

development of tonic immobility. In addition, this finding is in direct contrast with the prevalent rape myths regarding stranger rape, which typically propose that survivors attacked by an unknown attacker should engage in a violent, aggressive resistance at all costs, or else their experience isn't a "real rape." However, as this study suggested, survivors assaulted by a stranger may be more likely to freeze during an assault, which is unlikely to be interpreted as active resistance in today's social contexts. In addition to the stranger danger rape myth, the findings of this study also negate the myth that husbands cannot rape their wives, as 41.5% of the participants in this study were assaulted by a significant other or a past sexual partner. These findings comport with data from large national studies assessing the epidemiology of sexual assault (Black et al., 2011).

While prior research had been unable to establish a direct relationship between assault severity and tonic immobility during a sexual assault (Humphreys et al., 2010), and the connection between assault severity and TI has not been widely examined aside from the 2010 study, the current findings support that hypothesis that increased assault severity predicts an increased likelihood of the emergence of tonic immobility, becoming one of the first pieces of empirical evidence demonstrating this relationship. In particular, severity of physical force predicted tonic immobility, whereas severity of verbal coercion did not. This finding is in line with the current understanding of how tonic immobility develops, as physical force results in higher levels of fear and panic than verbal coercion. In addition, the severity of physical force is likely to be related to the level of perceived inescapability from the unwanted sexual encounter, which is also a vital component in the development of tonic immobility (Marx et al., 2008). Also, while the variable assessing victimization severity was approaching significance ($p = 0.09$), it fell short of statistical

significance. This variable was measured by categorizing sexual assault severity based upon how physically intrusive an assault is or whether penetration was involved in the assault. As such, a vaginal rape was considered “more severe” than forced oral sex. It may be that this type of measurement is not an accurate or complete depiction of the perceived severity of the act, as a survivor might rate forced oral sex to be just as severe and emotionally devastating as a vaginal rape, if not more. Moreover, the small sample size likely limited the statistical power available to detect significant differences. Given the trend identified here, it is anticipated that a larger sample size might find a statistically significant relationship.

The next hypothesis projected that certain sexual assault characteristics, including resistance from the survivor and the use of physical coercion by the perpetrator, would predict the emergence of tonic immobility. This hypothesis was partially supported, as some characteristics significantly differentiated those who experienced tonic immobility from those who did not. Specifically, participants who reported being physically coerced into having sex against their will reported significantly higher levels of tonic immobility than those participants who did not report being physically coerced. The measure of physical coercion included multiple forms of force, including being restrained, held down, being beaten, hit, slapped, or injured with a weapon. However, being held down or restrained, or actively struggling with the attacker, when measured alone, apart from the physical coercion composite, was not significant. It is possible the lack of findings on these measures may be due to the nature in which the questions were asked, as participants were asked whether these assault characteristics occurred at the moment in which they felt frozen or immobile. It is quite possible that participants were unable to

retrospectively recollect exactly what was happening in the very instant they recognized sensations related to tonic immobility. It is also probable that participants were better able to recall the general use of physical coercion throughout the sexual assault, as opposed to the order of particular events during the assault. While these findings differ somewhat from previously developed hypotheses (Marx, 2008), it may also be that being physically restrained and participating in an active struggle are not necessarily vital in the development of the tonically immobile response. Instead, it may be more subjectively perceived characteristics such as high levels of fear and perceived inescapability, perhaps brought on by a slap or a forceful gesture, that are more central to the occurrence of tonic immobility, as opposed to the rather specific phenomenon of being actually “held down.” As such, the perception of being unable to escape may be more predictive of tonic immobility than the actuality of being unable to escape.

The fifth hypothesis predicted that prior victimization of sexual assault survivors, either in childhood or earlier in adulthood, would be related to the emergence of tonic immobility during an assault. This hypothesis was not supported by the current study, which found no significant relationship between a history of assault and tonic immobility in a more recent sexual assault. This finding is inconsistent with prior research, which has suggested that prior trauma effects the reaction to a future traumatic event (Hagenaars et al., 2012; Norris et al., 2006). However, this finding was likely insignificant due to the restricted range of survivors who had not experienced past sexual trauma. An astounding 90.2% of participants had experienced at least one incident of unwanted sexual contact, either as adults or children, prior to their most recent assault. Additionally, it may be that the development of tonic immobility is more closely related to peritraumatic factors, such

as assault severity, than to prior experience. Also, as tonic immobility is thought to be brought on by high levels of fear and panic, it is possible that survivors who have experienced a prior assault may be more aware of the fact that one can survive a sexual attack and that they will likely live, while someone who has not been physically or sexually assaulted before might truly believe they are going to lose their life.

