

**Identifying and Predicting Classes of Sex Trafficking Survivors in the United States
2017-2018 Engagement Incentive Grant Report – Research Summary**

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Background

Human trafficking is an umbrella term that refers to modern slavery in the form of labor or sexual exploitation by means of force, fraud, or coercion (The Trafficking Victims Protection Act of 2000 [TVPA], 22 U.S.C. § 7102). At any given time, an estimated 40 million people worldwide are victims of human trafficking (International Labor Organization [ILO], 2017). Although there are no universally accepted approximations of trafficking victimization in the United States, conservative projections begin in the tens of thousands (Clawson, Dutch, Salomon, & Grace, 2009; Stranksy & Finkelhor, 2012). According to the United Nations Office on Drugs and Crime (UNODC; 2016), sexual exploitation is the most common form of human trafficking. Studies have consistently linked sex trafficking victimization with major health concerns including sexually transmitted infections (STIs), PTSD, substance abuse and addiction, depression, anxiety, personality disorders, psychotic behavior, physical health problems, and suicidality (e.g., Lederer & Wetzel, 2014; Oram et al., 2016; Ottisova, Hemmings, Howard, Zimmerman, & Oram, 2016). Despite the recent influx in global advocacy initiatives by non-governmental and non-profit organizations, specialized services designed to help survivors navigate these challenges are sparse.

Many argue that uniquely tailored long-term residential programs are needed to support survivor recovery (Shigekane, 2007; Williamson, Dutch, & Clawson, 2008; Williamson & Prior, 2009). Yet, effectiveness of these services has not been empirically validated and there are no evidence-based treatments in existence specifically tailored to meet the unique needs of this population. In fact, many existing recovery programs are often found to be incompatible with or insufficient for the manifold needs of survivors and their families (Busch-Armendariz, Nsonwu & Hefforn, 2011; Clawson & Grace, 2007; Reid, 2010). An absence of adequate support services in conjunction with the multi-systemic barriers facing survivors during the exit process (e.g., lack of resources to meet basic needs, poor employment opportunities, social discrimination, etc.) leads many to experience recurrent episodes of victimization.

To date, research on the sex trafficking phenomenon has generally relied on small sample sizes and qualitative analyses to examine victimization in terms of simple frequencies. Although these findings offer an important foundation for understanding the trafficking crisis, their generalizability and power to detect meaningful idiosyncrasies across survivors' unique experiences and needs is limited. The objective of this study was to examine heterogeneity in trauma exposure and biopsychosocial health among sex trafficking survivors by identifying distinct sub-groups (i.e., profiles or classes) within a sample of survivors from the United States. Further, this study investigated differences in help-seeking attitudes and intentions between these different profiles. Uncovering thematic variance in trauma history and biopsychosocial health, as well as differential help-seeking factors will ultimately contribute to a broader and more inclusive framework for understanding and responding to survivors' recovery needs.

The Present Study

The purpose of this study was to address this gap by examining the heterogeneity of CSE survivors' trauma exposure and post-trauma adaptations, specifically addressing the following:

RQ1: Are there distinct profiles of trauma exposure and biopsychosocial health within this sample of CSE survivors?

Based on previous investigations with other populations, it was hypothesized that there would be at least three distinct sub-groups of survivors, likely differentiated by symptom severity. Identifying these unique profiles has important clinical implications as they can facilitate a deeper understanding of survivors' unique service needs and aid in the development of person-centered intervention programs. Thus, a second goal of this study was to explore the association between different survivor profiles and their help-seeking behaviors. This is critical as previous research suggests that trauma survivors, specifically survivors of CSE, do not access and/or receive appropriate psychological support despite a manifest need for such services. Particularly among survivors of CSE, their sense of real or perceived danger, the feared loss of security, financial instability, poverty, addiction, lack of material resources (e.g., transportation), past negative experiences with service providers, and internalized beliefs that they are beyond help have all been identified as factors that inhibit help-seeking attitudes and behaviors (Dewan, 2014; Kynn, Steiner, Hoge, & Postmus, 2016; Zimmerman et al., 2011). To achieve a more nuanced understanding of help-seeking among CSE survivors, the RQ2 addressed in this study was:

RQ2: Are there differences in help-seeking attitudes and intentions between different latent profiles of CSE survivors' trauma history and biopsychosocial health?

It was hypothesized that there will be significant differences between survivor profiles regarding help-seeking attitudes and intentions. This study extended existing empirical and theoretical literature by applying a person-centered approach to investigating heterogeneity among CSE survivors' trauma exposure and biopsychosocial health, and associated differences in help-seeking attitudes and intentions.

Procedure

This study was grounded in the Community-Based Participatory Research (CBPR; Minkler & Wallerstein, 2008; Wallerstein & Duran, 2010; Wallerstein et al., 2008) framework. CBPR departs from traditional research methodology by building trust with marginalized communities to establish and mobilize collaborative community partnerships for research and intervention. CBPR is defined by the equitable integration of community members, service organizations, and researchers in all aspects of the research process (Minkler & Wallerstein, 2008; Wallerstein & Duran, 2010; Wallerstein et al., 2008). In CBPR, research agendas originate from, are conducted within, and are subsequently owned by the community of interest. Consistent with this framework, I established a CBPR program called RESTORE (*Research and Education with Sex Trafficking Survivors on Resilience and Empowerment*) to serve as the platform for a collaborative partnership between an interdisciplinary group of community stakeholders who share the mission of improving the quality of recovery services offered to CSE survivors. These individuals include CSE survivors, representatives from community-based agencies that facilitate survivor rescue and recovery programs, mental health professionals, law enforcement officials, medical professionals, and researchers from various fields of study. Members of this group represent diverse geographic locations across the United States and each maintains active involvement with advocacy, prevention, and/or intervention initiatives specific to CSE. Data presented in this study are part of a large-scale, ongoing project aiming to gather data from 500 CSE survivors across the United States. Given the scale of the parent study, and the challenges of conducting research with vulnerable populations, I built partnerships with community service providers (i.e., community partners, partner organizations), who disseminate information about this study to the CSE survivors they serve. At this time, RESTORE has community partnerships with 29 organizations in 19 different states.

