Unwanted Sexual Experience: An Investigation of Emotion and Physiology

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Unwanted Sexual Experience: An Investigation of Emotion and Physiology

by

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A Thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in General Psychology

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Each person whose signature appears below certifies that this thesis in his/her opinion is adequate, in scope and quality, as a thesis for the degree Masters in Psychology.

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I would like to express my deepest gratitude to my family and friends, your love and support through this long endeavor has helped me overcome many struggles and accomplish my goals. Thank you to my parents for giving me the freedom to pursue any dream I could dream, thank you for waiting these long years with such love, patience, and support.
# CONTENT

Approval Page...........................................................................................................iii

Acknowledgements .....................................................................................................iv

List of Figures .................................................................................................................vii

List of Tables ................................................................................................................viii

Abstract........................................................................................................................ix

Chapter

1. Introduction .................................................................................................................1
   
   Neuroanatomical and Psychophysiological Effects ................................................. 2
   Significance of the Project ....................................................................................... 12
   Hypotheses .............................................................................................................. 13

2. Methods ......................................................................................................................14
   
   Participants ............................................................................................................. 14
   Materials and Stimuli .............................................................................................. 15
   Physiological Measures ........................................................................................... 19
   
   Skin Conductance ................................................................................................. 19
   Heart Rate ............................................................................................................... 19
   
   Procedure ............................................................................................................... 19
   Data Analysis .......................................................................................................... 22

3. Results .......................................................................................................................24
   
   Hypothesis One ...................................................................................................... 24
   Hypothesis Two ...................................................................................................... 25

4. Discussion ..................................................................................................................28
   
   Hypothesis One ...................................................................................................... 28
   Hypothesis Two ...................................................................................................... 29
   Future Directions .................................................................................................... 30

References.....................................................................................................................33
Appendices

A. Sexual Experiences Survey .................................................................

B. Sexual Abuse Information Handout ......................................................

C. Demographic Questionnaire ..............................................................

D. Los Angeles Symptom Checklist .........................................................

E. Informed Consent ..........................................................................

F. IAPS Image List with Valence and Arousal .........................................
## FIGURES

<table>
<thead>
<tr>
<th>Figures</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heart Rate by Time, Valence, and Touch Across Entire Sample</td>
<td>50</td>
</tr>
<tr>
<td>2. SCR by Valence and Touch in the Entire Sample</td>
<td>51</td>
</tr>
<tr>
<td>3. SCR by Valence and Touch in the PTSD Sample</td>
<td>52</td>
</tr>
<tr>
<td>4. Heart Rate by Valence and Pictures Portraying Interpersonal Touch in the PTSD Sample</td>
<td>53</td>
</tr>
<tr>
<td>5. SCR by Valence and Touch in the SES Sample</td>
<td>54</td>
</tr>
<tr>
<td>6. Heart Rate by Valence and Pictures Portraying Interpersonal Touch in the SES Sample</td>
<td>55</td>
</tr>
<tr>
<td>Tables</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1. Demographic Characteristics of Participants</td>
<td>15</td>
</tr>
<tr>
<td>2. Sexual Experiences Survey (SES) percentage of participants’ that</td>
<td>21</td>
</tr>
<tr>
<td>Endorsed yes for each scale</td>
<td></td>
</tr>
<tr>
<td>3. Los Angeles Symptom Checklist (LASC) Means and Standard Deviations</td>
<td>22</td>
</tr>
</tbody>
</table>
ABSTRACT OF THE THESIS

Unwanted Sexual Experience: An Investigation of Emotion and Physiology

by

Julie Albery

Master’s Thesis, Graduate Program in Psychology
Loma Linda University, December 2010
Dr. Paul Haerich, Chairperson

The statistics on the prevalence of sexual abuse are varied and alarmingly large. Rojas and Kinder (2007) showed that a little less than 30% of males stated that they had been sexually abused while a little over 30% of females reported being sexually abused. The purpose of this study is to obtain additional information regarding cognitive-affective processing in individuals who have had an unwanted sexual experience. The current study is a pilot study that questions whether a difference in physiological response, as measured by skin conductance and heart rate, will occur in people who have had an unwanted sexual experience while viewing positive and/or negative interpersonal pictures. A total of 140 participants ranging in ages from 18-66 years were recruited from Cal State San Bernardino’s subject pool. The mean age was 25.23, of these participants, 125 were female and 15 were male. Multiple repeated measures ANOVA’s mixed design were conducted in order to assess whether having had an unwanted sexual experience and/or whether gender could affect one’s physiological responses when viewing emotionally laden pictures depicting interpersonal touch. This study showed that an innate physiological trauma did not exist in individuals who had experienced sexual abuse in the past. In fact, they experienced similar physiological responses, as those who did not report suffering from any type of unwanted sexual touch, as measured through
skin conductance and heart rate. Gender did not have a significant effect but this could be
due to the small sample size of males. The study was able to replicate other findings,
which showed that valence has a significant effect on skin conductance. A new finding
was that a significant interaction exists between pictures depicting interpersonal touch
and valence of the picture across skin conductance.
Introduction

A majority of the literature focusing on sexual abuse only looks at women who have been physically assaulted and/or raped. Moreover, the focus of a majority of the sexual abuse studies is restricted to women who have been diagnosed with Posttraumatic Stress Disorder. This leads to the question of the magnitude of the consequences for women or men who have been sexually abused but have not been diagnosed with Posttraumatic Stress Disorder. This is a population that appears to have been largely ignored and should be the primary study population when one takes into account the assumed underreporting of sexual abuse, the embarrassment and shame that the victim often feels, and the feeling of isolation, which can occur by not telling someone about the abuse until years after the incident.

Thombs, Bernstein, Ziegelstein, Bennett, and Walker (2007) found that the prevalence of sexual abuse in women during childhood was 56.9%. While, Koopman et al. (2007) had 31.6% of their participants report having experienced child sexual abuse and 46% reported having been raped by an intimate partner. Some of the differences among these reports may arise from the instruments used to collect the data. For example, Thombs et al. (2007) used a general definition of sexual abuse which asked participants if they ever experienced any unwanted sexual touch. In contrast, Koopman et al. (2007) used the childhood trauma questionnaire to define sexual abuse. This questionnaire consists of five items that ask about both physical and sexual abuse. Rojas and Kinder (2007) used the child sexual experiences questionnaire. This questionnaire is essentially synonymous with the sexual experiences survey to be used in this study with the exception that the questions are geared to children up to the age of 16. In general,
sexual abuse, sexual assault, and unwanted sexual experience can mean any type of unwanted sexual touch ranging from unwanted touch to actual rape. Using the sexual experiences survey this study will also define unwanted sexual experience as ranging from unwanted sexual touch to having been raped. As in previous studies this experiment will define unwanted sexual experience as inclusive of sexual assault and sexual abuse.

It is important to note who are the perpetrators of sexual abuse. Gavey (1991) found that 51.6% of female undergraduate students from New Zealand reported having been sexually abused. About 60% of all sexual abuse incidents reported by women occurred within heterosexual relationships and involved a boyfriend, husband, dates, or lovers. When one includes ex-boyfriends, ex-husbands, and ex-lovers the percentage increased to 82.5%. Lastly, the study found that 7.7% of sexual abuse victimization occurred with strangers being the perpetrator. Not only is it an international issue but as the previous study states the majority of abuse occurs by someone the victim knows and trusts. This is yet another reason why it is valuable to focus on undergraduate students who have been sexually abused and are exposed to shared living spaces with persons of the opposite sex (e.g., shared building or floor in ‘co-ed’ or mixed college dormitories).