The last hypothesis predicted that survivor substance use would be associated with a decrease in the emergence of tonic immobility during a sexual attack. However, this hypothesis was not supported, as there was no significant relationship established between survivor intoxication and tonic immobility. This result was not expected, given that prior research has suggested that sedatives may reduce fear mechanisms and inhibitory behaviors (Marx et al., 2008). However, prior studies have also shown that intoxicated survivors typically experience lower levels of force and physical coercion from perpetrators (Abbey et al., 2002; Brecklin & Ullman, 2010), which was not the case in this current study, as survivor intoxication was not related to the use of physical coercion, the perceived effectiveness of physical force, or the perceived effectiveness of threats of physical force. This was likely the reason why intoxication did not predict tonic immobility, either positively or negatively, in this study. It may be that there is not a direct relationship between substance use and tonic immobility, and that this relationship is instead moderated by other variables such as physical force. It is also possible that those who were more intoxicated

The only significant finding related to survivor intoxication revealed that lower levels of survivor intoxication were associated with increased perceived effectiveness of verbal coercion and threats from perpetrators. It appears that survivors who were more

sober were also more emotionally distressed and affected by verbal coercion techniques used by their perpetrators. It may be the case that alcohol, and other sedatives, dulls the emotional impact of verbal coercion techniques (either because the verbal coercion was not heard, understood, or believed), which could result in lower levels of fear and panic related to those verbal commands and other verbal coercion methods. On the other hand, those survivors who had not been consuming alcohol (or had drunk very little) may have been more likely to be frightened and affected by verbal threats.

As expected, when all of the hypothesized predictor variables were entered into hierarchical regressions, the full model significantly predicted tonic immobility. All three stages (objective variables, subjective variables, dissociation) significantly contributed to the model when the objective variables were entered into the model first. Subjective assault variables and dissociation still contributed to the model after controlling for the effects of the objective assault variables. However, once the order of variable entry was reversed, the objective variables no longer significantly contributed to the model after the effects of the subjective variables and dissociation were controlled for. This finding highlights the importance of those subjective variables in the context of the development of tonic immobility. It is possible that the emergence of tonic immobility is more closely related to subjective experiences of emotional distress and assault severity, as opposed to more measureable, “standardized” assessments of assault information, such as age different, severity of physical injuries, and victimization severity. For example, a sexual assault survivor may have experienced unwanted oral sex (considered less severe as there is no penetration involved) and did not receive physical injuries from her attack, but may still have experienced extremely high levels of fear and perceived inescapability due to

the belief in and effectiveness of coercion tactics used by her attacker. As such, this survivor may still experience tonic immobility, even very high levels of immobility, without the believed “necessary” objective assault characteristics. The results of these regression analyses comport with the overarching fear hypothesis (Gallup, 1977; Marx et al., 2008) that is most typically used to explain the development of tonic immobility, as the survivor’s level of perceived fear is thought to be more vital to tonic immobility than actual harm or injury.

The correlational analyses conducted to determine convergent validity determined that tonic immobility was positively correlated with PTSD ($r = 0.47$) and dissociation ($r = 0.52$). Furthermore, the results of the hierarchical regression revealed that dissociation explained a significant portion (8.1%) of the variation in tonic immobility over and above the effects of all other predictive variables discussed in this study, indicating that there is some kind of relationship between tonic immobility and dissociation that is still to be discovered and understood.

The general conclusion appears to be that, while the subjective experience of these two reactions to trauma appear quite similar for some survivors, they are considered distinct factors because of differences in neurological, biological, and emotional correlates, in addition to differences in cognitive processes and evolutionary and adaptive purposes (Bovin, Ratchford, & Marx, 2014; Halvorsen, 2015). Abrams et al. (2009) suggested that tonic immobility may be a severe behavioral manifestation of typical trauma-induced dissociation, while Halvorsen (2015) explored a theory of an umbrella term of “peritramatic dissociation” which would encompass 1) evolution-prepared dissociation, 2) tonic immobility, and 3) clinical dissociation, all of which would have

distinct correlates and predictors. While the theory of the division of peritraumatic dissociation is new and has yet to garner research support, this theory begins to provide a framework through which to view the distinct and overlapping variance of tonic immobility and dissociation found in this study. Thus important theoretical questions remain about whether tonic immobility and peritraumatic dissociation are qualitatively distinct or whether tonic immobility is a more extreme manifestation of peritraumatic dissociation.