Data Collection

The primary mechanism of data collection was an online survey facilitated by Qualtrics (<http://survey.k-state.edu/>). Recruitment materials directed survivors to the RESTORE website (www.therestorecoalition.com) where they could read the informed consent, find answers to frequently asked questions, and review information about the research team. If survivors decided they wanted to be in the study, they clicked the survey link on the website which securely re-directed them to the informed consent page in Qualtrics. Participants gave their consent by clicking the "ACCEPT" icon. On average, it took participants 60 to 90 minutes to complete the online survey.

Sample

The present study included cross-sectional data from 135 adult survivors of CSE living in the United States. Descriptive statistics are presented in Table 1 (Appendix B). The types of commercial sexual exploitation reported by each survivor is depicted in Figure 1 (Appendix A). Study participants reported exposure to an average of 10.79 ($SD = 6.50$) traumatic life events, 7.31 ($SD = 1.77$) adverse childhood experiences, and 11.54 years ($SD = 8.83$) of CSE.

Measures

One of the primary objectives of this study was to identify distinct profiles of trauma exposure and biopsychosocial health among a sample of CSE survivors. These are not static constructs that can be easily measured by a single indicator; they are clusters of symptoms and experiences representative of dynamic processes. For this reason, a robust survey comprised of gold-standard assessments was developed to examine multiple components of trauma exposure and biopsychosocial health. Fifteen scales and a demographic questionnaire were used to measure a total of 52 variables in the present study. Detailed descriptions of all scales and items included in these present analyses, including associated scoring procedures, clinical cutoffs, and psychometric properties, are provided in Table 2 (Appendix B).

Data Analysis Plan

Prior to investigating the research questions, data were cleaned and re-coded such that higher scores represented higher amounts (i.e., degrees) of the specific construct. Variables were checked for normality and all were found to be normally distributed. Missing data patterns were analyzed according to standard procedures and techniques for handling missingness (e.g., Cham, Reshetnyak, Rosenfeld, & Breitbart, 2017; Peters & Enders, 2002). Little's MCAR test revealed a non-significant chi-square indicating that data were missing completely at random (MCAR) [$\chi^2(1394) = 1373.64, p = .65$].

To answer the two research questions posed in this study, I performed a latent profile analysis (LPA; Gibson, 1959; Lazarsfeld & Henry, 1968; Muthén & Muthén, 1998–2012) using the BCH stepwise procedure (Bakk, Tekle, & Vermunt, 2013; Bakk & Vermunt, 2015; Bolck, 2004; Vermunt, 2010) in Mplus 8.0. First, I addressed Research Question 1 by running a LPA where classes were iteratively added to the model one-by-one to identify which solution best fit the data (see Nylund, Asparouhov, & Muthén, 2007). Model fit was evaluated according to standard LPA statistical procedures and indices (see Celeux & Soromenho, 1996; Tein, Coxe, & Cham, 2013). Participants were assigned to a single class according to their highest posterior probability for membership and pairwise comparisons were performed to investigate statistically significant differences between the latent classes.

To address Research Question 2, I applied the BCH procedure to the LPA. The BCH method enables researchers to explore mean-differences between latent classes on distal outcome variables, which are included in the model syntax as auxiliary variables. This is accomplished by applying a class assignment weight that essentially re-creates true latent classification (Bakk et al., 2013; Bakk & Vermunt, 2015; Bolck, 2004; Vermunt, 2010). A weighted multiple-group analysis is then performed using the Wald chi-square test where groups correspond to the latent class assignments. This approach avoids shifts in latent class membership that can occur when distal outcomes are included in the LPA through other techniques (Bakk et al., 2013; Bakk & Vermunt, 2015) and yields both global and class-specific difference statistics. In the present study, items from the help-seeking attitudes and intentions instruments were examined as distal outcomes using this BCH protocol.

Results

Descriptive statistics for all study variables are presented in Table 1 (Appendix B) (bivariate correlations were omitted due to the size of the table). Preliminary analyses revealed that, on average, the sample surpassed provisional diagnostic thresholds for PTSD, anxiety, depression, alcohol use, and suicidality. However, differential associations between study variables illustrate the need for further investigation into the heterogeneity of CSE survivors' biopsychosocial health and its relation to their help seeking-attitudes and intentions.

To answer Research Question 1, a latent profile analysis was performed investigating whether there were distinct profiles of biopsychosocial health within this sample of CSE survivors. Table 4 (Appendix B) provides class enumeration fit statistics. The 3-class model was identified as the optimal class solution based on the dual consideration of statistical fit indices and theoretical congruence.

Class Descriptions

Descriptive statistics for each class are provided in Table 1 (Appendix B) and a breakdown of the forms of CSE reported by each class is included in Figure 1 (Appendix A). Consistent with previous studies examining the symptoms of trauma survivors (e.g., Ayer et al., 2011; Breslau et al., 2005; Contractor et al., 2015; Elhai et al., 2011; Steenkamp et al., 2012), results from the present LPA indicated that classes of CSE survivors reported different levels of symptom severity, but not necessarily different symptom cluster types (e.g., dysphoria, emotional numbing). To maintain theoretical consistency, I adopted the labels most commonly used in existing literature and refer to the three classes as having mild (class 1), moderate (class 2), and severe (class 3) symptoms.

Mildly distressed class. Almost one-fifth ($n = 25$, 18.5%) of CSE survivors in this study were grouped in the mildly distressed class. These survivors reported the lowest exposure to traumatic life events ($M = 9.29$) and adverse childhood experiences ($M = 6.79$) of all three classes. They also experienced the shortest duration of CSE ($M = 7.50$ years) and were the furthest removed from their most recent incident of CSE (approximately 1-5 years). Most notably, survivors in this class did not report clinically significant levels of PTSD, anxiety, depression, substance use, or suicidality. They were also characterized by the sample's lowest self-harm, maladaptive personality trait, and diagnosed mental health condition scores, and the second-lowest diagnosed physical health condition scores. Not only did these survivors report a comparative absence of psychological distress, they were also the only class to report a high degree of comfort with relational intimacy and a moderate degree of comfort depending on others/believing others will be there when needed. Regarding support services, survivors with mild symptoms reported some of the shortest durations of service engagement (present, $M = 1.71$ years; past, $M = 2.40$) years of all study participants. All survivors in this class identified as female and their average age was 36.56 years-old. Over 80% reported that their primary racial identity was either white (55.6%) or black (27.8%), and together they maintained the highest average education, employment, and income levels of the three classes.