**Neuroanatomical and Psychophysiological Effects**

To date research has shown that individuals who have experienced an unwanted sexual experience can exhibit relatively long-lasting neuroanatomical and psychophysiological effects. Bremner, Krystal, Southwick, and Charney (1995) found that the medial prefrontal cortex is involved with both emotion and stress response in animals. Additionally, other animal studies have shown that emotion and stress response
play a role in the dysfunction of the medial prefrontal cortex. These studies also show that animals with lesions of the medial prefrontal cortex are unable to extinguish fear responses after trials of fear conditioning (Bremner, Narayan, Staib, Southwick, McGlashan, & Charney, 1999).

The hypothalamic-pituitary-adrenal axis is an integral player in the stress response within the brain.

The HPA axis is central to the stress response. The paraventricular nucleus of the hypothalamus releases corticotrophin-releasing factor (CRF). CRF is the central regulatory neuropeptide that coordinates the neuroendocrine response to stress. It activates both the pituitary-adrenal axis, and the sympathetic nervous system. CRF causes the pituitary to release adrenocorticotrophic hormone (ACTH) and beta-endorphin. ACTH signals the cortex of the adrenal glands to secrete cortisol. This system also causes the adrenal medulla to secrete the catecholamines epinephrine and norepinephrine into the bloodstream, activating the fight or flight responses (Kendall-Tackett, 2003, page 2-4).

Cortisol and the HPA axis can have different reactions depending on whether the stress response is acute or chronic such as what you see in individuals diagnosed with PTSD.

At the onset of trauma, high levels of cortisol may damage the hippocampus, and this damage can persist for many years and lead to a lower hippocampal volume on an MRI. The atrophy of the hippocampus may lead to hypothalamic inhibition, which results in elevated CRF and a blunted response to ACTH (Kendall-Tackett, 2003, page 2-5).

This blunted response of ACTH occurs due to a decrease in the sensitivity or the number of ACTH receptors. In other words this is a consequence of the HPA axis’ negative feedback loop. This is the pattern seen in PTSD.

The abnormally low levels of cortisol in PTSD may reflect a long term change and adaptation to the high levels of cortisol initially. Thus acute stress may lead to hyperactivity of the CRF/HPA (hypothalamic-pituitary-adrenal axis) system, whereas chronic PTSD may lead to long term dysregulation and indeed a different HPA/Cortisol system. Traumatic changes also cause chronic hypersecretion of CRF and ACTH, with accompanying adrenal and pituitary hypertrophy (Kendall-Tackett, 2003, page 2-6).
In fact Kendall-Tackett (2003) also found that Children exposed to consistent trauma develop a generalized physiological hyperarousal, and all cues activate this system. When exposed to chronic stress cerebellar changes can occur as can physiological responses within an individual.

Bremner et al. (1999) believes it is probable that the areas with increased activation in women with PTSD (the medial prefrontal cortex, parietal, visual association cortex, and the posterior cingulate) may form a pathway of traumatic memory recall and remembrance in women with PTSD. All of the circuits that are embedded in the prefrontal cortex and have been mentioned previously play a significant role in emotional memory. It is probable that these structures are integral to increased recall in persons with PTSD who have stronger reactions and better recall of negative emotionally valenced scripts (Bremner et al., 1999). It is possible that aversive conditioning, through single trial learning, occurred leading to automatic and exogenous activation of traumatic memory. Kendall-Tackett (2003, page 8-11) discusses the amygdala’s role with memory in PTSD. The amygdala seems to be a particularly important structure in memories associated with PTSD. Of particular interest are the N-methyl-D-aspartate (NMDA) receptors on the amygdala. These appear to be involved in the formation and retrieval of traumatic memories because NMDA antagonists can be applied to the amygdala and prevent the development of fear conditioning responses.

Stress during an unwanted sexual event has been associated with another memory-related structure, the hippocampus. Studies have shown that hippocampal volume is in fact decreased in women who have sexual-abuse-induced PTSD when compared to women who have not been diagnosed with PTSD even after controlling for
In fact, children with histories of child maltreatment have demonstratively different brains than children without such a history. For example, the left hemispheres of maltreated children have fewer nerve connections between nerve cells than those of non-maltreated children. MRIs have revealed that children with a severe history of physical or sexual abuse have lower brain volumes than matched controls (Kendall-Tackett, 2003, page 8-11).

Bremner et al. (2003a) found that, when taking part in a memory encoding task, abused women without PTSD had increased blood flow in the left hippocampus compared to abused women with PTSD. Women without PTSD also had greater increases in blood flow during verbal memory encoding in comparison to women with PTSD. Thus, PTSD appears to be associated with reduced activation in the hippocampus during memory tasks and is an example of the psychophysiological effects associated with the experience of sexual trauma.

A particularly clear example of the association between the symptoms of PTSD (including intrusive memory and fear) and functional brain activation is presented by Bremner et al., (2003b). Based on these data, Bremner et al. (2003b) was interested in which brain structures would be activated when someone who has sexual abuse induced PTSD was retrieving an emotionally valenced declarative memory. It seemed that the experimenters were attempting to activate both episodic and semantic memory as all the emotional words were negative fear words. All participants were scanned with PET while being presented with three lists of word-pairs. They were first presented with a shallow encoded task, which consisted of a neutral word pair list. This task is considered shallow encoding because participants needed to identify the single letter D within the presented
words. After a five-minute interval participants were asked to recall the words by naming the missing word from the each pair. Since participants were only asked to identify the letter D and not told to remember the words recall was poor in this condition. The next two lists were a deeply encoded neutral word pair list followed by a deeply encoded emotional word pair list. These were deeply encoded because participants were asked to remember the word pairs as they heard them for a subsequent cued memory test. The emotional word list consisted of life threatening words or fear related words such as “rape.” During retrieval of emotionally valenced words, women with childhood sexual abuse–induced PTSD showed increased activation in motor cortex, posterior cingulate, the visual association cortex (BA 19), left inferior parietal lobule (BA 40), left middle and superior frontal gyrus, and right middle temporal gyrus (BA 20) (Bremner et al., 2003b). Decreased blood flow was found in an extensive area of medial prefrontal cortex involving the orbitofrontal cortex (Broadmann’s Areas 11, 47), anterior cingulate (including subcallosal gyrus Broadmann’s 25 and 32), and medial prefrontal cortex (Broadmann’s area 9). There were also decreases in left hippocampal activation during retrieval of emotionally valenced words in women who had PTSD relative to non-PTSD women (Bremner, 2003b).

This study supports the involvement of the hippocampus, medial prefrontal cortex, amygdala and the cingulate in the stress response. Based on this evidence and past animal studies Bremner hypothesizes that a dysfunction of the medial prefrontal cortex may exist in pathologic emotions that follow extreme stressors such as childhood sexual abuse (Bremner, 2003b). Hence an individual with PTSD constantly remembers and re-experiences the fear associated with the traumatic event. The evidence from these studies
suggests that other physiological measures, not requiring costly brain imaging might also
index the responses of individuals who have experienced sexual trauma.

In the bioinformational approach to emotion, physiological measures such as
heart rate, and electrophysiological responding provide significant additional information
allowing the investigator to obtain a more complete understanding of the individual’s
emotional reaction (Lang, 1979; Lang, Bradley, & Cuthbert, 1990). These physiological
responses are likely to reflect changes in cognitive processing associated with functional
changes such as those reported above (Bremner et al. 2003). Often, victims of sexual
abuse do not disclose their abuse to others (Testa et al., 2004). Therefore, examining
physiological responses may allow the investigator to obtain additional information
relevant to emotional responding to supplement a participant’s verbal report and history.
What is necessary to note is that much of the research has focused on individuals with a
diagnosis of PTSD and has ignored individuals who have a history of sexual abuse but
may not meet criteria for PTSD.