These findings have implications for psychological treatment of survivors and for ways in which the legal system prosecutes sexual assault cases and interprets victim responses and behaviors as legitimate or not based upon how closely their responses align with the typical stranger danger script. Evidence of injury or reports of trying to escape are often crucial for the successful prosecution of sexual assault perpetrators (Bryden, 2000; Temkin & Krahe, 2008; Marx et al., 2008), yet they are often absent in most cases, particularly those involving known offenders.

Results of this study highlight the importance of subjective experiences of perceived fear and assault severity in the prediction of tonic immobility. Given the reliance on the stranger danger script in prosecuting sexual assault cases, it is important that police, prosecutors, judges, and juries be adequately informed about the nature of tonic immobility and dissociation as common sexual trauma responses, to avoid misinterpreting such behavior as evidence of victim disingenuousness. Increased visibility of counterintuitive reactions to assault such as tonic immobility can provide clarification and context as to why there may be an absence of active resistance and/or injury in such cases. In addition, improved knowledge of the biological nature of trauma

responses can be incorporated into the treatment of sexual assault survivors, as survivors often experience high levels of guilt when more passive resistance strategies are utilized during a sexual assault. A trained trauma counselor would be able to direct survivors to resources and literature on tonic immobility, which may validate survivor's experiences and provide additional circumstances to explain their involuntary actions during their assaults. In addition, improved understanding of tonic immobility by the general public could potentially provide more support and encouragement to sexual assault survivors who admit to engaging in passive responses, whether voluntarily or involuntarily, during their assaults.

Limitations and Future Directions

While several hypotheses were supported by this study, these results should be interpreted with caution for various reasons. First, a sample of 41 survivors is a relatively small sample for this type of investigation focusing on nuanced responses during a sexual assault. As some of the measured variables had restricted response ranges, a larger sample size will be necessary to compare groups with and without certain assault characteristics. Also, 21 participants dropped out of the survey sometime after consenting to their participation. This may have occurred for multiple reasons (length of the survey, the distressing or potentially triggering nature of the items, etc.), but it is unfortunately impossible to determine potential differences between those participants who completed the survey and those who did not. In addition, due to the nature of how the data was collected (rape crisis centers, therapist's offices, Facebook page for assault survivors), the particular participants whom this study attracted may be unique, as these participants have probably reached the point in their recovery in which they are beginning to seek

help or are already using psychological services. It is also possible that as help seekers, these individuals experienced more severe forms of sexual assault, leading them to both conceptualize and label their experiences as sexual assault, and to seek services for their distress. As such, the results from this study may not generalize to all or even most sexual assault survivors who do not fit this description.

As this study was one of the first to examine individual differences in the expression of tonic immobility, future research with more diverse and larger samples is necessary to replicate and extend the present findings. In particular, the distinction between dissociation and tonic immobility is theoretically interesting, and further research disentangling the nature of the overlap in these two constructs is necessary in order to better understand whether the distinctions are qualitative or quantitative in nature.

While online surveys are useful in order to gather certain forms of anonymous data, future studies ought to rely on face to face in order to collect more nuanced data and to clarify subtleties in the nature and timing of freezing and dissociative responses. Interviews would allow survivors more freedom and flexibility to share their stories, and would also allow researchers to collect important information about the emergence of tonic immobility that is difficult to acquire using a forced choice survey format. For example, an interview may be able to gather a more accurate timeline of events that occur during a sexual assault (e.g., whether a survivor struggled more before or after feeling frozen, whether there were particular antecedents to becoming paralyzed). Also, an interview format may increase the percentage of survivors who complete the entire study

and can potentially provide additional support to survivors who respond negatively to the study items.

While this study represents an important step towards developing a greater understanding of counterintuitive victim responses to sexual assault, much more work must be done to change the traditional views of the legal system and society at large regarding passive responding to sexual attacks. It is hoped that as the tonic immobility response becomes more established and more well known, the experiences of sexual assault survivors pursuing legal remedies will be met with greater understanding, acceptance and validation.