Moderately distressed class. The second and largest cluster of CSE survivors in the present study was the moderately distressed class ($n = 66$, 48.89%). These survivors reported marginally higher exposure to traumatic life events ($M = 9.60$) and adverse childhood experiences ($M = 7.12$), compared to those in the mildly distressed class. On average, they experienced nearly 10 years of CSE ($M = 9.81$), with the most recent incident taking place roughly 7-12 months prior to completing the study survey. Regarding mental health, survivors in this class narrowly exceed clinical thresholds for anxiety, depression, and alcohol use. Their average suicidality reports neared the clinical cutoff score. Although survivors' average PTSD symptom total scores fell five points below the preliminary diagnostic cutoff, they endorsed clinically meaningful levels of re-experiencing and avoidance symptoms. Further, this class was characterized by medial maladaptive personality trait reports, with their two highest sub-scale scores being negative affect and detachment. Despite these indicators of psychological stress, these survivors indicated a relatively small history of self-harm, low levels of drug use, the fewest number of diagnosed physical health conditions, and the classes' median number of diagnosed mental health problems. Survivors in the moderately distressed class appeared to maintain more anxious attachment styles, as evidenced by a high fear of rejection/abandonment, coupled with an intermediate degree of comfort with relational intimacy. Compared to the other two classes, survivors characterized by moderate symptoms reported the longest history of support services ($M = 4.19$ years) and were second in the length of current support services ($M = 1.84$ years). Two of the 66 survivors in this class identified as male (5.4%) and the rest identified as female (94.6%). Most class members identified as either White (50%) or Black (41.7%), and these individuals represented the sample's second highest education, employment, and income levels.

Severely distressed class. The third class represents survivors with the most severe and complex symptoms. This group comprised 32.59% ($n = 44$) of the sample and was characterized by the highest

exposure to traumatic life events ($M = 13.09$) and adverse childhood experiences ($M = 7.88$), in addition to the longest duration of CSE ($M = 16.09$ years), and the most recent experience of CSE (within the past 1-12 months). Survivors in the severely distressed class reported clinically significant levels of PTSD, anxiety, depression, alcohol use, drug use, and suicidality. This group also reported the highest rate of self-harm, diagnosed mental health conditions, and diagnosed physical health conditions of all three classes. Regarding maladaptive personality traits, these survivors reported moderately-high total symptom scores with noteworthy negative affect, detachment, and psychoticism sub-scale scores. Compared to participants in the mild and moderately distressed classes, survivors in this class also reported the greatest disruptions in attachment. Namely, they maintained the highest fear of rejection or abandonment (i.e., attachment dimension – anxiety) and the lowest sense of comfort with both intimacy (i.e., attachment dimension – close) and depending on others/believing others will be there when needed (i.e., attachment dimension – depend; Collins, 1996). Despite having the sample's highest rate of biopsychosocial distress and the shortest duration of past service engagement ($M = 2.38$ years), these survivors had been receiving their current support services longer than survivors in the other two classes ($M = 3.50$ years). Survivors in the severe symptoms group predominantly identified as female (94.3%) but also included one person who identified as male (2.9%) and one who identified as transgender (2.9%). This class was further characterized by the greatest racial diversity, the widest range of educational and employment backgrounds, and the lowest income levels of all three classes (see Table 1).

Class Validity

Participants were assigned to a single class according to their highest posterior probability for membership (see Table 4, Appendix B) and mean-level comparisons were performed to examine differences between latent classes on all indicator variables used in the LPA. First, the Levene's statistic was used to examine homogeneity of variance between classes. Twelve of the 28 variables violated the assumption of homogeneity (see Table 5, Appendix B). The Welch's test and Games-Howell post-hoc were used for mean comparisons on these variables. All other variables were compared using one-way ANOVA and Tukey post-hoc tests. Results of these analyses are presented in Table 5 (Appendix B). Notably, there were no statistically significant differences in length of current or past support services, number of physical health conditions, or report of degree of comfort depending on others/believing others will be there when needed (i.e., attachment dimension – depend) between the three classes. There were statistically significant differences between two or more classes on all other LPA indicator variables.

Help-Seeking Attitudes and Intentions by Latent Class

The BCH stepwise approach to latent class modeling was used to answer Research Question 2. Per this three-step method, help-seeking attitudes and intentions (i.e., distal outcomes) were included in the LPA as auxiliary variables. The BCH procedure examines overall and between-class mean differences for each distal outcome within the model using the Wald chi-square test. Full results are presented in Table 6 (Appendix B). Results indicated that survivors in the mildly distressed class reported greater value and need in seeking professional psychological help than those in the severely distressed class. Further, survivors in the severely distressed class endorsed that talking about psychological problems is a poor way to solve emotional problems and that coping without professional help is admirable, significantly more than survivors in the mild and moderately distressed classes. More than the other two classes, the severely distressed class also indicated that they would not seek help from anyone if having a personal or emotional problem. Finally, survivors in the moderate and severely distressed classes indicated that they might want counseling in the future significantly more than those in the mildly distressed class. However, the same survivors also reported a significantly higher belief that therapy would not have value for them, compared to their counterparts in the mildly distressed class.