This study hypothesizes that someone who has had an unwanted sexual
experience will have an increased physiological response to others entering into their
interpersonal space. The increased physiological response is based on a defensive
reaction, which leads to the activation of the individual’s fight or flight mechanism. This
hypothesis is derived from the notion of the “defense cascade” (Bradley, 2000).
Essentially what occurs within the defense cascade is that “different response systems
change in different ways as activation within each motivational system increases”
(Bradley, 2000). For example, an individual that views an image containing a potential
threat; the defense system is then activated; however, the defense cascade can be
activated at different levels depending on the stimulus and level of threat perceived by the individual. It has been shown that when specific phobics view pictures of their own phobic objects their heart rate accelerates and the defense response is activated differing from a normal participant viewing similar pictures which may elicit only a moderate defensive response (Bradley, 2000). Based on previous research sexual abuse victims who have already been primed by the memory of what happened to them should have cardiac acceleration when processing pictures of interpersonal touch because they will be further along in the defense cascade when compared to control participants.

As an exploratory first step, the current study hypothesizes that an individual who has been sexually assaulted will have a greater heart rate and skin conductance response due to fear and/or anxiety while viewing negative as well as positive interpersonal pictures when compared to controls. That is, these changes may also produce a feeling of discomfort when seeing two people showing affection for one another or two people engaging in interpersonal touch in a threatening situation (i.e. man grabbing woman from behind with a knife to her neck). Affection can be any type of interpersonal touch; which could range from holding hands, to hugging, kissing, to engaging in consensual intercourse. Through images it is possible that the participant may be brought back to the memory of their traumatic experience leading to increased physiological responses. Thus, because of unwanted sexual experience, changes in brain function occur. In participants with unwanted sexual experience the invasion of interpersonal space results in the operation of the Bremner-described stress brain circuits, producing physiological responses that will be different from those participants with little to no unwanted sexual experiences. Moreover, not only will actual invasion of interpersonal space produce these
reactions, observing such invasion will result in similar responses (as processing unwanted sexual experience relevant words did in the paired-associates task).

PTSD arises from stress associated with many things: sexual abuse, other abuse, and trauma. Previous studies have reported that sexual abuse and assault can result in autonomic changes. McDonagh-Coyle et. al. (2001) found that heart rate significantly increased in women with severe Posttraumatic Stress Disorder who had been sexually abused as children as they recalled their own trauma when compared to women who did not have PTSD but had been sexually abused in the past. Chronic PTSD activates the sympathetic nervous system and affects heart rate. In a study of 115 motor vehicle accident victims, and 42 controls, those who developed PTSD in the subsequent year had elevated heart rates at all four assessment points. Indeed, those participants who had sub threshold PTSD also had elevated heart rates, but not as elevated as those who developed PTSD (Kendall-Tackett, 2003, page 8-13). This research focused only on women or individuals diagnosed with Posttraumatic Stress Disorder leaving open the question of the prevalence of similar responding in individuals who have had an unwanted sexual experience but have not been diagnosed with or would not fit the criteria for PTSD.

When the focus in the literature does change from Posttraumatic Stress Disorder it changes to the broader topic of physical abuse which includes sexual abuse as well as being beaten, or slapped. For example, Rice and Records (2006) conducted a study in which women’s heart rate’s was measured while the individual was first lying down and then standing. It was shown that there was a significant difference in that both pregnant and non-pregnant women who had been physically abused, had faster heart rates, when compared to pregnant and non-pregnant women who had not been physically abused
According to Rice and Records (2006), experiencing sexual trauma in and of itself permanently increases an individual’s heart rate without any further stimulation when compared to women who have not experienced any sexual trauma. It has been shown that PTSD disturbs sleep and increases cardiovascular reactivity (Kendall-Tackett, 2003, page 8-12).

In addition to heart rate, skin conductance or the sweat response, is indicative of autonomic arousal such as that which occurs while viewing emotionally salient images. Among a sample of female undergraduates, Smith, Löw, Bradley, and Lang (2006) found that skin conductance remained high throughout the block for negative pictures but decreased significantly from early to late in the block when viewing neutral or pleasant pictures. Although this study did not include males nor specifically address sexual abuse victims, it suggests that negatively valenced material may be more generally efficacious in producing arousal responses. Indeed, in the Metzger et al. (1999) sample of sexual abuse victims, women who currently experienced PTSD as well as those with lifetime PTSD had a statistically significant reduction in skin conductance habituation to startling tones when compared to a control group. Taken together with the HR data above, this suggests that being a victim of sexual abuse may chronically change one’s physiological responses to certain stressful events.

Current literature has started to show a different trend in women who have been sexually abused in regards to their physiological responses to trauma scripts. One study (Marx & Soler-Baillo, 2005) found that when women who were diagnosed with sexual abuse-induced PTSD listened to a script of a date slowly getting out of control their heart rates did not show greater reactivity when compared to other groups. In contrast, if an
individual was asked to imagine their past experience, their heart rate increased. However this has only been shown in studies whose participants had a diagnosis of PTSD.

Because studies have found that average heart rate and skin conductance response increases when viewing negative pictures (Smith et. al., 2006; Pollatos, Herbert, Matthias, and Schandry, 2007), and that women who suffer from Posttraumatic Stress Disorder due to having been abused as children also have an increased heart rate in general and/or when imagining their abuse (Metzger et. al., 1999; McDonagh-Coyle et. al. 2001), it may be hypothesized that persons who have been sexually abused but do not have PTSD will have larger autonomic reactions (heart rate and skin conductance responses) when viewing negative pictures when compared to people with no history of abuse. This hypothesis is supported by previous studies discussed above which have shown persons with abuse having magnified autonomic responses when compared to controls in both sedentary situations as well as situations in which the participant was provoked by traumatic stories.

One of the concerns of this study is the safety of it’s participants who will be subjected to a variety of different pictures. Past studies have shown that people who participate in childhood sexual abuse or sexuality research and have been sexually abused are not at greater than minimal risk for immediate increases in anxiety, depression, or anger (Rojas and Kinder 2007). Because Rojas and Kinder (2007) included both males and females, this further demonstrates that participants who have experienced sexual abuse have minimal risk participating in sexuality studies. They also noted that males do not suffer more or less than females. Based on the prior studies this experiment should not pose greater than minimal risk to its participants.
Significance of the Project

It is important to note that sexual abuse occurs all too often on college campuses. Cole (2006) found that rape is the most common violent crime at U.S. universities. It is estimated that rape occurs to 35 out of every 1000 female college students per year in the United States. Rape is the most severe form of sexual abuse and these statistics only address rape and not other forms of sexual abuse.

An important consequence of experiencing abuse is a decrease in the individual’s experienced quality of life. Pikarinen et al. (2007) found abuse whether physical, sexual, or both had a strong impact on a woman’s quality of life. Women who were physically and or sexually abused stated that their general health and sex lives were bad more often than controls. These women also suffered more long term health problems such as stomach pain, digestive disorders, and gynecological problems. The extent to which analogous consequences appear as daily emotional and cognitive trauma is the primary question for this project.