APPENDIX

SURVEY ITEMS AND INSTRUCTIONS

Screening Questions & Consent Form

Thank you for taking the time to complete this survey. Before you begin, please answer the following questions to determine whether you qualify for this study.

1. What is your gender?
 - a. Male
 - b. Female
 - c. Decline to Answer

2. What is your age?
 - a. 0—18 years old
 - b. 18+ years old

3. Have you experienced a sexual assault as an adult (when you were over the age of 18)?
 - a. Yes
 - b. No

Sexual Experiences Survey—Short Form Victimization

Instructions: The following questions concern sexual experiences that you may have had that were unwanted. Place select the items showing the number of times each experience has happened to you. If several experiences occurred on the same occasion—for example, if one night someone told you some lies and had sex with you when you were drunk, you would select both a and c. The past 12 months refers to the past year going back from today. Since age 18 refers to your life starting on your 18th birthday and stopping one year ago from today.

Sexual Experience	How many times in the past 12 months?	How many times since age 18?

	0 1 2 3+	0 1 2 3+
1. Someone fondled, kissed, or rubbed up against the private area of my body (lips, breast/chest, crotch or butt) or removed some of my clothes without my consent (<i>but did not attempt sexual penetration</i>) by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
2. Someone had oral sex with me or made me have oral sex with them without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
3. A man put his penis into my vagina, or someone inserted fingers or objects without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		

c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
4. A man put his penis into my butt, or someone inserted fingers or objects without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
5. Even though it did not happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
6. Even though it did not happen, a man TRIED to put his penis into my vagina, or someone tried to stick in fingers or objects without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		

b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		
7. Even though it did not happen, a man TRIED to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:		
a. Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said that I didn't want to.		
b. Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to.		
c. Taking advantage of me when I was too drunk or out of it to stop what was happening.		
d. Threatening to physically harm me or someone close to me.		
e. Using force, for example, holding me down with their body weight, pinning my arms, or having a weapon.		

Tonic Immobility Scale—Adult Form

Instructions: The following questions pertain to some reactions that you may have had during the most recent episode when you were coerced or forced to engage in an unwanted sexual activity without your consent. Please answer the following questions by selecting the number that corresponds to the most accurate response about your reactions during the unwanted sexual episode. There are no right or wrong answers.

1. Rate the degree to which you froze or felt paralyzed during your most recent experience.

0	1	2	3	4	5	6
not at all frozen or paralyzed						completely frozen or paralyzed

2. Rate the degree to which you were unable to move even though not restrained during your most recent experience.

0 1 2 3 4 5 6
 could move could not
 freely move at all

3. Rate the degree to which your body was trembling/shaking during the event.

0 1 2 3 4 5 6
 shaking no shaking
 a lot at all

4. Rate the degree to which you were unable to call out or scream during the event.

0 1 2 3 4 5 6
 could scream could not
 freely scream at all

5. Rate the degree to which you can remember the details of the event.

0 1 2 3 4 5 6
 can remember Unable to remember
 vividly at all

6. Rate the degree to which you felt numb or felt no pain during the event.

0 1 2 3 4 5 6
 could not could feel
 feel any pain a lot of pain

7. Rate the degree to which you felt cold during the event.

0 1 2 3 4 5 6
 did not feel felt extremely
 cold at all cold

8. Rate the extent to which you felt feelings of fear/panic during the event.

0 1 2 3 4 5 6
 extreme absolute
 fear calm

9. Rate the extent to which you feared for your life or felt as though you were going to die.

0 1 2 3 4 5 6
 absolutely no extreme
 fear for my life fear for my life

10. Rate the extent to which you felt that you were unable to escape during the assault.

0	1	2	3	4	5	6
could escape easily						could not escape at all

11. Rate the extent to which you felt detached from yourself (e.g., mentally removed from your body) during the event.

0	1	2	3	4	5	6
No sense of detachment from self						extreme detachment from self

12. Rate the extent to which you felt detached from what was going on around you (e.g., went to another place) during the event.

0	1	2	3	4	5	6
extreme detachment surroundings						No sense of detachment from

13. Rate the extent of your feelings of guilt/shame following your most recent sexual experience.

0	1	2	3	4	5	6
extreme shame/guilt						no shame/guilt

14. Have you experienced any of the above symptoms during a sexual assault aside from the most recent experience (Include only experiences that occurred **AS AN ADULT** [age 18 or older]).