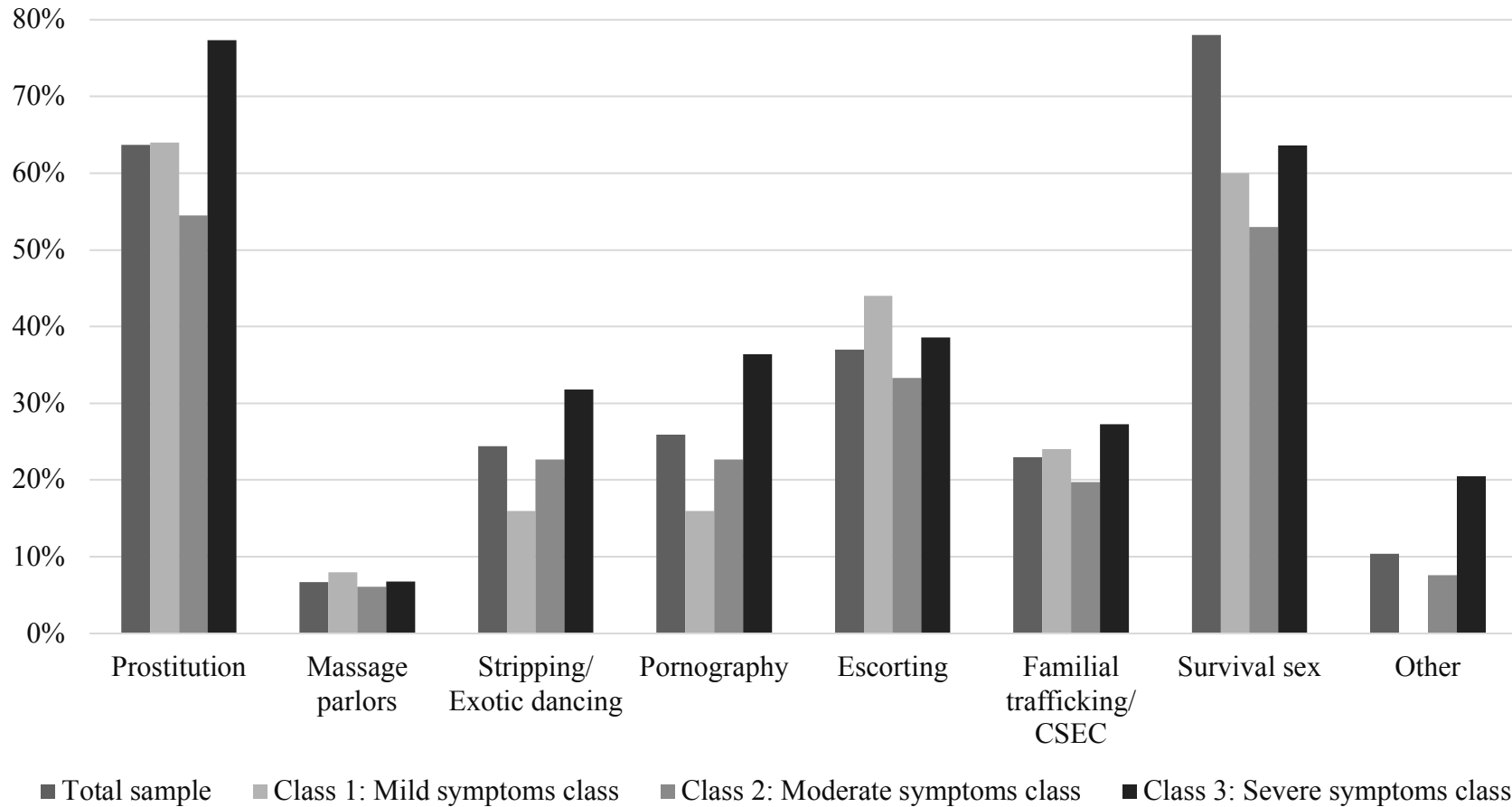
Discussion

The purpose of this study was to investigate unique patterns of trauma exposure and biopsychosocial health among a sample of CSE survivors. Results from a latent profile analysis with 135 adults trafficked in the United States yielded three distinct survivor sub-groups: mildly

distressed, moderately distressed, and severely distressed. The mildly distressed class (18.5%) was characterized by the lowest reports of trauma exposure and an absence of clinically significant psycho-social stress symptoms. The moderately distressed class (48.89%) endorsed comparatively medial levels of trauma exposure, as well as clinically significant disturbance in six domains of psycho-social health. The severely distressed class (32.59%) reported the highest degree of trauma exposure and exhibited clinically significant symptoms of pervasive psycho-social stress across all domains assessed. To better understand variation in CSE survivors' engagement with formal support services, this study also examined differences in help-seeking attitudes and intentions between latent classes. Results indicated that compared to those in the mildly and moderately distressed classes, severely distressed survivors endorsed significantly more unfavorable attitudes toward seeking professional help, along with no intention to seek help from any source when facing a personal or emotional crisis. Findings from this study provide a snapshot of significant heterogeneity in trauma exposure and biopsychosocial health among CSE survivors, as well as associated differences in help-seeking attitudes and intentions. The identification of distinct survivor sub-groups in these and future analyses mark an important intermediate step toward developing empirically-testable support services that are specifically designed to meet the unique needs of CSE survivors.

Appendix A - Figures

Figure 1. Forms of Commercial Sexual Exploitation Reported by Participants



Note. N = 135; CSEC = commercial sexual exploitation of children.