Previous studies have not included people from the general campus population who have had unwanted sexual experiences yet do not suffer from Posttraumatic Stress Disorder. Past studies do not address how persons who have had unwanted sexual experiences would react to seeing other people interacting with one another in an interpersonal manner (hugging, kissing, and fondling). This is an important question since in American culture public displays of affection are normal and accepted. It is possible that the uncomfortable feeling a person who has been sexually abused experiences is a result of the trauma of having been sexually abused. If this study shows the hypothesis to be true then this could be a stepping stone towards later sexual abuse
research. This information could then be applied in a clinical setting. Before addressing overcoming the sexual abuse the therapist could address overcoming the fear of both experiencing and viewing interpersonal touch. Once the fear is overcome, the therapist can use this accomplishment to help the client both continue with therapy and overcome the overall trauma of the sexual abuse. If those who have had unwanted sexual experiences encounter a traumatic reaction to seeing people interacting with one another in an interpersonal manner; then this trauma, which has been ignored, will now be uncovered.

**Hypotheses**

1. An individual who has been sexually assaulted will have a greater heart rate and skin conductance response due to fear and/or anxiety while viewing negative and positive interpersonal pictures when compared to controls.

2. While controlling for PTSD-like symptoms a greater heart rate and skin conductance response will be present due to fear and/or anxiety while viewing negative and positive interpersonal pictures when compared to controls.
Methods

Participants

The targeted study population consists of individuals representing a range of unwanted sexual experience from those having experienced sexual abuse and trauma to those who have not had an unwanted sexual experience. The sample was recruited from undergraduates who are taking courses in psychology and will receive credit for their participation. Based on previous research, it was expected that about 32% of women and 20% of men to admit to having had an unwanted sexual experience (Koss, Gidycz, and Wisneiwski 1987; Gavey 1991; Rojas and Kinder, 2007).

The sampling frame was originally supposed to consist of 150 undergraduate students from California State University of San Bernardino. Any person who signed up for the study would be allowed to participate as long as they were literate in English, had normal or corrected to normal vision, and normal hearing. However, due to time restraints, participant availability, and no show rates the total sample size was slightly smaller than originally anticipated.

A total of 140 participants that ranged in age from 18-66 years were obtained for this study. The mean age was 25.23 years. The ethnicities of the participants varied with 19 of African Origin, 1 American Indian/Alaksa Native/Aboriginal Canadian, 9 Asian American/Asian Pacific Islander, 6 Bi-racial/Multiracial, 33 of European Origin/Caucasian, 69 Latino-a/Hispanic, and 3 other. Of these participants 8 were left-handed and 132 were right handed. Lastly there were 125 females and 15 males in the study.
Table 1

Demographic Characteristics of Participants

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Percentage (Raw #)</th>
<th>Mean (SD)</th>
</tr>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
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<tr>
<td>Female</td>
<td>89.3% (125)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10.7% (15)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>25.2 y (8.23)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino/a/Hispanic</td>
<td>49.3% (69)</td>
<td></td>
</tr>
<tr>
<td>European Origin/Caucasian</td>
<td>23.6% (33)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>13.6% (19)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>6.4% (9)</td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska</td>
<td>0.7% (1)</td>
<td></td>
</tr>
<tr>
<td>Native/ Aboriginal Canadian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bi-racial/Multi-racial</td>
<td>4.3% (6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.1% (3)</td>
<td></td>
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</tbody>
</table>

Materials and Stimuli

All participants provided informed consent. Participants were given an informed consent document, which was reviewed and approved by the Human Subjects Review boards of both CSUSB and LLU (see Appendix E), and the experiment was explained to them and any questions were answered. Each consent form had a participant ID number on the top right corner. If the participant agreed to participate they were asked to indicate their consent by marking an X and writing the date as their ‘signature’. This was done in order to ensure confidentiality and anonymity due to the sensitivity of sexual abuse disclosure.

Participants completed five questionnaires, a demographic sheet, the Sexual Experiences Survey (SES), the Los Angeles Symptom Checklist (LASC), Toronto
Alexithymia Scale (TAS), and the Self Report Psychopathy Scale III (SRP-III). The demographic sheet consisted of questions that asked about the participant’s age, gender, ethnicity, and handedness (See Appendix C and Table 1 above).

The Sexual Experiences Survey (SES) consisted of eleven yes/no questions discussing varying types of molestation and forced intercourse (See Appendix A). The validity and internal consistency of the Sexual Experiences Survey were originally assessed using different populations of college students (Koss & Gidycz, 1985), which further supports the applicability of this survey for the current study. Koss and Gidycz (1985) found the internal consistency for women to be 0.74 and 0.89 for men. Testa et al. (2004) showed the internal consistency calculated using Cronbach’s Alpha of the Sexual Experiences Survey to be 0.71 after having modified the questions on the survey. The current study used the modified version of the Sexual Experiences Survey. To control for anonymity and ethical concerns the Sexual Experiences Survey (See Appendix A) does not have questions that ask about who the abuser was. This ensures both anonymity and confidentiality. This also allows the participant to feel more comfortable answering the questions honestly if the participant knows that the abuser cannot be identified. Two groups were created using this questionnaire those who have had an unwanted sexual experience (i.e. experienced sexual abuse) or those who did not. For this study a participant only needed to endorse one item in order to fall into the sexually abused participant pool.

Participants also answered the Toronto Alexithymia Scale (TAS-20) which is a 20 item questionnaire that assesses trouble identifying and describing emotions and
tendencies to minimize emotional experience. The TAS-20 demonstrates good reliability with a Cronbach’s alpha of 0.81 (Bagby, Parker, & Taylor, 1994).

The participants also answered the Self Report Psychopathy scale III (SRP-III) a questionnaire that assessed psychopathic personality traits in the non-psychopathic population as this study was combined with others in order to be able to collect a large sample as quickly as possible. This is a relatively newer version that does not appear to have established it’s internal validity. The SRP III was shown to have a Cronbach’s Alpha of 0.81 (Paulhus, Hemphill, & Hare, in press). However these questionnaires were not an essential component of this study and as such will not be considered elsewhere.

After data collection for this study began an additional questionnaire, the Los Angeles Symptom Checklist (LASC), was added to screen for the possibility of PTSD-like symptoms. As such only the last 39 participants completed the Los Angeles Symptom Checklist (LASC). This made it possible to examine the possibility that participants in the subsample did not meet diagnostic criteria for PTSD-like symptoms as was hypothesized (See Appendix D). The LASC also showed high internal consistency with a group of battered women, adult survivors of childhood sexual abuse, psychiatric outpatients, and martially distressed women with an alpha of 0.94 for the 43-item index (King, King, Leskin, & Foy, 1995).

Individuals were placed in the group of meeting criteria for PTSD-like symptoms based on the following scoring procedure. There are 17 items that assess for PTSD-like symptoms on the LASC. These 17 items fall into one of three categories that follow diagnostic statistical manual fourth editions revised (DSM-IV) criteria for meeting PTSD. The categories are reexperiencing trauma (category B), avoidance and numbing
(Category C), and increased arousal (Category D). Category B consists of three items. Category C has six items and category D has 8 items. In order to meet criteria for PTSD-like symptoms an individual would have had to endorse at least one item from category B, three items from category C, and two items from category D.

As a part of a larger study, the participants viewed a variety of pictures, which differed in valence consisting of positive, negative, and neutral pictures. These pictures were selected from the International Affective Picture System or IAPS (Lang, Bradley, & Cuthbert, 1999). Included among these pictures were seven different categories which consisted of negative pictures, negative pictures that included interpersonal touch, neutral pictures, neutral pictures that included interpersonal touch, positive pictures, and positive pictures that included interpersonal touch. Interpersonal touch pictures consisted of pictures of usually two people engaging in some type of touch whether it be holding hands or kissing. There were positive (e.g., a man and woman kissing), neutral (e.g. man and woman hugging), and negative interpersonal touch pictures (e.g., a man holding knife to woman’s neck). A seventh category was that of negative empathy which included pictures that had a negative valence but were meant to elicit an empathetic response. This set of pictures was included as part of a collaboration with another investigator and are not a part of this study’s hypotheses or statistical analyses. Please See Appendix F for image type, valence, and arousal ratings for all images used in this experiment.

