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Psychometrics of a Measure of Sexual Assault Coping Self-Efficacy: A Comparison of Across Age Groups

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Abstract

Sexual assault affects people of all ages and is associated with poorer psychosocial outcomes including depression, anxiety, and PTSD. Coping self-efficacy (CSE) refers to how capable an individual feels they are able to handle stressors, including sexual assault, and it is a strong predictor of psychosocial outcomes. This dissertation assessed the psychometrics of the Sexual Assault Coping Self-Efficacy Measure (SACSEM), an instrument developed to measure sexual assault CSE across different age groups. Since the majority of research has focused on CSE following sexual assault in adults, I examined CSE across groups of adolescents, emerging adults, and adults (N = 137) to examine whether this measurement of coping could be applied similarly across age groups. I conducted invariance testing between the three age groups, and then assessed convergent validity with a measure of coping styles. Initial indicators of the SACSEM's model fit were suboptimal (across age groups, CFI ranged from .829-.841; RMSEA ranged from .134-.153). The initial single-factor, 19-item structure was retained after exploring alternative models. Within the context of suboptimal fit, invariance testing revealed no significant difference in the factor structure between age groups. Assessments of convergent validity confirmed the hypothesis that CSE is positively associated with the use of active coping styles across age groups (among adolescents, r = 554 and p <. 001; among emerging adults r = .329 and p = .014; among adults r = .429 and p = .004) but revealed that CSE and avoidant coping are only strongly associated in older age groups. These findings suggest that, while CSE following sexual assault can be measured similarly across age groups, the relationship between avoidant coping and CSE differs by age. Clinicians may utilize these findings when working with adolescents by crafting interventions that distinguish between active and avoidant coping,

as the distinction between these coping styles may be less naturally apparent for adolescents. Limitations include low sample size which impacted fit indices and not controlling for demographics such as race or sexual orientation. Future research should focus on understanding the relationship between avoidant coping, CSE, and age, and utilize longitudinal data to study this.

Keywords: coping self-efficacy, resilience, sexual assault, adolescents, emerging adults, lifespan

CHAPTER I

Introduction

Childhood sexual abuse (CSA) is a pervasive problem, with an estimated 19.7% of girls and 7.9% of boys worldwide (Pereda et al., 2009) and 26.6% of girls and 5.5% of boys in the United States experiencing sexual abuse sometime before age 18 (Finkelhor et al., 2014). CSA is defined as "the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared and cannot give consent, or that violates the laws or social taboos of society" (World Health Organization, 2003), including inducement of sexual activities, exploitative use of a child in prostitution, and the use of children in pornographic materials, among other sexual acts.

The long-term consequences of CSA have been well-studied and include poorer psychological outcomes, such as increased rates of adult anxiety and depression (Lindbert et al., 2014), posttraumatic stress disorder (Afifi et al., 2014; Cecil et al., 2017), eating disorders (Moldendijk et al., 2017), sleep disturbance including insomnia (Lind et al., 2015), and externalizing disorders (Cecil et al., 2017). Beyond psychiatric diagnoses, there are a number of other associated psychosocial impairments including worse educational and financial functioning (Copeland et al., 2018), increased rates of revictimization for either sexual assault or another crime (Papalia et al., 2017), risk for suicide attempts (Devries et al., 2014), rates of criminal behavior (Copeland et al., 2018; Papalia et al., 2017), drug overdose (Papalia et al., 2017), and earlier age of first alcohol consumption (Smith et al., 2014).

Within the CSA literature, considerable attention has been devoted to the role of coping and how different ways of coping can influence psychosocial outcomes. Such areas of research include styles of coping and their relation to psychological outcome variables such as PTSD severity (Cantón-Cortés & Cantón, 2010), predicting specific maladaptive coping behaviors such

as binging, self-harm, or excessive alcohol consumption (Johnon & Lynch, 2013), and cognitive processes such as rumination involved in coping behaviors among those who have experienced CSA (Sarin & Nolen-Hoeksema, 2010). One alternative perspective is to assess coping self-efficacy (CSE). Rather than focusing on specific coping behaviors, research on CSE examines an individual's overall belief in their own ability to manage distress following sexual abuse, for example, how well an individual feels they are able to regulate their emotions, manage distressing thoughts, or to seek help when needed.

Coping Self-Efficacy

CSE is defined as "the perceived capability to manage one's personal functioning and the myriad environmental demands of the aftermath occasioned by a traumatic event" (Benight & Bandura, 2004, p. 1113). According to Benight and Bandura, self-efficacy is the basis of all human agency and provides the motivation to enact control over one's life. The belief that one's behaviors can produce desired outcomes underpins all motivation and incentive to act in the face of stressful or difficult experiences. More specifically, CSE is related to these issues of control and agency as they relate to the aftermath of a traumatic event such as sexual assault. CSE has been theorized to act on a number of psychological processes and, in turn, be a key factor in post-traumatic recovery.