Yes No

If yes, please use the list below to indicate which symptoms you have experienced before.

Felt frozen or paralyzed
 Body was trembling/shaking
 Details of the event(s) are clear
 Felt cold
 Feared for your life
 Felt detached from yourself
 Felt guilt/shame

Unable to move, though not restrained
 Unable to call out or scream
 Felt numb or felt no pain
 Felt feelings of extreme fear/panic
 Believed you were going to die
 Felt detached from your surroundings
 Could fight/resist during assault(s)

Instructions: Please answer the following questions (a through q) only if you suffered a loss of an ability to voluntarily resist the attacker or move (e.g., felt frozen or paralyzed at some point) during your most recent episode.

a. Rate the degree to which your inability to move or resist occurred suddenly or without warning.

0	1	2	3	4	5	6
occurred very gradually						occurred very suddenly

b. Rate the extent to which you either suddenly or gradually recovered your capacity to move or resist following a period of being unable to do so.

0	1	2	3	4	5	6
regained movement suddenly						regained movement very gradually

c. Rate the degree to which you became aggressive towards your perpetrator after you regained your ability to move.

0	1	2	3	4	5	6
not at all aggressive						extremely aggressive

d. How frightening was this feeling/state of being unable to voluntarily move your body?

0	1	2	3	4	5	6
extremely frightening						not at all frightening

e. Rate the degree to which you attempted to run away or flee after you regained your ability to move.

0	1	2	3	4	5	6
no attempt to run/flee						really tried to run/flee

f. Rate the degree to which you attempted to struggle and escape from the perpetrator after you regained your ability to move.

0	1	2	3	4	5	6
extreme effort to struggle/escape						no effort to struggle/escape

g. How vivid and clear in your memory are the events that occurred after you lost your ability to move/resist?

0	1	2	3	4	5	6
extremely vivid/clear						extremely clouded/unclear

h. When you regained your ability to move was it a consequence of something the perpetrator did?

Yes No

If Yes, please explain: _____

i. At the moment you regained your ability to move, was there a loud noise or sudden change in the behavior of the perpetrator?

Yes No

If Yes, please explain: _____

j. Do you remember closing your eyes for a period of time when you were unable to move or resist?

Yes No

If Yes, please explain: _____

k. Prior to losing your ability to move, were you actively struggling with the perpetrator?

Yes No

If Yes, please explain: _____

l. Do you remember making eye contact with the perpetrator just before or at about the same time you lost your ability to move?

Yes No

If Yes, please explain: _____

m. Did the perpetrator's behavior change after you lost your ability to resist?

Yes No

If Yes, please explain: _____

n. How long after you lost the ability to move did the assault continue?

Please estimate _____ number of minutes

o. Were you being held down and restrained at the time you lost your ability to move?

Yes No

If Yes, please describe: _____

p. If you were being beaten by the assailant, did it stop when you lost the ability to resist or shortly thereafter?

Yes No Not applicable (I was not beaten)

q. Have you ever experienced a loss of an ability to voluntarily resist or move (e.g., felt frozen or paralyzed at some point) during other physical (non—sexual) assault or other traumatic situations AS AN ADULT (age 18 or older)?

Yes No

If Yes, please list the kind of experiences:

Sexual Assault Severity Scale

Instructions: Please indicate which of the following sexual behaviors happened to you without your permission or consent during your most recent unwanted sexual experience:

1. Someone touched, kissed, or rubbed against the private parts of your body (i.e. breasts, crotch, butt), but did not attempt sexual intercourse.
 - a. Yes
 - b. No
2. Someone TRIED to perform oral sex on you.
 - a. Yes
 - b. No
3. Someone TRIED to make you perform oral sex on them.
 - a. Yes
 - b. No
4. Someone TRIED to have vaginal sex with you (either with his penis or by inserting fingers or objects).
 - a. Yes
 - b. No
5. Someone TRIED to have anal sex with you (either with his penis or by inserting fingers or objects).
 - a. Yes
 - b. No
6. Someone performed oral sex on you.
 - a. Yes
 - b. No
7. Someone made you perform oral sex on them.
 - a. Yes
 - b. No
8. Someone had vaginal sex with you (either with his penis or by inserting fingers or objects).
 - a. Yes
 - b. No
9. Someone had anal sex with you (either with his penis or by inserting fingers or objects).
 - a. Yes
 - b. No
10. How old were you when the sexual experience occurred? _____