After the participation, information about sexual abuse, sexual abuse hotlines, internet sources, as well as the number for the psychological services at their school was provided. Each participant was debriefed and asked if they had any questions or concerns after having participated in this study.
Physiological Measures

**Skin conductance.** Skin conductance was measured using a constant 0.5 V system and disposable Ag/AgCl electrodes filled with a conductive paste on the distal phalanges of the first and third fingers of the nondominant hand. The SCR was recorded continuously sampling at 1000 Hz (because EMG was also being recorded) using the Contact Precision Instruments system (London, U.K.) with an SC5 module. The skin conductance response was scored as the largest peak occurring with an onset between 1 and 4 seconds after the onset of the picture. Trials with acoustic startle probes were excluded.

**Heart rate.** Heart rate was recorded using a pulse photoplethysmograph placed on middle finger of the nondominant hand. Recorded at 1000 Hz with the CPI system using a Peripheral Pulse Amplifier module. Heart rate was scored by having identified the peak of each peripheral pulse waves, calculating the interbeat interval for each peak and converting to beats-per-minute using the procedure described by Graham (1978).

**Procedure**

After providing informed consent, the participant then had the electrodes and the pulse plethysmograph applied. The participant was seated in front of a computer screen and told that they will view a series of images of a wide variety of content. The participant was asked to maintain their gaze on the pictures at all times although the images may be disturbing or boring. They were asked to view the pictures as though they were actually there when the picture was taken and to allow any emotions to occur while viewing these images. At first the participants viewed a neutral picture for two minutes in
order to obtain a baseline measurement of heart rate and non specific skin conductance responses. The participant then viewed each picture for six seconds followed by a 25 ±3 inter-picture interval to allow the effects of the image to dissipate.

After viewing all of the images the participant was asked if they had any questions. The electrodes and pulse plethysmograph were then removed and the participant was asked to complete the five questionnaires, the demographic sheet, the SES, the SRP-III, the TAS-20, and the LASC. These items were combined to seem like one long questionnaire and presented using E-Prime 2.0 Professional (Schneider, Eschman, & Zuccolotto, 2007). Participants were then thanked for there help, given the opportunity to ask questions about the project, and provided with the referral information.

The first questionnaire consisted of demographic questions that depicted the client’s age, ethnicity, handedness, and gender (Appendix C). The second questionnaire, Sexual Experiences Survey (Appendix A), established whether the participant had ever had an unwanted sexual experience and the nature of that experience. The Sexual Experience Survey consists of eleven yes/no questions that comprise eight individual scales that that differentiates between different types of molestation and types of rape experienced by the individual (Table 2). The third questionnaire is the LASC, which assessed for whether the participant may be suffering from PTSD-like symptoms (Appendix D), consists of 43 items that asses for various symptoms of anxiety and comprises five scales. The LASC has a single open-ended question that asks for the individual’s duration of reported symptoms on the survey. The survey also has a scale that sums all the scales together to provide a global level of distress experienced by the individual. Lastly the survey provides a conclusion of weather or not the individual is
experiencing PTSD-like symptoms (0 = not experiencing PTSD-like symptoms, and 1 = not experiencing PTSD-like symptoms), based off their answers to the 43 items of the survey (Table 3). The fourth questionnaire (SRP-III) looked at individual and personality differences of psychopathy. The fifth questionnaire assessed for alexithymia (TAS). The last two questionnaires were used as part of a collaboration with another investigator.

After having completed the questionnaires each participant was presented with a handout (Appendix B) that included sexual abuse hotline numbers, websites, as well as the phone number for student psychological services at their university. All participants were given the researcher’s contact information, which they could use if they would like access to the results of the study once it is completed.

Table 2

Sexual Experiences Survey (SES) percentage of participants’ that Endorsed yes for each scale.

<table>
<thead>
<tr>
<th>Sexual Experience Scales</th>
<th>Percentage of Endorsement of Item</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molestation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressured</td>
<td>40%</td>
<td>0.4</td>
</tr>
<tr>
<td>Authority Figure</td>
<td>15%</td>
<td>0.2</td>
</tr>
<tr>
<td>Forced</td>
<td>14%</td>
<td>0.1</td>
</tr>
<tr>
<td>Rape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressured</td>
<td>31%</td>
<td>0.3</td>
</tr>
<tr>
<td>Authority Figure</td>
<td>6%</td>
<td>0.1</td>
</tr>
<tr>
<td>Drugged</td>
<td>5%</td>
<td>0.1</td>
</tr>
<tr>
<td>Physical Force</td>
<td>11%</td>
<td>0.1</td>
</tr>
<tr>
<td>Foreign Objects</td>
<td>8%</td>
<td>0.1</td>
</tr>
</tbody>
</table>
Table 3


<table>
<thead>
<tr>
<th>LACS Scales</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-Experiencing Trauma</td>
<td>1.44</td>
<td>1.11</td>
</tr>
<tr>
<td>Avoidance and Numbing</td>
<td>2.74</td>
<td>2.06</td>
</tr>
<tr>
<td>Increased Arousal</td>
<td>4.15</td>
<td>2.21</td>
</tr>
<tr>
<td>Depression</td>
<td>1.59</td>
<td>1.16</td>
</tr>
<tr>
<td>Duration of Symptoms</td>
<td>3.00</td>
<td>1.76</td>
</tr>
<tr>
<td>Global Distress Level</td>
<td>75.72</td>
<td>28.52</td>
</tr>
<tr>
<td>PTSD Symptomotology</td>
<td>0.28</td>
<td>0.46</td>
</tr>
</tbody>
</table>

Data Analysis

A power analysis was conducted *a priori*, using G power 3 (Faul, Erdfelder, & Buchner, 2007), which showed that in order to obtain an effect size of 0.25 and power of 0.90 the experiment would need 44 participants. Due to human error and the fact that disclosure of sexual abuse occurs at an average of 30%, I decided to collect data from at least 75 participants, which is double what is needed for an adequate power. This is being done with the hope that this will insure an equal number of persons in each group and maintain the power of 0.90. After having completed the study a posteriori power evaluation was conducted, using G power 3, which showed that with a sample size of 129 using a repeated measures ANOVA mixed design a power of 0.94 was obtained.

This study is a quasi-experimental correlational design that examines the question: to what extent does being sexually abused influence physiological response to emotionally salient pictures?

The analyses began with multiple within-between groups mixed design ANOVAs for each of the relevant dependent variables. The analyses included the between participants factors of gender and SES group (no contact / one or more contact) and
repeated measures for image valence (neutral, negative, and positive) as well as whether interpersonal contact was depicted in the images (touch: touch, no touch). The dependent variables included baseline HR, baseline (non-specific) SCR, and the HR and SCR responses to image presentation.

Different subsets of the overall sample were used for the statistical analyses. These different subsets came about due to administration error or equipment problems in the laboratory at the time of data collection. When this occurred only collection of the questionnaire data was possible. No physiological data were collected for 11 participants. The first two statistical analyses consist of a sample size of 129 participants. Analyses on data from those participants completing the LASC were conducted to investigate whether meeting criteria for PTSD-like symptoms affected physiological responses to the images in this study. Because the LASC was added after data collection had already begun the sample size was 39 for the group that received the LASC.