CSE functions on a cognitive level; individuals with low CSE tend to endorse beliefs about the dangers of their environment, magnify the possibility of threats, focus on their own coping deficits, and consequently, suffer from higher levels of functional impairment (Bandura, 1997; Jerusalem & Mittag, 1995; Lazarus & Folkman, 1984). Experimental research on interventions that modify participants' beliefs about control and self-efficacy in stressful situations, such as during panic attacks (Sanderson et al., 1989), provide evidence suggesting that

perceived control mitigates physiological arousal compared to control groups. Based on this evidence, CSE is theorized to foster posttraumatic resiliency via modulation of emotional and cognitive responses to stressful events as well as employment of effective coping strategies (Benight & Bandura, 2004).

A number of studies have found a link between level of CSE and an individual's primary coping strategies, with high CSE being associated more with active coping strategies (e.g., seeking help from others), and low CSE being associated with more avoidant coping strategies (e.g., trying not to think about one's problems; Bosmans et al., 2015; Creasley et al., 1997; Rodkjaer et al., 2014). The coping strategies seen in individuals with low CSE may partly explain symptom presentations in traumatic disorders which are defined by avoidance of hyper-arousing stimuli.

Critically, individuals with high CSE also display less ruminative preoccupation with perceived environmental threats and faster recovery from distress (Benight & Bandura, 2004). Given the ruminative cognitive patterns often seen in individuals who have experienced trauma, this directly implicates CSE as a key variable in post-traumatic recovery. CSE is necessarily concerned with control, agency, and self-regulation, and is therefore a crucial variable to study given the avoidant, hyper-aroused, ruminative presentation often seen in individuals who have experienced traumatic events.

CSE has been identified as a key variable affecting post-traumatic outcomes, with evidence that it mediates the relationship between childhood sexual abuse and development of later PTSD symptoms (Cieslak et al., 2008), the relationship between childhood abuse (physical and sexual) and adult ADHD symptoms (Singer et al., 2016), and between trauma history and dissociation frequency among individuals who have experienced physical/sexual abuse

(Mahoney & Benight, 2019). CSE has mostly been studied within the context of PTSD, and research is growing—there is evidence that it is a greater predictor of post-traumatic outcomes than other variables such as social support and history of psychopathology (Benight et al., 2015). More broadly, CSE has also been studied outside the realm of sexual assault; it has been implicated as a key variable associated with posttraumatic recovery in burn victims (Bosmans et al., 2015), as a mediator of symptom management in long-term breast cancer survivors (Adams et al., 2017), is associated with lower rates of depression in HIV patients (Rodkjaer et al., 2014), and promotes posttraumatic recovery following an assortment of traumatic events including natural disasters, violent assault, military combat, and terrorist attacks (Benight & Bandura, 2004). Thus, CSE in a broad sense has important psychosocial implications and is consistently associated with positive health outcomes across a range of populations.

Among these studies, measurement of CSE has varied, and this is particularly true for those focused on sexual assault. Cieslak and colleagues (2008) used the 42-item author-constructed Sexual Abuse Coping Self-Efficacy (SACSE) questionnaire, while Singer and colleagues used the Coping Self-Efficacy Scale (Chesney et al., 2006) which broadly measures coping self-efficacy and is not specific to CSA. Mahoney and Benight (2019) utilized the Trauma Coping Self-Efficacy Scale (Benight et al., 2015), which is also not specific to sexual abuse. Further, these studies use samples of adults who have experienced CSA, and indeed most of the literature on CSA focuses on adult outcomes. Given that vulnerability and response to stressors and ability to utilize different coping strategies fluctuate across the lifespan and by psychosocial environment (Aldwin, 2011), there is a need for research that focuses on childhood and adolescent coping self-efficacy following CSA, and the development of an instrument to measure such a construct that reflects the differences in coping experiences for youth (e.g.,

ability to complete schoolwork, coping with a thoughts of a life unfulfilled) as opposed to adults. Researchers such as Compas et al. (2001) and Skinner and Zimmer-Gembeck (2011) have noted a gap in the literature such that many conceptualizations of coping for children and adolescents merely take already established models for adults and apply them to younger ages and have called for more research in this area. In this dissertation I am assessing the psychometric properties of an existing measure to determine if it functions equivalently across the lifespan.

Invariance Testing

Invariance testing is a statistical procedure used to assess whether or not items on an instrument are measuring similarly across different populations sampled (Byrne, 1993). For example, the SACSEM was normed on a sample of adult women (typically between the ages of 18-24) who speak English and were living in the Pacific Northwest (Gebregiorgis et al., 2021). Invariance testing is a way to investigate the question of how participants outside of this group are responding to the SACSEM's items, and if this is similar enough to the original normed sample to use the SACSEM more generally with other populations.