Appendix B - Tables

Table 1. Full Sample and Class-Specific Descriptive Statistics

Variables	Total sample <i>N</i> = 135				Latent classes		
	<i>M</i>	<i>SD</i>	Range	α	Class 1: Mild symptoms <i>n</i> = 25 (18.5%) <i>M</i> (<i>SE</i>)	Class 2: Moderate symptoms <i>n</i> = 66 (48.9%) <i>M</i> (<i>SE</i>)	Class 3: Severe symptoms <i>n</i> = 44 (32.6%) <i>M</i> (<i>SE</i>)
Total traumatic life events experienced	10.79	6.50	0 – 16		9.29(1.28)	9.60(.85)	13.09(1.29)
Adverse childhood experiences score	7.31	1.77	3 – 10		6.79(.37)	7.12(.29)	7.88(.26)
Length of CSE (in years)	11.54	8.83	.50 – 42		7.50(2.02)	9.81(1.14)	16.09(2.18)
Last experience of CSE ^a	3.45	1.33	1 – 5		4.02(.28)	3.66(.20)	2.92(.24)
Length of current support services ^b	2.54	3.92	0 – 20		1.71(.48)	1.84(.40)	3.50(1.05)
Length of past support services ^b	3.17	4.34	0 – 20		2.40(.58)	4.19(1.02)	2.38(1.02)
PTSD symptoms	34.32	26.45	0 – 79	.97	8.42(2.02)	28.21(2.94)	56.29(4.62)
Re-experiencing symptoms	2.29	1.33	0 – 4	.94	.49(.11)	2.04(.15)	3.48(.11)
Avoidance symptoms	2.32	1.32	0 – 4	.80	.61(.16)	2.12(.16)	3.41(.14)

Table 1. Continued

Variables	<i>M</i>	<i>SD</i>	Range	α	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)
Neg. thoughts/feelings symptoms	2.18	1.22	0 – 4	.93	.70(.17)	1.84(.13)	3.30(.12)
Arousal symptoms	2.05	1.19	0 – 4	.89	.44(.13)	1.78(.11)	3.16(.11)
Anxiety symptoms	11.58	6.44	0 – 21	.93	3.72(.75)	10.68(.71)	17.06(.67)
Depression symptoms	12.50	6.92	0 – 27	.88	3.58(.65)	11.84(.62)	18.25(.96)
Alcohol use	8.77	9.97	0 – 40	.93	3.87(.74)	8.62(1.32)	11.74(1.81)
Drug use	5.45	3.43	0 – 10	.89	4.08(.84)	5.23(.46)	6.51(.48)
Number of times self-harmed	2.71	2.86	0 – 7		1.69(.59)	1.96(.40)	4.12(.44)
Suicidality	7.66	2.95	3 – 16	.75	5.96(.48)	6.74(.31)	9.70(.52)
Personality traits	35.19	14.60	2 – 66	.91	18.95(2.69)	32.62(1.76)	47.74(1.89)
Negative affect traits	1.93	0.77	0 – 3	.79	.98(.19)	1.87(.08)	2.55(.05)
Detachment traits	1.56	.69	0 – 3	.65	1.03(.12)	1.36(.08)	2.11(.08)
Antagonism traits	1.15	.75	0 – 3	.76	.67(.08)	1.09(.12)	1.51(.14)

Disinhibition traits	1.24	.76	0 – 3	.82	.70(.17)	1.23(.11)	1.56(.13)
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Table 1. Continued

Variables	<i>M</i>	<i>SD</i>	Range	α	M(SE)	M(SE)	M(SE)
Psychoticism traits	1.37	.87	0 – 3	.85	.63(.12)	1.19(.11)	2.03(.14)
Number of diagnosed mental health conditions	4.06	2.54	0 – 11		2.51(.30)	3.44(.28)	5.84(.46)
Number of diagnosed physical health conditions	2.92	2.27	0 – 13		2.93(.45)	2.71(.28)	3.19(.39)
Attachment dimension – close	2.76	.68	1 – 5	.73	3.08(.14)	2.81(.11)	2.53(.12)
Attachment dimension – depend	2.54	.83	1 – 5	.64	2.73(.16)	2.67(.13)	2.29(.15)
Attachment dimension – anxiety	3.31	1.19	1 – 5	.89	2.68(.24)	3.33(.16)	3.64(.25)
Help-seeking attitudes	21.86	5.11	10 – 30	.80	22.15(1.25)	22.42(.89)	21.18(.87)
Openness	2.32	.64	0 – 3	.80	2.14(.19)	2.36(.10)	2.40(.10)
Value and need	2.07	.75	0 – 3	.79	2.29(.14)	2.14(.13)	1.88(.14)
HSA-1. Would obtain professional help if having a mental breakdown ^c	2.35	.87	0 – 3		2.56(.21)	2.22(.15)	2.33(.15)

Table 1. Continued

Variables	<i>M</i>	<i>SD</i>	Range	α	M(SE)	M(SE)	M(SE)
HSA-2. Talking about psychological problems is a poor way to solve emotional problems ^c	.87	1.09	0 – 3		.55(.22)	.74(.18)	1.20(.20)
HSA-3. Would find relief in therapy if having an emotional crisis ^c	2.13	.93	0 – 3		1.85(.26)	2.18(.15)	2.25(.15)
HSA-4. Coping without professional help is admirable ^c	1.39	1.19	0 – 3		1.05 (.27)	1.22(.21)	1.76(.20)
HSA-5. Would obtain psychological help if upset for a long time ^c	2.39	.86	0 – 3		2.35(.24)	2.24(.16)	2.55(.13)
HSA-6. Might want counseling in the future ^c	2.48	.84	0 – 3		1.94(.25)	2.74(.11)	2.58(.13)

HSA-7. A person with an emotional problem is likely to solve it with professional help ^c	2.26	.85	0 – 3		1.99(.23)	2.40(.13)	2.29(.15)
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Table 1. Continued

Variables	<i>M</i>	<i>SD</i>	Range	α	M(SE)	M(SE)	M(SE)
HSA-8. Therapy would not have value for me ^c	.94	.99	0 – 3		.59(.15)	1.16(.21)	.94(.16)
HSA-9. A person should work out their problems without counseling ^c	.69	.92	0 – 3		.70(.18)	.50(.16)	.86(.17)
HSA-10. Emotional problems resolve by themselves ^c	.75	.98	0 – 3		.65(.21)	.69(.18)	.86(.17)
Likely to seek help from... ^d							
Intimate partner	4.49	2.21	1 – 7		4.79(.59)	4.29(.38)	4.47(.44)
Friend	4.89	1.84	1 – 7		5.11(.47)	4.64(.31)	5.00(.32)
Parent/caregiver	3.09	2.19	1 – 7		2.94(.50)	3.64(.41)	2.68(.36)
Other family member	3.02	2.16	1 – 7		2.79(.46)	3.39(.38)	2.83(.39)
Mental health professional	5.51	1.66	1 – 7		5.60(.41)	5.56(.29)	5.42(.28)
Phone helpline	3.65	2.31	1 – 7		3.08(.49)	4.27(.42)	3.44(.39)
Internet	3.53	2.16	1 – 7		3.45(.49)	3.39(.38)	3.70(.38)