11. How much time has passed since the sexual experience occurred?
- Less than 1 week
 - 1 to 4 weeks
 - 1 to 2 months
 - 3 to 6 months
 - 7 to 12 months
12. How many people were involved in the sexual experience (excluding you)?
- 1
 - 2
 - 3
 - 4
 - 5+
13. Was the person(s) you had the sexual experience with male or female? If there were multiple people and some were male and some were female, then mark "Both"
- Male
 - Female
 - Both
14. The sexual experience occurred:
- In public, outside (i.e. parking lot, alley, park)
 - In public, inside (i.e. bar, public bathroom)
 - At the person's house/apartment/dorm
 - At my house/apartment/dorm
 - Other: _____
15. The person(s) who I had the sexual experience with was: (If more than one person, choose all that apply)
- Stranger
 - Someone I just met
 - An acquaintance
 - Close friends/confidant (but I've never had sexual relations with him/her before)
 - Someone that I've had previous sexual relations with (i.e. acquaintance, close friend, ex)
 - A significant other or spouse
16. How close of a relationship did you have with the person you had the sexual experience with?
- | | | | | | | | | | | |
|------------------|---|---|---|-----------------|---|---|---|---|---|----------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Not close at all | | | | | | | | | | I trusted them |
| | | | | with my secrets | | | | | | |

If there was more than one person involved, please rate how close of a relationship you had with the second person when the sexual experience happened. Choose N/A if there was no second, third, fourth, or fifth person involved.

Second Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not close at all I trusted them
 with my secrets

Third Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not close at all I trusted them
 with my secrets

Forth Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not close at all I trusted them
 with my secrets

Fifth Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not close at all I trusted them
 with my secrets

17. How safe did you feel with the person prior to the sexual experience?
 0 1 2 3 4 5 6 7 8 9 10
 Not safe at all Extremely safe

If there was more than one person involved, please rate how safe you felt with each person prior to the sexual experience. Choose N/A if there was no second, third, forth or fifth person involved.

Second Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not safe at all Extremely Safe

Third Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not safe at all Extremely Safe

Forth Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not safe at all Extremely Safe

Fifth Person
 N/A 0 1 2 3 4 5 6 7 8 9 10
 Not safe at all Extremely Safe

18. Approximately how many people were present during the sexual experience (but did not participate)?
- No one else was present (0)
 - 1
 - 2
 - 3
 - 4
 - 5+
19. How severe would you rate the sexual experience?
- | | | | | | | | | | | | |
|-------------------|---|---|---|---|---|---|---|---|---|---|------------------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Not at all severe | | | | | | | | | | | Extremely severe |
20. How much emotional harm do you believe you have dealt with as a result of the sexual experience?
- | | | | | | | | | | | | |
|------|---|---|---|---|---|---|---|---|---|---|--------------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| None | | | | | | | | | | | Extreme harm |
21. The person(s) who I had the sexual experience with did which of the following to persuade me to do the sexual act (Choose all that apply):
- Tried to convince me
 - Threatened to end our relationship
 - Threatened to spread rumors about me
 - None of the above
22. How effective was this method of persuasion? If none of the methods were used, choose N/A:
- | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---------------------|
| N/A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Not at all effective | | | | | | | | | | | Extremely effective |
23. If the person threatened to end the relationship, how much did you believe the threat? If the person did not make these threats, choose N/A:
- | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|-----------------|
| N/A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Not at all | | | | | | | | | | | I knew it would |
24. If the person threatened to spread rumors about you, how much did you believe the threat? If the person did not make these threats, choose N/A:
- | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|-----------------|
| N/A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Not at all | | | | | | | | | | | I knew it would |
25. The person who I had this sexual experience with THREATENED to do which of the following if I did not do the sexual act (Choose all that apply):
- Hold me down or restrain me
 - Slap me
 - Punch or kick me
 - Beat me

- e. Choke me
- f. Use a weapon
- g. Kill me
- h. None of the above

26. How much did you believe the threat? If the person did not make these threats, choose N/A.

N/A 0 1 2 3 4 5 6 7 8 9 10
Not at all Completely

27. How afraid were you when the threat was made? If the person did not make any of these threats, choose N/A.

N/A 0 1 2 3 4 5 6 7 8 9 10
Not at all afraid Extremely afraid

28. How effective was the threat? If the person did not make any of these threats, choose N/A.

N/A 0 1 2 3 4 5 6 7 8 9 10
Not at all effective Extremely effective

29. The person who I had the sexual experience with did which of the following when I did not do the sexual act (Choose all that apply):

- a. Held me down or restrained me
- b. Slapped me
- c. Punched or kicked me
- d. Beat me
- e. Choked me
- f. Used a weapon
- g. None of the above

30. How afraid were you when the person did one or more of these acts of physical force? If the person did not do any of these acts, circle N/A.