Invariance testing involves multiple components, such as testing for measurement invariance (whether or not factor loadings of an instrument are equivalent across different samples) and structural invariance (whether the relationship between those factors is the same across different samples). Statistically significant discrepancies in how items are being responded to between different samples (e.g., men vs women, English-speaking vs Spanish-speaking, adult vs. adolescents, etc.) may indicate differences in how items are perceived across different groups and/or differences in how a construct (e.g., sexual assault coping self-efficacy) should be conceptualized for a particular group. Such results would indicate revisions and development of new or alternate instruments that are psychometrically sound before their use

within those specific populations.

Invariance testing has been used to study various related constructs across age. For example, Prince-Embury and Courville (2008) compared resilience among age groups (9-11, 12-14, 15-18) using the Resiliency Scales for Children and Adolescents; Moreland and Dumas (2007) compared the Revised Coping Competence Scale among ages of daycare children. Most relevant to this dissertation is a study by Gucciardi and colleagues (2011) which compared resilience (defined by the authors as positive responses to adverse or traumatic events) between adult and adolescent samples using the Connor-Davidson Resilience Scale and found no difference in how these groups responded. It is worth noting that these constructs (resilience, coping competence) are considered related and similar to coping self-efficacy, but are not the same. Traumatic presentations are different in children compared to adults; for example, children may engage in play re-enactments of the traumatic even, are less likely to experience flashbacks, and experience nightmares without specific content (Hamblen & Barnet, 2016; Shaw, 2000). Given these differences, , more research is needed to measure coping self-efficacy by age.

Coping Across the Lifespan

Adolescence is particularly of interest in the stress and coping literature because it is a period marked by a number of uniquely stressful transitions across various domains (biological, educational, social, etc.). Historically, most research on coping in childhood or adolescence has been a downward extension of existing conceptualizations, definitions, and models of coping that have been established for adults (Compas et al., 2001), with researchers only recently beginning to incorporate developmental perspectives into views of childhood and adolescent coping. Current research tends to focus on the lifespan development of specific coping strategies and development of coping-related constructs related to perceived control (CSE, locus of control,

causal appraisals).

In a review of the development of coping strategies across the lifespan, Aldwin (2011) described adolescence as a time when parents hold a high degree of influence on an adolescent's use of coping strategies. Adolescence marks the beginning of certain coping strategies such as humor, positive self-talk, metacognition, and cognitive restructuring, while other cognitive strategies such as reflection do not develop until later (Singh & Bussey, 2009). This is also when strategies associated with poorer psychosocial outcomes, such as substance use, rumination, and disordered eating may begin.

The critical importance of caregivers on adolescent CSE cannot be understated; caregivers model and propagate beliefs about coping, in addition controlling which stressful events an adolescent is exposed to and must cope with (Skinner & Zimmer-Gembeck, 2007). Parents are also often adolescents' primary source of support before peers (Cicognani, 2011; Steinberg, 2001), all of which underscores the importance of parental and family influence on adolescent coping. Skinner and Zimmer-Gembeck (2011) argue that coping and related constructs such as CSE, locus of control, and causal attributions, are underlined by the concept of perceived control, which develops across the lifespan. Thus, adolescent CSE is marked by the dichotomy between the gradual development of autonomy while parental influence is still a major influence in adolescents' lives. Perhaps unsurprisingly, CSE has been observed to decrease in adolescence (Causey & Dubow, 1992; Donaldson et al., 2000; Singh & Bandura, 2009; Spirito et al., 1991) beginning at around age 14, possibly due to increases in anger, self-criticism, and depression during this time.

Trauma responses also differ by age. The National Center for PTSD (Hamblen & Barnet, 2016) reported that trauma in adolescents looks closer to adult presentations than to that of

younger children, but with some distinguishing characteristics such as engaging in traumatic re-enactment and displaying aggressive and impulsive behaviors at higher rates than other age groups. Other researchers have found that trauma responses in adolescents are colored by the perception and awareness of a life unlived and fear of a shortened future (Shaw, 2000). This may manifest in a number of ways from phobic avoidance and isolation to hedonic, impulsive behaviors.

In sum, coping during adolescence is influenced by the development of certain cognitive strategies such as self-talk, significant parental influence, and increases in emotional difficulties that co-occur with overall decreases in CSE. Coping responses to traumatic events are in turn influenced by these developments, as adolescents move out of childhood and closer to adulthood, while still presenting differently from these age groups.