Table 1. Continued

Variables	<i>M</i>	<i>SD</i>	Range	α	M(SE)	M(SE)	M(SE)
Doctor/nurse	4.30	2.15	1 – 7		3.63(.56)	4.82(.35)	4.25(.37)
Community agency	4.72	2.00	1 – 7		4.45(.51)	4.76(.33)	4.86(.36)
Religious leader	4.24	2.30	1 – 7		4.40(.55)	4.45(.41)	3.94(.40)
Would not seek help from anyone	2.46	1.90	1 – 7		1.84(.34)	2.28(.33)	3.01(.35)
Age	34.78	9.86	18 – 64		36.56(11.90)	34.79(9.22)	33.75(9.61)
	Total sample				Class 1: Mild symptoms	Class 2: Moderate symptoms	Class 3: Severe symptoms
Variables	%				%	%	%
Gender							
Male	3.3		0			5.4	2.9

Female	95.6	100	94.6	94.3
Transgender	1.1	0	0	2.9
Race				
American Indian/Alaska Native	2.2	0	0	5.7

Table 1. Continued

Variables	%	%	%	%
Asian	1.1	5.6	0	0
Black	28.1	27.8	41.7	14.3
Hispanic/Latino	3.4	0	5.6	2.9
Native Hawaiian/Pacific Islander	2.2	5.6	0	2.9
White	55.1	55.6	50	60
Other	7.9	5.6	2.8	14.3
Education				
No schooling completed	6.7	5.6	0	14.3
Some schooling, no diploma	12.3	0	16.7	14.3
High school diploma/GED	27	16.7	27.8	31.4
Some college credit, no degree	23.6	16.7	36.1	14.3
Technical/vocational training	7.9	16.7	2.8	8.6
Associate degree	7.9	27.8	5.6	0

Table 1. Continued

Variables	%	%	%	%
Bachelor's degree	10.1	11.1	8.3	11.4
Master's degree or higher	4.5	5.6	2.8	5.7
Employment				
Full time	22.5	33.3	19.4	20
Part time	13.5	22.2	16.7	5.7
Unemployed, looking for work	23.6	22.2	25	22.9
Unemployed, not looking for work	5.6	0	5.6	8.6
Student	9	5.6	11.1	8.6
Homemaker	3.4	0	2.8	5.7
Self-employed	3.4	5.6	0	5.7
Unable to work	13.5	5.6	13.9	17.1

Other	5.6	5.6	5.6	4.5
Income				
Below \$9,999	51.2	35.3	44.4	66.7
Table 1. Continued				
Variables	%	%	%	%
\$10,000-19,999	16.3	17.6	19.4	12.1
\$20,000-29,999	16.3	11.8	22.2	12.1
\$30,000-39,999	8.1	17.6	11.1	0
\$40,000-49,999	2.3	0	0	6.1
\$60,000-69,999	1.2	5.9	0	0
\$70,000-79,999	1.2	0	0	3
\$80,000-89,999	2.3	5.9	2.8	0
\$90,000-99,999	1.2	5.9	0	0
Region of the U.S. currently living				
West ^e	23	28	19.7	25
Midwest ^f	5.2	8	4.5	4.5
South ^g	31.1	32	25.8	38.6
Northeast ^h	3	4	3	2.3

Note. CSE = commercial sexual exploitation ^aLast experience of CSE (1 = within the past month, 2 = in the past 1 to 6 months, 3 = in the past 7 to 12 months, 4 = in the past 1 to 5 years, 5 = more than 5 years ago). ^bLength of time receiving support services (in years).

Table 1. Continued

^cHelp-seeking attitude (HSA) scale (ATSPPH-SF) questions. ^dHelp-seeking intentions scale (GHSQ) questions. ^eWest = WA, OR, CA, NV, AZ, UT, ID, MT, WY, CO, NM, AK, HI. ^fMidwest = ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH. ^gSouth = OK, TX, AR, LA, MS, AL, FL, GA, TN, SC, NC, VA, WV, KY, DC, MD, DE. ^hNortheast = PA, NJ, NY, CT, RI, MA, VT, NH, ME.

Table 2. Summary of Measures

Construct	Instrument	Description	Items	Psychometrics
Adverse Childhood Experiences	Adapted from portions of the Adverse Childhood Experiences International Questionnaire (ACE-IQ; WHO, 2017)	Assesses exposure to various adverse childhood experiences.	12	
Alcohol Use	Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993)	Assesses hazardous alcohol consumption using 5-point Likert scales, all of which range from 0 to 4. Total scores range from 0 to 49 with a score of 8 or higher representing a higher likelihood of harmful drinking behaviors.	10	$\alpha = .80-.98$
Anxiety	GAD-7 (Spitzer et al., 2006)	Assesses the severity of anxiety symptoms using a 4-point Likert scale (0 = <i>not at all</i> , 3 = <i>nearly every day</i>). Total scores range from 0 to 21 with cut points for mild (≥ 5), moderate (≥ 10), and severe anxiety (≥ 15).	7	$\alpha = .92$
Attachment	Revised Adult Attachment Scale (AAS; Collins, 1996)	Assesses 3 domains of attachment styles (close, depend, and anxiety) using a 5-point Likert scale (1 = <i>not at all characteristic of me</i> , 5 = <i>very characteristic of me</i>).	18	Close ($\alpha = .82$), Depend ($\alpha = .80$), Anxiety ($\alpha = .85$)
Depression	The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001)	Assesses the severity of depression symptoms using a 4-point Likert scale (0 = <i>not at all</i> , 3 = <i>nearly every day</i>). Total scores range from 0 to 27 with cut points for mild (≥ 5), moderate (≥ 10), moderately severe (≥ 15), and severe depression (≥ 20).	9	$\alpha = .89$
Drug Use	Drug Abuse Screening Test (DAST-10; Skinner, 1982; Yudko, Lozhkina, & Fouts, 2007)	Assesses drug use and associated degree of consequence by summing items representing problematic substance abuse to generate a total, continuous score ranging from 0 to 10 (0 = <i>no problems</i> ; 1-2 = <i>low level</i> ; 3-5 = <i>moderate level</i> ; 6-8 = <i>substantial level</i> ; 9-10 = <i>severe level</i>).	10	$\alpha = .94$