In all cases of possible violation of the sphericity assumption, the conservative Greenhouse-Geisser correction has been used. In presenting the results, the uncorrected degrees of freedom are reported along with the corrected p-value and the $\varepsilon$ correction factor.
Results

Hypothesis One

The first hypothesis stated that an individual who has been sexually assaulted will have a greater heart rate and skin conductance response due to fear and/or anxiety while viewing negative and positive interpersonal pictures when compared to controls.

The heart rate sample consisted of a total sample of 129 participants (89%; 115 female) and (10%; 14 males). Of these participants 63 (48%) endorsed having had an unwanted sexual experience while 66 (51%) did not endorse ever having had an unwanted sexual experience.

As may be seen in Figure 1, heart rate generally decelerated after onset of the picture reaching a nadir after about 5 seconds and recovered to baseline within 3 seconds of picture offset. The deceleration appears in the statistical analysis as a main effect of Time, $F(13, 1625) = 6.84, p = 0.001, \eta^2 = 0.05, \epsilon = 0.17$, with significant linear and quadratic trends, $F$’s(1, 125) = 19.06 and 6.4, $p$’s < .001 and = 0.01, and $\eta^2$’s = 0.13 and 0.05, respectively. Picture valence affected the magnitude of the deceleration. A Valence x Time interaction, $F(26, 3250) = 2.02, p = 0.04, \eta^2 = 0.02, \epsilon = 0.31$, along with Valence x Time interactions in linear and cubic trends, $F$’s(1, 125) = 135.1 and 111.5, $p$’s = 0.03 and 0.01, $\eta^2$’s = 0.04 and 0.05, respectively, reflected a pattern in which negative images produced deeper decelerations than neutral and positive images. Critically, none of the effects involving the Touch or SES factors were significant, $F$’s < 2.31, $p$’s > 0.36. No other main effect or interaction was significant.
There was a significant main effect of valence on the skin conductance response $F(2, 250) = 5.28, p = 0.008$, partial $\eta^2 = 0.04 \epsilon = 0.89$. With both the linear $F(1, 125) = 3.81, p = 0.05$, partial $\eta^2 = 0.03$ and quadratic effects $F(1, 125) = 6.13, p = 0.02$, partial $\eta^2 = 0.05$ across valence. Inspection of Figure 2 indicates that there appears to be a significant difference between neutrally and positively valenced pictures $p = 0.02$. This is interesting since the experimenter would expect significant differences among all three valences as previous research has shown. However, it appears that positively valenced pictures had the smallest skin conductance response when compared to both negative and neutrally valenced pictures. Finally, there was a marginally reliable interaction between Valence and Touch, $F(2, 250) = 3.02, p = 0.06$, $\eta^2 = 0.02$, $\epsilon = 0.82$, which appears to reflect larger SCRs for neutral images with touch compared to neutral images without interpersonal touch while negative images produced the opposite (See Fig. 2). Critically, neither the main effect nor any interaction involving the SES factor reached significance ($F$’s < 1.41, $p$’s > 0.24. There were no other significant main effects or interactions regarding skin conductance.

**Hypothesis Two**

The second hypothesis stated that an individual who has been sexually assaulted and does not meet criteria for PTSD-like symptoms will have a greater heart rate and skin conductance response due to fear and/ or anxiety while viewing negative and positive interpersonal pictures when compared to controls.

In order to assess if an individual’s meeting criteria for PTSD-like symptoms could affect how one physiologically responds to these pictures, mixed design ANOVAs
were conducted on skin conductance and heart rate responding using the PTSD variable from the LASC as a grouping factor. A total of 39 participants completed the LASC. Of these participants 11 (28%) met criteria for having PTSD-like symptoms while 28 (72%) did not. This analysis revealed no effect of PTSD-like symptoms on SCR as none of the effects involving the PTSD factor were significant, \( F^* \)'s < 1. Otherwise, the pattern of responding among participants in this subsample was consistent with that observed in the overall sample. Valence was found to be significant \( F(2, 74) = 3.20, p = 0.05, \) partial \( \eta^2 = 0.08, \epsilon = 0.90 \) (See Fig 3). There appears to be larger skin conductance responses to pictures that are negative and neutrally valenced and a much smaller skin conductance response to positive pictures. No other main effect or interaction was significant. This shows that there does appear to be a significant difference in how individuals physiologically respond to differently valenced pictures and pictures that depict individuals engaging in personal touch however, there does not seem to be a statistically significant difference in whether the individual meets criteria for PTSD-like symptoms.

Paralleling the analysis of SCR, there was no effect of PTSD-like symptoms on HR as none of the effects involving the PTSD factor were significant, \( F^* \)'s < 1.95, \( p \)'s > 0.16. Otherwise the pattern of HR responding among participants in this subsample was consistent with that observed in the overall sample. Heart rate generally decelerated after onset of the picture reaching a nadir after about 5 seconds and recovered to baseline within 3 seconds of picture offset. The deceleration appears in the statistical analysis as a main effect of Time, \( F(13, 468) = 9.64, p < 0.001, \eta^2 = 0.21, \epsilon = 0.30, \) with significant linear and quadratic trends \( F(1, 36) = 17.16, p = 0.000, \eta^2 = 0.32 \) and \( F(1, 36) = 11.53, p = 0.002, \eta^2 = 0.24. \) A Valence x Time interaction, \( F(26, 936) = 7.07, p = 0.05, \eta^2 = 0.05, \)
$\varepsilon = 0.27$, along with Valence x Time interactions in linear and quadratic trends across time, $F's(1, 36) = 10.49$ and 5.70, $p's = 0.003$ and 0.02, $\eta^2's = 0.23$ and 0.14 (see Fig 4), respectively, reflected a pattern in which negative images produced deeper decelerations than neutral and positive images. Finally, a Valence x Touch interaction, $F(2, 72) = 3.26$, $p = 0.05$, $\eta^2 = 0.08$, $\varepsilon = 0.82$, reflected a pattern in which both negative and positive pictures without interpersonal touch elicited a greater deceleration than negative and positive pictures with interpersonal touch. However neutral interpersonal touch images produced deeper decelerations than neutral pictures without touch. No other main effect or interaction was significant.
Discussion

It has been shown in previous research that individual’s who have reported sexual abuse and have Post Traumatic Stress Disorder like symptoms have a greater skin conductance response and an increased heart rate when compared to individuals who report no sexual abuse. It has also been shown that individuals who report sexual abuse have an increase in skin conductance and Heart Rate when recalling their traumatic experience (Metzger et al. 1999; Rice & Records, 2006; Kendall-Tackett, 2003). This research suggests that individuals who report being sexually abused will have significantly greater physiological responses (including heart rate and skin conductance) then individuals who report no history of sexual abuse. Currently the research has not addressed if there is a significant difference in the physiological responses of individuals who report sexual abuse and have PTSD-like symptoms and individuals who report sexual abuse and do not have PTSD-like symptoms.

Hypothesis One

Hypothesis one states that an individual who has been sexually assaulted will have a greater heart rate and skin conductance response due to fear and/ or anxiety while viewing negative and positive interpersonal pictures when compared to controls. This hypothesis was not supported. Individuals who have experienced sexual abuse and those who have not display similar physiological responses when viewing emotionally positive, neutral, or negative pictures. Previous research has shown an effect of valence on heart rate (Lang, Bradley, & Cuthbert, 1990). This study was able to replicate this effect,
because negative images produced deeper decelerations in heart rate than neutral and positive images. Moreover, picture valence affected the magnitude of the deceleration. This interaction between time and valence on heart rate is seen in previous research.