Emerging Adulthood

Over the past few decades, human development researchers have posited the existence of a distinct transitional phase in between adolescence and adulthood, deemed emerging adulthood (Arnett, 2000). This developmental phase, occurring approximately between ages 18 and 25, is marked by unique changes in traditional markers of adulthood, including later age of marriage, later age of first childbirth, and increased participation in higher education, that occurred in western countries during the end of the 20th century. Arnett described emerging adulthood as "the age of identity explorations, especially in the areas of love and work; it is the age of instability; it is the most self-focused age of life; it is the age of feeling in-between, neither adolescent nor adult; and it is the age of possibilities, when optimism is high and people have an unparalleled opportunity to transform their lives" (Arnett, 2006, p. 7). Emerging adulthood has been studied as a distinct stage of development, unique from adolescence and adulthood, in

relation to other contexts and variables including sexual assault. Emerging adulthood has been identified by researchers as the life stage in which propensity to engage in risky behaviors is at its peak, including an increased risk for sexual assault (Clodfelter et al., 2010), so research on coping and self-efficacy will be particularly informative for this age group. Additionally, while some researchers have generalized findings on sexual assault outcomes within emerging adults to the larger adult population (Ponce-Garcia et al., 2016), I will include emerging adults as a distinct age group in between adolescents and adults age 26 and older, in order to eschew the child/adult dichotomy and to take a more granular approach to studying CSE across three different developmental groups.

CSE and Coping Styles

Coping efficacy beliefs are a hypothesized mechanism that influences the selection of coping strategies (Folkman & Lazarus, 1985). In the face of stressful events, individuals assess these events in two phases: primary appraisal (whether they pose a threat or a challenge) and secondary appraisal (an assessment on the availability of the resources needed to cope; Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). Coping efficacy beliefs thus have a direct impact on selection of coping behaviors because of the appraisal process (Folkman & Lazarus, 1985; Skinner & Wellborn, 1997). Perceived control of events may actually be more important than actual control of the situation (Kleiwer, 1991), and this perception of control predicts the type of coping strategies used. Children who rate their confidence in their ability to feel better used more active coping strategies and fewer avoidance strategies (Creasey et al., 1997). Thus, for the current dissertation, I predict that greater coping self-efficacy will be associated with a greater number of active coping styles and a smaller amount of avoidant coping styles.

Dissertation Purpose

Thus, the purpose of this dissertation is to report the psychometric development of an instrument to measure sexual abuse CSE developed during a partnership with a sexual assault legal advocacy center in western Washington. The results will assist the program evaluation by establishing the practical utility of using the SACSEM for adolescent clientele, as well as helping on a theoretical level to understand the relationship between CSE and coping strategies.

The data used for analysis in this dissertation were collected as part of a partnership with an agency that provides support and advocacy services to individuals who have experienced sexual violence and their family members in the state of Washington. Among the services offered are access to therapy, education, community training, and legal advocacy services (KCSARC, n.d.). The agency describes its mission as providing "survivors with tools that support their own strengths, encourage them to make their own decisions, and empower them to regain control of their lives through their individual healing process" (KCSARC, n.d.). Various measures were developed in order to assess outcomes in individuals who had received advocacy services, including a measure on coping self-efficacy following sexual assault.

CHAPTER II

Method

Sampling Procedures

Data collection has been ongoing since 2019, when surveys were sent out to clients of a sexual assault resource center in the state of Washington as part of a collaborative program evaluation of the program. Participants were included in the analysis if they identified as cisgender females at least 13 years of age. Males and transgender individuals were not included due to low sample size. The survey includes questions about demographic information and a variety of measures, the most relevant to this dissertation being the author-constructed SACSEM and the CSI-RF.

Participants completed measures regarding coping self-efficacy and coping styles, with the surveys offered at intake and then approximately at 3- and 6- months post intake. Incentives were offered in the form of gift cards at $5, $10, and $15 (for a sum of up to $30) for completion of each survey wave. Survey completion was completed online via Qualtrics. Online surveys were de-identified by the agency and sent to the researchers for analysis. To maximize the sample size, data from the first instance that the client took the survey was used in this study.

Sampling Size, Power, and Precision

Using Soper's (2018) Structural Equation Model Sample Size Calculator, I input the estimated effect size at 0.1 (small effect size), desired statistical power level at 0.8, probability level at .05, and the number of latent variables and observed variables (items) for the SACSEM. Results indicated a minimum sample size of 87 participants for each age group is required to detect an effect.

Instruments

Sexual Assault Coping Self-Efficacy

The Sexual Assault Coping Self Efficacy Measure (SACSEM) is a 19-item self-report measure that assesses a person's confidence to cope after their sexual assault and has been used in previous dissertations (Roberts, 2017; Sparrow, 2018). Each item presents the individual with an aspect of coping, and responses are recorded on a Likert scale (1 = *not at all capable* to 5 = *totally capable).* Examples of sample items include "Dealing with feelings of shame concerning the assault" and "Trusting others."