N/A 0 1 2 3 4 5 6 7 8 9 10
Not at all afraid Extremely afraid

31. How effective was this act of physical force? If the person did not do any of these acts, choose N/A.

N/A 0 1 2 3 4 5 6 7 8 9 10
Not at all effective Extremely effective

32. What types of physical injuries did you have as a result of this act of physical force?

- a. Bruising
- b. Soreness
- c. Swelling
- d. Small/shallow cuts

- e. Deep cuts/lacerations
- f. Not applicable (N/A)

33. I received medical treatment (i.e. went to the doctor or hospital) for injuries I received during the sexual experience.
- a. No
 - b. Yes

34. How severe were your physical injuries? If you did not have physical injuries, choose N/A.

N/A	0	1	2	3	4	5	6	7	8	9	10
	Not at all severe					Extremely severe					

Instruction: Please answer the following questions regarding substance use at the time of the sexual experience.

35. At the time of the sexual experience, I was drinking alcohol.
- a. No
 - b. Yes

36. How many drinks did you have?
- a. 0 (N/A)
 - b. 1 to 2
 - c. 3 to 4
 - d. 5 to 6
 - e. 7+

37. Please rate your degree of intoxication at the time of the sexual experience. If you did not drink alcohol, choose N/A.

N/A	0	1	2	3	4	5	6	7	8	9	10
	Not at all drunk					Black out drunk					

38. Did the person you had the sexual experience with insist that you drink alcohol?
- a. No
 - b. Yes

39. To your knowledge, did the person(s) you had the sexual experience with put any drugs or substances in your drink?
- a. No
 - b. Yes

40. To your knowledge, did the person(s) you had the sexual experience with drink alcohol before or during your sexual encounter?
- a. No

- b. Yes
41. Approximately, how many drinks did the person(s) have? If you are unsure, please take your best guess.
- None
 - 1 to 2
 - 3 to 4
 - 5 to 6
 - 7+
42. Please rate the person(s) level of intoxication at the time of the sexual experience. If the person(s) was not drinking, choose N/A.
- | | | | | | | | | | | | |
|-----|------------------|---|---|---|---|-----------------|---|---|---|---|----|
| N/A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Not at all drunk | | | | | Black out drunk | | | | | |
43. At the time of the sexual experience, were you using illicit substances (i.e. marijuana, ecstasy, oxycontin, crack, cocaine, meth)?
- No
 - Yes
44. What drug(s) did you use?
- Marijuana
 - Prescription pain meds/sedatives (i.e. oxycontin)
 - Crack/cocaine
 - Methamphetamine
 - Ecstasy
 - LSD
 - Mushrooms
 - None
45. Please rate how high you were at the time of the sexual experience. If you did not use any drugs, choose N/A.
- | | | | | | | | | | | | |
|-----|-----------------|---|---|---|---|----------------|---|---|---|---|----|
| N/A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Not at all high | | | | | Extremely high | | | | | |
46. Did the person(s) you had the sexual experience with insist that you use illicit substances?
- No
 - Yes
47. To your knowledge, what drugs did the person(s) use?
- Marijuana
 - Prescription pain meds/sedatives (i.e. oxycontin)
 - Crack/cocaine
 - Methamphetamine
 - Ecstasy
 - LSD

8. Was the assailant able to ejaculate during your most recent unwanted sexual encounter?
- a. Yes
 - b. No
 - i. If no, did the assailant lose his erection before ejaculation?
 1. Yes
 2. No
9. Approximately how long did your most recent unwanted sexual experience last (estimate in minutes)? _____
10. Please approximate the age of the assailant(s) at the time of the unwanted sexual experience.
- a. Assailant 1 _____
 - b. Assailant 2 _____
 - c. Assailant 3 _____
 - d. Assailant 4 _____
 - e. 5+ Assailants

Peritraumatic Dissociative Experiences Questionnaire

Instructions: Please complete the items below by selecting the choice that best describes your experiences and reactions during your MOST RECENT unwanted sexual experience and immediately afterwards. If an item does not apply to your experience, please select “Not at all true.”