One of the limitations that should be noted for this hypothesis is the lack of male participants in this study. The lack of gender representation in this study restricted the analysis of gender differences among individuals who report having been sexually abused. The other limitation of this study was that individuals were not asked to rate each picture that they viewed. This made it impossible to compare the individual’s personal experience with their physiological response to the stimuli. Without that information it is unknown if their self report is commensurate with the normative ratings of valence and arousal of the IAPS.

**Hypothesis Two**

Hypothesis two states that an individual who has been sexually assaulted and does not meet criteria for PTSD-like symptoms will have a greater heart rate and skin conductance response due to fear and/or anxiety while viewing negative and positive interpersonal pictures when compared to controls. This hypothesis was not supported. The data indicate that meeting criteria for PTSD-like symptoms did not have a significant effect on the individual’s skin conductance or heart rate. Specifically there was not a significant difference in the heart rate or skin conductance when viewing pictures of interpersonal touch between individuals who were experiencing PTSD-like symptoms and individuals who were not experiencing PTSD-like symptoms. However, there was a significant interaction of valence and picture showing interpersonal touch. This
demonstrated that both negative and positive images without interpersonal touch elicited a greater deceleration in heart rate when compared to negative and positive pictures that showed interpersonal touch. However, neutral images that showed interpersonal touch produced deeper decelerations then neutral images that did not show interpersonal touch.

The primary limitation for hypothesis two is the small sample size, with the under representation of men in particular. In addition there was a small sample of individuals who met criteria for PTSD-like symptoms, which led to this portion of the study lacking the statistical power needed to find between subjects differences. This sample included only 39 individuals with only 11 meeting criteria for PTSD-like symptoms. It is possible that with a larger sample size different results would be uncovered. Lastly the lack of individuals self-reporting the valence of the images through rating each image was a limitation of this hypothesis. This did not allow for a comparison of the individual’s physiological response and their perceived valence and arousal of the images.

**Future Directions**

As stated in the literature review, previous studies have found that individuals with PTSD have neuroanatomical differences such as a smaller hippocampus and changes in their physiological responses such as an increased heart rate. It is possible that there are different levels of PTSD in that these studies would use structured clinical interviews to assess for PTSD as well as an instrument like the LASC. In future research both a clinical interview and an objective self report measure should be used to more accurately discriminate between an individual who meets criteria for a diagnose of PTSD and an individual who has PTSD-like symptom. Which could lead to a better understand
of weather there are different levels of PTSD among individuals who have experienced sexual abuse.

As stated previously the research has shown that individuals who report being sexually abused and who meet criteria for PTSD have neuronatomical changes. Future studies could also study whether neuroanatomical changes occur in individuals who have been sexually abused but do not meet criteria for PTSD-like symptoms. Kendall-Tackett (2003) showed that individuals who were chronically exposed to sexual trauma over time and on multiple occasions had the most severe neuroanatomical differences. It would be particularly interesting if future studies looked at individuals who were exposed to sexual abuse on more than one occasion and do not meet criteria for PTSD-like symptoms to assess what if any neuroanatomical changes have occurred.

It should be noted that the neutral pictures that depicted interpersonal touch had a higher arousal rating that the positively valenced pictures that depicted interpersonal touch. Although the pictures were chosen based on their content (with or without interpersonal touch) and normative valence, the differences in normative arousal could have had an effect on the data reducing any difference between positive and neutrally valenced pictures which is seen in the normative sample. Future studies should control for both valence and arousal of each picture when deciding which pictures to use. In addition future research should collect both physiological and self-report of arousal and valence for images. This will allow for more definitive conclusions to be made about the individual’s experience as well as the comparison with the normative sample.

Lastly, this study looked at weather ethnicity could play a role in an individual’s physiological response. However, it appears that ethnicity did not play a role when all
ethnicities were examined within the statistical analysis. It would be fruitful for future research to look at whether ethnicity could play a role in an individual’s physiological response when they have or have not been sexually abused. Additionally future research could look at whether there is a difference between ethnicities and their definition or understanding of sexual abuse.

In conclusion this study aimed to look at whether there is a significant difference in the physiological responses of individuals who report sexual abuse and do or do not meet the criteria for PTSD-like symptoms. It was found that there were no differences in the physiological response of individuals who do have PTSD-like symptoms and individual who do not have PTSD-like symptoms when viewing images that display interpersonal touch. These findings are contrary to what research has found. These findings could be due to the small sample size, unequal gender representation, or the lack of individuals self report of valence and arousal. This study shows that individuals who do not meet criteria for PTSD-like symptoms are resilient to certain stressors such as sexual abuse in regards to their physiological responses of heart rate and skin conductance when viewing valenced pictures.
References


1. Have you ever been fondled, kissed, or touched sexually when you didn’t want to because you were overwhelmed by a man/woman’s continual arguments and pressure?

2. Have you ever been fondled, kissed, or touched sexually when you didn’t want to because a man/woman used his/her position of authority (boss, teacher, camp counselor, supervisor) to make you?

3. Have you ever been fondled, kissed, or touched sexually when you didn’t want to because a man/woman threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you?

4. Have you given in to sexual intercourse when you didn’t want to because you were overwhelmed by a man/woman’s continual arguments and pressure?

5. Have you had sexual intercourse when you didn’t want to because a man/woman used his/her position of authority (boss, teacher, camp counselor, supervisor) to make you?

6. Have you had a man attempt to insert his penis (but intercourse did not occur) when you didn’t want him to by threatening or using some degree of force (twisting your arm, holding you down, etc.)?

7. Have you ever had a man attempt to insert his penis (but intercourse did not occur) when you didn’t want him to by getting you intoxicated on alcohol or drugs without your knowledge or consent?

8. Have you had sexual intercourse when you didn’t want to because a man/woman made you intoxicated by giving you alcohol or drugs without your knowledge or consent?

9. Have you been in a situation in which you were incapacitated due to alcohol or drugs (that is, passed out or unaware of what was happening) and were not able to prevent unwanted sexual intercourse from taking place?

10. Have you had sexual intercourse when you didn’t want to because a man/woman threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you?
11. Have you had sex acts (anal or oral intercourse or penetration by objects other than the penis) when you didn’t want to because a man/woman threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you?
Appendix B

Sexual Abuse Information Handout

Rape Abuse and Incest National Network (RAINN): The nation’s largest anti sexual assault organization. For more information go to www.rainn.org

FAQ

What is the National Sexual Assault Online Hotline?

The National Sexual Assault Online Hotline is a free, confidential, secure service that provides live help over the RAINN website.

Who should use the Online Hotline?

Victims of sexual assault (whether their attack took place today or decades ago)
Spouses, family members, and partners of victims
Friends of victims

What services does the Online Hotline provide?

Crisis intervention and support
Answers to your questions about recovering from sexual assault
Information about medical issues
Explanations of the criminal justice system, and what to expect when you report the crime to the police
Referrals to resources in your area
Information for family and friends of victims

How does it work?

It works just like instant messaging. You'll go into a private session with a trained volunteer and communicate, live, by typing messages back and forth. The service is completely anonymous, and you do not have to give your name or any personal information.
Who provides the help?

Online Hotline services are provided by RAINN and local rape crisis centers across the US, with the help of hundreds of trained volunteers. All trained volunteers have successfully completed state-mandated training and receive ongoing supervision from their local center. Online Hotline supervisors monitor sessions for quality control.