The SACSEM version utilized in this study is the result of a long-running collaboration with a sexual assault legal advocacy center in western Washington to assess the client outcomes of their services (Gebregorgis et al., 2021). A mixed-methods approach was used to finalize the items. The first phase of this process involved discussions with agency stakeholders about programming goals and outcome measures (including coping self-efficacy) which were used to guide the creation of measures for ongoing program evaluation. Based on stakeholder input, members of the research team and agency searched the existing literature to begin the modification of Benight's Domestic Violence Coping Self Efficacy Measure (DVCSE; Benight et al., 2004) to assess this. The psychometrics of this instrument were then assessed, with adequate model fit (CFI = .915, RMSEA = .097). The internal consistency in this sample was .97. Temporal stability was calculated by comparing data from 34 participants who completed the measure for a second time approximately three months after the first administration. Pearson's r = .856, suggested a robust relationship between scores across time, demonstrating strong test-retest reliability.

CSI-SF

The Coping Strategies Inventory, Short-Form (CSI-SF) is a shortened, 16-item variant of the longer, 72-item Coping Strategies Inventory, developed by Tobin, Holroyd, and Reynolds (1984). The CSI measures coping styles categorized on two continua: focus (problem-focused or emotion-focused) and level of engagement (engagement or disengagement), resulting in four categories of coping: problem-focused engagement, problem-focused disengagement, emotion-focused engagement, and emotion-focused disengagement.

Respondents are asked to think of a stressful situation they have experienced and respond to the items with that stressor in mind with a four-point Likert rating system. Example items and their scale include, "I try to talk about it with a friend or family" (problem-focused engagement), "I step back from the problem and try to put things into perspective" (problem-focused disengagement), "I hope for a miracle" (emotion-focused engagement), and "I try to spend time alone" (emotion-focused disengagement). Responses are summed with scores for each subscale, with higher scores indicating greater use of that kind of coping. Two additional subscales represent the third-order factors: total engagement and total disengagement, which are the sums of the respective problem and emotion-focused subscales.

As reported in its manual, the original, full-scale measure has adequate internal consistency coefficients, ranging from .71 to .94, with two-week test-retest correlations ranging from .39 to .61. The shortened variant of this instrument has not been the subject of as much psychometric research, although initial studies have reported adequate fit indices (GFI = .95, RMSEA = .06) though with alpha coefficients that are lower than optimal (ranging from .58 to .72; Addison et al., 2007).

Analyses of these instruments together can answer questions surrounding the utility of the

SACSEM for measuring coping self-efficacy following sexual assault in adolescents, and how these responses map onto another well-researched measure of coping.

Research Design

The data used in the analyses of this dissertation are part of a larger, ongoing project carried out in collaboration with a sexual assault resource center. The collection of data was approved by the Seattle Pacific University Institutional Review Board (IRB) under two separate data collections, #070802039, first approved on 2/22/2008 and #181908002, first approved on 2/20/2019. It has been renewed and is valid through 2/9/2022.

Statistical Analyses

Invariance Testing

Invariance testing is a statistical procedure use to assess whether or not items comprising an instrument are measuring similarly across different populations sampled (Byrne, 1993). For the purpose of this dissertation, it will tell us if individuals are responding to questions about sexual assault coping self-efficacy differently as a function of age. Invariance testing has multiple steps and requires separating each sub-group (adolescents, emerging adults, and adults) and establishing a well-fitting baseline model that fits all sub-groups, establishing a configural model that combines the groups into one model, evaluating model fit separately, and then making multi-group comparisons (Byrne 1993; 2010).

First, it is necessary to test whether the SACSEM has the same set free and fixed factor loadings across age groups. Invariance here means the basic organization of the constructs holds between groups. Next is a test of the equivalence of the item loadings on the factors. This is done by constraining factor loadings to be equivalent in the two groups. Invariance here means that each item has an approximately equal loading onto its factors. Next, item intercepts are

constrained to be equivalent between the two groups; invariance here indicates no systematic differences in responding patterns. Each step is predicated upon the preceding step, so non-invariance in early stages of the statistical analyses indicate overall non-invariance between groups.

Invariance testing has been used to study various related constructs across age. For example, Prince-Embury and Courville (2008) compared resilience among age groups (9-11, 12-14, 15-18) using the Resiliency Scales for Children and Adolescents, and Moreland and Dumas (2007) compared the Revised Coping Competence Scale among ages of daycare children. Most relevant to this dissertation is a study by Gucciardi and colleagues (2011) which compared resilience (defined by the authors as positive responses to adverse or traumatic events) between adult and adolescent samples using the Connor-Davidson Resilience Scale and found no difference in how these groups responded. It is worth noting that these constructs (resilience, coping competence) are considered related and similar to coping self-efficacy, but are not the same. Given that traumatic responses and symptom presentations change across the lifespan (Hamblen & Barnet, 2016; Shaw, 2000), more research is needed to measure coping self-efficacy by age.