1. I had moments of losing track of what was going on—I “blanked out” or “spaced out” or in some way felt that I was not part of what was going on.
- 1 2 3 4 5
- Not at all true Slightly true Somewhat true Very true Extremely true
2. I found that I was on “automatic pilot” —I ended up doing things that I later realized I hadn’t actively decided to do.
- 1 2 3 4 5
- Not at all true Slightly true Somewhat true Very true Extremely true
3. My sense of time changed—things seemed to be happening in slow motion.
- 1 2 3 4 5
- Not at all true Slightly true Somewhat true Very true Extremely true
4. What was happening seemed unreal to me, like I was in a dream or watching a movie or play.
- 1 2 3 4 5
- Not at all true Slightly true Somewhat true Very true Extremely true

5. I felt as though I were a spectator watching what was happening to me, as if I were floating above the scene or observing it as an outsider.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true
6. There were moments when my sense of my own body seemed distorted or changed. I felt disconnected from my own body or felt that it was unusually large or small.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true
7. I felt as though things that were actually happening to others were happening to me—like I was being trapped when I really wasn't.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true
8. I was surprised to find out afterwards that a lot of things had happened at the time that I was not aware of, especially things I ordinarily would have noticed.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true
9. I felt confused; that is, there were moments when I had difficulty making sense of what was happening.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true
10. I felt disorientated; that is, there were moments when I felt uncertain about where I was or what time it was.
- 1 2 3 4 5
 Not at all true Slightly true Somewhat true Very true Extremely true

Childhood Trauma Questionnaire—Short Form

Instructions: These questions ask about some of your experiences growing up as a child and a teenager. Although these questions are of a personal nature, please try to answer as honestly as you can. For each question, choose the response that best describes how you feel and describes your experiences up until you were 18 YEARS OLD.

When I was growing up...

1. Someone tried to touch me in a sexual way, or tried to make me touch them.
- 0 1 2 3 4
 Never True Rarely True Sometimes True Often True Very Often True

2. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.

0 1 2 3 4
Never True Rarely True Sometimes True Often True Very Often True

3. Someone tried to make me do sexual things or watch sexual things.

0 1 2 3 4
Never True Rarely True Sometimes True Often True Very Often True

4. Someone molested me.

0 1 2 3 4
Never True Rarely True Sometimes True Often True Very Often True

5. I believe that I was sexually abused.

0 1 2 3 4
Never True Rarely True Sometimes True Often True Very Often True

Posttraumatic Stress Disorder Checklist for the DSM 5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:

1. Repeated, disturbing, and unwanted memories of the stressful experience?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

2. Repeated, disturbing dreams of the stressful experience?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

3. Suddenly feeling or acting as if the stressful experience were actually happening again (*as if you were actually back there reliving it*)?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

4. Feeling very upset when something reminded you of the stressful experience?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

5. Having strong physical reactions when something reminded you of the stressful experience (*for example, heart pounding, trouble breathing, sweating*)?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

6. Avoiding memories, thoughts, or feelings related to the stressful experience?

0 1 2 3 4

- Not at all A little bit Moderately Quite a bit Extremely
7. Avoiding external reminders of the stressful experience (*for example, people, places, conversations, activities, objects, or situations*)?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
8. Trouble remembering important parts of the stressful experience?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
9. Having strong negative beliefs about yourself, other people, or the world (*for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous*)?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
10. Blaming yourself or someone else for the stressful experience or what happened after it?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
12. Loss of interest in activities that you used to enjoy?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
13. Feeling distant or cut off from other people?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
14. Trouble experiencing positive feelings (*for example, being unable to feel happiness or have loving feelings for people close to you*)?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
15. Irritable behavior, angry outbursts, or acting aggressively?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
16. Taking too many risks or doing things that could cause you harm?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
17. Being “superalert” or watchful or on guard?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
18. Feeling jumpy or easily startled?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely
19. Having difficulty concentrating?
 0 1 2 3 4
- Not at all A little bit Moderately Quite a bit Extremely

20. Trouble falling or staying asleep?

0 1 2 3 4
Not at all A little bit Moderately Quite a bit Extremely

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