Construct	Instrument	Description	Items	Psychometrics
Help-Seeking Attitudes	Attitudes Toward Seeking Professional Psychological Help Scale-Short Form (ATSPPH-SF; Elhai, Schweinle, & Anderson, 2008)	Assesses mental health treatment attitudes using a 4-point Likert scale (0 = <i>disagree</i> , 3 = <i>agree</i>). Scores range from 0 to 30 with higher scores representing more positive help-seeking attitudes. Also includes subscales assessing value and need in professional help, as well as openness to professional help.	10	$\alpha = .82-.84$
Help-Seeking Intentions	General Help-Seeking Questionnaire (GHSQ; Wilson et al., 2005)	Assesses intentions to seek help for personal-emotional pain using a 7-point Likert scale (1 = <i>extremely unlikely</i> , 7 = <i>extremely likely</i>).	11	$\alpha = .85$
History of Suicidality	The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001)	Assesses past suicidal behaviors across 4 dimensions (lifetime suicide ideation/attempts, frequency of ideation in the past 12 months, threat of suicidal behavior, and self-reported likelihood of suicidal behavior). Each item has its own scoring scale.	4	$\alpha = .76-.87$
Non-Suicidal Self-Injury		Two questions were included in the survey to assess participants' history of non-suicidal self-harm.	2	
Personality Dysfunction	The Personality Inventory for DSM-5-Brief Form (PID-5-BF; Krueger et al., 2013)	Assesses maladaptive personality traits (i.e., negative affect, detachment, antagonism, disinhibition, and psychoticism) using a 4-point Likert scale (1 = <i>very false/often false</i> , 4 = <i>very true/often true</i>). Total scores range from 0 to 75; mean score were used for sub-scales; higher scores indicator greater personality/trait dysfunction.	25	Negative Affect ($\alpha = .70$); Detachment ($\alpha = .69$); Antagonism ($\alpha = .68$); Disinhibition ($\alpha = .76$); Psychoticism ($\alpha = .78$)
Physical Health Assessment		This is a broad yes/no assessment of participants' physical and mental health status. Total scores for physical health and mental	44	

Construct	Instrument	Description	Items	Psychometrics
PTSD Symptoms	PTSD Checklist for DSM-5 (PCL-5; Blevins et al., 2015)	health were calculated by summing all endorsed items in each category (i.e., physical health and mental health) Assesses PTSD symptoms according to DSM-5 diagnostic criteria using a 5-point Likert scale (0 = <i>not at all</i> , 4 = <i>extremely</i>). Total scores range from 0 to 80 with scores of 33 or higher suggesting a provisional diagnosis of PTSD. Subscales corresponding with the four PTSD diagnostic criteria are also included in this assessment – mean scores were used to analyze subscale scores	20	$\alpha = .94$
Sex Industry Experiences		This assessment was developed by the researchers to understand participants' experiences while in the sex industry.	15	
Trauma Exposure	Modified Version of the Trauma History Questionnaire (THQ; Hooper, Stockton, Krupnick, & Green, 2011)	Assesses participants' exposure to traumatic life events through a series of yes/no questions. Each yes response is followed by questions regarding age of exposure and number of times exposed. Researchers modified this assessment to include questions specific to participants experience in the sex industry.	20	

Table 3. Latent Profile Analysis Fit Statistics for 1-4 Class Solutions

Model	LL	AIC	BIC	SSA-BIC	Entropy	LMR	BLRT	Participants per class (%)				
								1	2	3	4	
1 class	-6960.24	14032.48	14195.18	14018.03				100				
2 class	-6591.26	13352.51	13599.46	13330.58	.91	-6960.24**	-6960.24**	61.48	38.52			
3 class	-6454.43	13136.86	13468.06	13107.44	.89	-6591.56	-6591.26**	18.52	48.89	32.59		
4 class	-6378.41	13042.83	13458.28	13005.92	.90	-6454.43	-6454.23**	30.37	16.30	26.63	23.70	

Note. LL = log-likelihood. AIC = Akaike information criterion. BIC = Bayesian information criterion. SSA-BIC = Sample-size adjusted Bayesian information criterion. LMR = Lo-Mendell-Rubin likelihood ratio test. BLRT = Bootstrapped likelihood ratio test. Participants per class (%) = the proportion of participants in each of the classes in the model. * $p < .10$. ** $p < .001$

Table 4. Classification Posterior Probabilities for the Three-Class Solution

	<i>n</i> (%)	Average classification posterior probabilities		
		Mildly distressed class	Moderately distressed class	Severely distressed class
Mildly distressed class	25 (18.52)	.98	.02	.00
Moderately distressed class	66 (48.89)	.06	.91	.04
Severely distressed class	44 (32.59)	.00	.01	.99

Note. Values on the diagonal are the average posterior probabilities associated with the classes to which participants were assigned.