Convergent Validity

As a test of convergent validity, I assessed how well the SACSEM's measure of sexual assault coping self-efficacy maps onto measures of coping strategies. Previous studies have suggested a correlation between high coping self-efficacy and more active styles of coping (e.g., solving problems, seeking support), while low coping self-efficacy is associated with more avoidant styles of coping (e.g., distraction, social withdrawal; Bosmans et al., 2015; Creasley et al., 1997; Rodkjaer et al., 2014); thus, I expected to find this same trend in my sample when

correlating levels of coping self-efficacy from the SACSEM with the two coping style scales from the CSI-SF. A statistically significant correlation establishes that there is a relationship between these two constructs which would be evidence of convergent validity. Because this dissertation is a comparison of the psychometrics between two sample sets, this procedure to assess convergent validity will be carried out separately for each sample. The resultant correlations will be compared with each other via χ^2 tests that assess invariance between the two samples.

CHAPTER III

Results

Missing Data

Data missingness was analyzed using the recommendations of Enders (2010). For the initial data sample, 345 participants began the survey. The missing values in this sample showed a general/haphazard response pattern, indicating no systematic patterns of nonresponse. In accordance with recommendations by Olinsky et al. (2003) Participants with more than 24% missing information were excluded from data analyses. The remaining missing values were managed by using single imputation. After removal, the final sample of 162 participants had no more than 20% missing data for these two measures; of those, 137 had 100% complete data.

Descriptive Statistics

Racial/ethnic and sexual orientation demographic information of the sample are shown in Tables 1 and 2, including breakdowns by age group. In terms of racial/ethnic make, 11.5% of the total sample identified as Asian, 5.8% identified as Black, 11.5% identified as Hispanic/Latino, 56.1% identified as Caucasian, 10.1% identified as Mixed/Biracial, and 5.1% identified as another race/ethnicity. In terms of sexual orientation, 69.8% of the total sample identified as heterosexual, 1.4% identified as gay/lesbian, 18% identified as bisexual, and 10.8% identified as another sexuality or preferred not to say. Ages ranged from 13-60. The mean age in the adolescent age group (13-17) was 15.46 (SD = 1.21); for emerging adults (18-25) the mean age was 21.23 (SD = 2.56); for adults (26+) the mean age was 38.98 (SD = 9.01).

Table 1

Race/ethnicity of sample

Sample	*n*	Asian	Black	Hispanic/Latino	White	Mixed/Biracial	Other
Adolescents	54	5.1%	5.1%	7.7%	53.8%	20.5%	7.7%
Emerging Adults	57	18.2%	5.5%	14.5%	47.3%	7.3%	7.3%
Adults	51	8.9%	6.7%	11.1%	68.9%	4.4%	--
Total	162	11.5%	5.8%	11.5%	56.1%	10.1%	5.1%

Table 2

Sexual orientation of sample

Sample	*n*	Heterosexual	Gay/Lesbian	Bisexual	Other/Not Specified
Adolescents	54	59%	2.6%	23.1%	15.4%
Emerging Adults	57	70.9%	--	16.4%	12.7%
Adults	51	77.8%	2.2%	15.6%	4.4%
Total	162	69.8%	1.4%	18%	10.8%

Model Fit

Byrne (2016) recommended a multi-step process to assess for invariance, beginning with determining a well-fitting baseline model separately for each group. Evaluation of model fit is based on the chi-square statistic and a set of fit indices, namely the comparative fit index (CFI; Bentler, 1990) and the root mean square error of approximation (RMSEA; Byrne, 2001). The comparative fit index is a measure of the closeness of fit between covariance matrix of the sample and the covariance matrix of the proposed model. When assessing model fit, the recommended guidelines suggest that values greater than .95 indicate adequate fit (Byrne, 2010; Hu & Bentler, 1999). RMSEA is a measure of the discrepancy between the covariance matrix of the population and the hypothesized model with optimally chosen parameter estimates (Byrne, 2010); values between .05 and .06 indicate good fit; values between .08 and above indicate

suboptimal fit.

The initial hypothesized models produced fit statistics indicating suboptimal fit; chi-square values and fit indices are shown in Table 3. In light of this, there are several possible options to take in order to respecify the hypothesized model for better fit. First, an exploratory factor analytic approach may be helpful in determining whether a different model structure is a more appropriate fit for the data.