**Sexual Assault and Sexual Abuse hotlines:** 1-800-656-HOPE the call is free and confidential

**California State University of San Bernardino Student Psychological Counseling Center:** 909-537-5040.
Appendix C

Demographics Questionnaire

1. What is your age?________________

2. What is your handedness?_____________

3. What is your gender?_________________

4. What is your ethnicity?_____________
Appendix D

LOS ANGELES SYMPTOM CHECKLIST
(ADULT VERSION)

Below is a list of problems. Rate each one on a scale of 0 to 4 according to how much of a problem that item is for you. A rating of zero would mean that the item is not a problem for you; one, a slight problem; two, a moderate problem; three, a serious problem; and four, an extreme problem.

0 not a problem 1 slight problem 2 moderate problem 3 serious problem 4 extreme problem

____ 1. difficulty falling asleep
____ 2. Abusive drinking
____ 3. severe headaches
____ 4. Restlessness
____ 5. Nightmares
____ 6. difficulty finding a job
____ 7. difficulty holding a job
____ 8. Irritability
____ 9. pervasive disgust
____ 10. momentary blackouts
____ 11. abdominal discomfort
____ 12. management of money
____ 13. trapped in an unsatisfying job
____ 14. physical disabilities or medical problems.
   Explain: ____________________________________________
____ 15. hostility/violence
____ 16. marital problems
____ 17. easily fatigued
____ 18. drug abuse
____ 19. inability to express feelings
____ 20. tension and anxiety
____ 21. no leisure activities
____ 22. suicidal thoughts
____ 23. vivid memories of unpleasant prior experiences
____ 24. excessive eating
____ 25. difficulty concentrating
____ 26. dizziness/fainting
____ 27. sexual problems
____ 28. waking during the night
____ 29. difficulty with memory
30. marked self-consciousness
31. Depression
32. inability to make and keep same sex friends
33. inability to make and keep opposite sex friends
34. excessive jumpiness
35. waking early in the morning
36. loss of weight/ appetite
37. heart palpitations
38. panic attacks
39. problems with authority
40. avoidance of activities that remind you of prior unpleasant experiences
41. trouble trusting others
42. loss of interest in usual activities
43. feeling emotionally numb

How long have you been bothered by these symptoms?
Appendix E

Informed Consent

Informed Consent Document

Variations in Emotional and Interpersonal Behavior as a Function of Personality Type

Principal Investigator: Paul Haerich
Co-Investigators: Julie Alberty, Veronica Llamas, Kim Rose

Purpose

You are invited to participate in this research study to help us better understand the interplay of individual differences in personality and experience with human reflexes, human cognition, and human interpersonal interaction. This research study will investigate the way people respond to various pictures and sounds in the context of certain aspects of personality and experience evaluated with a series of questionnaires. The pictures you will be viewing have been chosen to cover a variety of things individuals might encounter in their life. Your responses on the personality and experience questionnaires indicate how much you agree or disagree that each statement accurately describes you, and your responses will indicate, yes or no, if the statement reflects your experience.

Procedure

During this study, you will first view a series of pictures depicting various participants including (listed alphabetically): animals, guns, household objects, human nudes, nature scenes, mutilations, plants, rocks, snakes, spiders, sports scenes, etc. From time to time while viewing these slides, a brief, loud noise also will occur. The sounds used in this study are similar in loudness and duration to a loud handclap, or a book being dropped.

This procedure also will involve collecting information regarding the activity of the heart and of the muscles involved in the eye blink. A small device that clips onto the end of one finger will measure heart rate activity. Eye muscle activity will be measured by small, button-like sensors, which will be taped below your left eye and one behind the ear. Finally, two larger sensors will be taped to the palm of your left hand. These sensors will be used to measure small changes in the amount of sweat being produced – an indicator of small changes in the activity level of part of the nervous system.
In the second portion of the study, you will be asked to complete the computerized personality and experiences questionnaires. On the questionnaires you will be asked to rate a series of statements about your feelings, opinions and attitudes on a numerical scale using the computer keyboard. On the experiences questions you will be asked to indicate whether or not you have experienced specific events involving unwanted sexual contact. The items ask only for a yes or no answer.

It should take approximately 70 minutes to complete your participation in this study.

**Risks**
There is no increased risk associated with participation in this study beyond that of everyday life. Therefore, the committees at both CSU San Bernardino (Department of Psychology Institutional Review Board Sub-Committee) and Loma Linda University (Institutional Review Board) that review human studies have determined that participating in this study exposes you to minimal risk. The official stamp appearing on this form indicates this approval.

Although this study has been deemed of minimal risk, you should be aware that some of the content of certain slides may lead to feelings of surprise or may make you feel uneasy or uncomfortable. The sounds may be relatively loud and may cause surprise or be startling, but in no case will the sounds be louder than 110 dB, which, for the type of sounds used, has been determined by the Occupational and Safety Health Administration to be below the level that could cause temporary or permanent hearing problems.

**Benefits and Reimbursement**
You should not expect to receive any direct benefit from your participation in this research study other than the educational experience of participating in a scientific psychological research project. It is anticipated that the results of this study will help advance our understanding of how different people, with different personalities respond to emotional stimuli and situations. We hope that this information will eventually be useful in improving or targeting psychotherapy techniques.

**Compensation**
Although not a benefit from the research study itself, you may receive extra credit for your class, at your instructor’s discretion. If you are a student at CSUSB you will receive your credit via the SONA system after you finish your participation. You will receive 5 units of extra credit for your participation in this research study. You will still receive extra credit even if you decide to discontinue your participation.

**Confidentiality**
All of the information gathered during your participation in this research study is confidential and will be handled anonymously. That means that your name will not be attached to or stored with any of your responses or physiological data. The responses of individual participants will not be disclosed to anyone. The information you provide will be grouped with that of other participants. Any publications or presentations resulting from this study will refer only to the grouped results.
Third Party Contact & Questions
If at any time you have any other questions regarding your participation in this study, you should feel free to contact Paul Haerich, PhD at the Department of Psychology, Loma Linda University. (phone: 909-558-4770).

If you wish to contact an impartial third party not associated with this study regarding any complaint about the study, you may contact the Office of Patient Relations, Loma Linda University Medical Center, Loma Linda, CA 92354 (phone: 909-558-4647), for information and assistance.

Participant’s Rights
Participation in this study is voluntary. If, after signing this consent form, you decide to discontinue the session at any time, for any reason, you are free to do so. Discontinuing the session will not jeopardize your class standing or grade. You will receive extra credit for your participation whether you complete the session or not. If you have any questions regarding this study, we will be happy to answer them.

Consent Statement

By placing an X in the space below I acknowledge that I have been informed of, and that I have understand, the nature and purpose of this study, and I freely consent to participate. I have read the contents of the consent form and have been given the opportunity to ask questions concerning the study. I have been offered a copy of this form. I acknowledge that I am at least 18 years of age. I hereby give my voluntary consent to participate in this study. Signing this consent form does not waive my rights nor does it release the investigators or institution(s) from their responsibilities. I may call Paul Haerich, Ph.D. at (909) 558-4770 if I have additional questions or concerns.

Participant’s X ________
Date: ____________
## Appendix F

### IAPS Image List with Valence and Arousal

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Figure 1. Heart Rate by Time, Valence, and Touch Across Entire Sample
Figure 2. SCR by Valence and Touch in the Entire Sample
Figure 3. SCR by Valence and Touch in the PTSD Sample
Figure 4. Heart Rate by Valence and Pictures Portraying Interpersonal Touch in the PTSD Sample
Figure 5. SCR by Valence and Touch in the SES Sample
Figure 6. Heart Rate by Valence and Pictures Portraying Interpersonal Touch in the SES Sample