Table 5. Mean Comparisons between Latent Classes on Biopsychosocial Health LPA Indicator Variables

Indicator variables	<i>F(df)</i>	η^2	Pairwise comparisons
Total traumatic life events (CSE)	3.96(2,104)*	.07	3 > 1 ¹
Adverse childhood experiences score	3.90(2,128)*	.06	3 > 1
Length of CSE (in years)	6.98(2,99)**	.14	3 > 1, 3 > 2 ¹
Last experience of CSE	5.62(2,99)**	.11	1 > 3, 2 > 3
Length of current support services ^a	1.33(105)	.05	<i>ns</i> ¹
Length of past support services ^a	1.26(2,105)	.05	<i>ns</i>
PTSD symptoms	53.13(2,120)***	.47	3 > 2 > 1 ¹
Re-experiencing symptoms	102.80(2,95)***	.68	3 > 2 > 1 ¹
Avoidance symptoms	73.35(2,97)***	.61	3 > 2 > 1
Neg. thoughts/feelings symptoms	85.31(2,95)***	.64	3 > 2 > 1
Arousal symptoms	126.93(2,95)***	.73	3 > 2 > 1
Anxiety symptoms	78.94(2,120)***	.57	3 > 2 > 1
Depression symptoms	85.80(2, 120)***	.59	3 > 2 > 1 ¹
Alcohol use	5.28(2, 118)**	.08	2 > 1, 3 > 1 ¹
Drug use	4.56(2, 118)*	.07	3 > 1 ¹
Number of times self-harmed	9.82(2, 109)***	.15	3 > 1, 3 > 2
Suicidality	22.25(2,116)***	.28	3 > 1, 3 > 2 ¹
Personality traits	68.52(2,121)***	.53	3 > 2 > 1
Negative affect traits	72.55(2,121)***	.55	3 > 2 > 1 ¹

Table 5. Continued

Indicator variables	<i>F(df)</i>	η^2	Pairwise comparisons
Detachment traits	40.00(2,121)***	.40	3 > 2 > 1
Antagonism traits	11.80(2,121)***	.16	3 > 2 > 1 ¹
Disinhibition traits	11.98(2,121)***	.17	3 > 2 > 1
Psychoticism traits	35.71(2,121)***	.37	3 > 2 > 1
Number of diagnosed mental health conditions	26.66(2,132)***	.29	3 > 1, 3 > 2 ¹
Number of diagnosed physical health conditions	.37(2,132)	.01	<i>ns</i>
Attachment dimension – close	4.59(2,97)*	.10	3 > 1
Attachment dimension – depend	2.86 (2,97)†	.06	<i>ns</i>
Attachment dimension – anxiety	4.37(2,97)*	.09	3 > 1 ¹

Note. One-way ANOVA and Tukey post-hoc analyses were used to test mean differences between latent classes on all LPA indicator variables. Only significant differences ($p < .05$) between the three classes are reported. *ns* = not significant. ¹Homogeneity of variance assumption violated; Welch's test and Games-Howell post-hoc statistic used for mean comparisons. 1 = mildly distressed class; 2 = moderately distressed class; 3 = severely distressed class. ^aLength of time receiving support services (in years).

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6. Results from Distal Outcome Analysis of Help-Seeking Attitudes and Intentions by Latent Classes of Biopsychosocial Health among Survivors of Sex Trafficking

Distal outcome variables	Global χ^2	Class comparisons			Summary of comparisons
		1 v 2	1 v 3	2 v 3	
Help-seeking attitudes	1.05	.03	.40	.93	<i>ns</i>
Openness	1.56	.97	1.56	.09	<i>ns</i>
Value and need	4.80*	.59	4.69**	1.78	1 > 3
HSA-1. Would obtain professional help if having a mental breakdown ^a	1.46	1.45	.74	.26	<i>ns</i>
HSA-2. Talking about psychological problems is a poor way to solve emotional problems ^a	5.31*	.39	4.74**	2.76*	3 > 1, 3 > 2
HSA-3. Would find relief in therapy if having an emotional crisis ^a	1.84	1.05	1.84	.11	<i>ns</i>
HSA-4. Coping without professional help is admirable ^a	5.86**	.22	4.43**	3.37**	3 > 1, 3 > 2
HSA-5. Would obtain psychological help if upset for a long time ^a	2.44	.14	.51	2.25	<i>ns</i>
HSA-6. Might want counseling in the future ^a	7.24**	7.23***	5.14**	.83	2 > 1, 3 > 1
Table 6. Continued					
Distal outcome variables	Global χ^2	1 v 2	1 v 3	2 v 3	Summary of comparisons
HSA-7. A person with an emotional problem is likely to solve it with professional help ^a	2.06	2.05	1.22	.26	<i>ns</i>
HSA-8. Therapy would not have value for me ^a	5.23*	4.58**	2.59*	.67	2 > 1, 3 > 1
HSA-9. A person should work out their problems without counseling ^a	2.21	.62	.43	2.21	<i>ns</i>
HSA-10. Emotional problems resolve by themselves ^a	.79	.02	.63	.48	<i>ns</i>
Likely to seek help from...Intimate partner ^b	.43	.43	.19	.09	<i>ns</i>
Likely to seek help from...friend ^b	.88	.64	.04	.63	<i>ns</i>
Likely to seek help from...Parent/caregiver ^b	2.92	1.03	.19	2.91*	2 > 3
Likely to seek help from...Other family member ^b	1.26	.89	.00	.99	<i>ns</i>
Likely to seek help from...Mental health professional ^b	.19	.01	.14	.11	<i>ns</i>
Likely to seek help from...Phone helpline ^b	3.33	2.99*	.32	1.96	1 > 2
Likely to seek help from...Internet ^b	.35	.01	.16	.31	<i>ns</i>
Likely to seek help from...Doctor/nurse ^b	2.98	2.82*	.84	1.19	2 > 1

Table 6. Continued

Distal outcome variables	Global χ^2	1 v 2	1 v 3	2 v 3	Summary of comparisons
Likely to seek help from...Community agency ^b	.46	.23	.46	.04	<i>ns</i>
Likely to seek help from...Religious leader ^b	.93	.01	.47	.76	<i>ns</i>
Would not seek help from anyone ^b	5.90**	.77	5.77**	2.51*	3 > 1, 3 > 2

Note. Distal outcome mean differences were assessed by Wald chi-square tests performed as part of the BCH stepwise approach to latent class modeling in Mplus. 1 = mildly distressed class; 2 = moderately distressed class; 3 = severely distressed class. *ns* = not significant. ^aHelp-seeking attitude (HSA) scale (ATSPPH-SF) questions. ^bHelp-seeking intentions scale (GHSQ) questions. * $p < .10$. ** $p < .05$. *** $p < .01$.