Table 3

Confirmatory factor analyses for SACSEM by age group

Sample	X^2	df	CFI	RMSEA
Adolescents	297.653	152	0.837	0.134
Emerging Adults	309.695	152	0.841	0.136
Adults	328.929	152	0.829	0.153

Note. 'X^2' refers to chi-square values; 'df' is an acronym for degrees of freedom. 'CFI' is the acronym for Comparative Fit Index. 'RMSEA' is the acronym for Root Mean Square Error of Approximation.

I used principal components analysis to determine the structure of the 19 items from the SACSEM. I first screened the data to ensure the suitability of the data for analyses. I used two criteria; the Kaiser-Meyer- Olkin measure of sampling adequacy (KMO; Kaiser, 1970) and the Barlett's Test of Sphericity (Field, 2005). The KMO is a value from 0.00 to 1.00, with values closer to 1.00 suggesting that the data should yield distinct factors in a factor analysis (Field, 2005). The KMO was .96, suggesting acceptable sampling adequacy. Barlett's Test of Sphericity examines whether the population correlation matrix resembles an identity matrix (Field, 2005); Barlett's Test of Sphericity in this dataset was X^2 (171) = 2778.759, $p < .001$, indicating clusters of correlated variables and suggests our data is not a correlation matrix, making it acceptable for principle components analysis. To determine the number of factors for the model, I followed three criteria: a priori theory, analysis of the scree plot, and the Eigenvalue-greater-than-one

criteria suggested by Kaiser (1960). Gebregiorgis et al. (2021) previously identified a unidimensional factor for the SACSEM, which guided the theorized factor structure for this dissertation. Both the scree plot and Eigenvalue-greater-than-one criteria indicated a factor model. Based on the convergence of these different criteria, the single-factor model for the SACSEM was kept. The single factor accounts for 63.9% of the variance.

Factor loadings are seen in Table 4. Factor loading are correlations between the item and the factor it is proposed to belong to. According to Stevens (1992), .4 represents an acceptable cut-off level for factor loadings. All items demonstrate factor loadings above .4 and were included in the single-factor model.

Table 4

Factor loadings for SACSEM items, all age groups

Items	Single factor
Please rate your confidence in the following items…	
Q1 Feeling good about myself	.74
Q2 Managing my housing, food clothes, and medical needs	.66
Q3 Handling feelings of hopelessness and helplessness	.83
Q4 Controlling thoughts that I am going crazy	.79
Q5 Managing my feelings of guilt and self-shame about the assault	.77
Q6 Handling fears of anger/rage at my relationship with the assailant	.64
Q7 Controlling feelings of anxiety and panic	.83
Q8 Coping with loneliness and isolation	.79
Q9 Dealing with nightmares/flashbacks concerning the assault	.80
Q10 Dealing with feelings of shame concerning the assault	.80
Q11 Coping with feelings completely overwhelmed by everything	.83
Q12 Being able to concentrate and effectively handle personal responsibilities	.75
Q13 Controlling thoughts that “I just can’t handle this”	.88
Q14 Trusting others	.69
Q15 Dealing with feelings of sadness	.85
Q16 Controlling negative thoughts about myself	.86
Q17 Coping with the feelings that family and friends just don’t understand	.77
Q18 Handling feelings of embarrassment	.79
Q19 Handling feelings of inadequacy	.83

Modification indices are another possibility to understand sources of misfit. By analyzing modification indices, errors of items in the model may be freed to covary, if there is a logical or theory-driven reason for why two items may be related. However, based on an analysis of the modification indices, it is difficult to justify allowing errors to covary because of the small increases in model fit that would be afforded, and because of the lack of logical or theory-driven reason to allow errors to covary.

Lastly, I analyzed items that may be suitable for removal based on low alpha levels; lower alpha levels indicate poorer fit with the other items on the measure overall. However, only one item had an alpha coefficient below .7, the guideline for an acceptable alpha level (Ponterotto & Ruckdeschel, 2000), and removing this item did not substantially impact the overall fit indices.

Thus, the single-factor, 19-item model shown in Figure 1 represents the best-fitting model across three different age groups: adolescent, emerging adult, and adult, despite suboptimal fit, and for the purposes of this dissertation will be used for invariance testing, despite recommendations by Byrne (2016).

Once the model fit has been established for each group, Bryne (2016) recommends establishing the configural model, or multigroup model. This model is a combination of the individual model specifications and assesses the degree to which the same pattern of freely estimated parameters is the same across group.

Lastly, I assessed the measurement model; this is structurally the same as the configural model but with factor loadings constrained to be equal. I then compared the fit indices between the measurement model, with factor loadings constrained equal, and the original configural model, without factor loadings constrained to be equal, in order to determine whether or not

these models are statistically significantly different. Statistically significantly differences in models would suggest that there are sources of invariance in patterns of responding between age groups, whereas no statistically significantly differences suggest that there are no systematic differences in responding to the measure based on age. Although I compared three different groups overall, I compared two groups at a time incrementally to best determine any source of invariance, first comparing adolescents and emerging adults, and then emerging adults and adults.

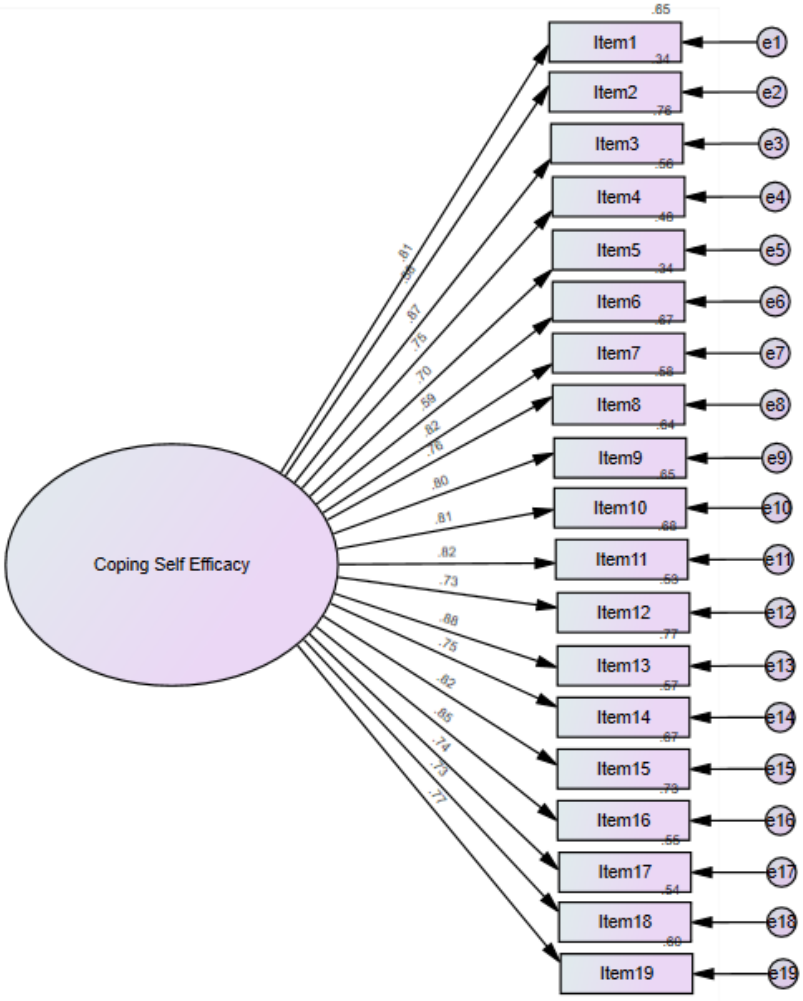

Figure 1. The baseline model for the SACSEM with factor loadings for adolescents.

Fit indices of the configural and measurement models are shown in Tables 5 and 6, including chi-square difference test significance levels, with significance levels greater than .05 representing no statistically significant difference between models.

Table 5
Fit indices of configural and measurement models with adolescents and emerging adults

Model description	X^2	df	ΔX^2	Δdf	Statistical significance	CFI	ΔCFI
Configural model; no equality constraints imposed	607.347	304	___	___	___	.839	___
Measurement model: All factor loadings and error covariances constrained equal	613.941	342	6.594	38	p = .9998	.845	.006

Table 6
Fit indices of configural and measurement models with emerging adults and adults

Model description	X^2	df	ΔX^2	Δdf	Statistical significance	CFI	ΔCFI
Configural model; no equality constraints imposed	638.624	304	___	___	___	.835	___
Measurement model: All factor loadings and error covariances constrained equal	646.531	322	7.885	18	p = .9803	.840	.005

Note. 'X^2' refers to chi-square values; 'df' is an acronym for degrees of freedom. 'Δ' is the capital Greek letter, Delta, which indicates change in indices. 'CFI' is the acronym for Comparative Fit Index.

Convergent Validity

The second objective of this dissertation was to establish concurrent validity, that is, to assess how well the SACSEM maps onto another already established measure. I selected the Coping Strategies Inventory, Short Form (CSI-SF), which measures the use of specific coping strategies (e.g., try to talk about it with a friend or family, try not to think about the problem) and organizes them into engagement and disengagement subscales. There is a body of evidence to suggest that high frequency of engagement coping styles (e.g., making a plan of action to confront the problem, talking about it with others) is associated with higher levels of coping self-efficacy, and that disengagement coping styles (trying not to think about it, hope the problem will take care of itself) is associated with lower levels of coping self-efficacy (Bosmans et al., 2015; Creasley et al., 1997; Rodkjaer et al., 2014). Thus, seeing this same pattern of high correlations between engagement coping styles and high coping self-efficacy, and disengagement and low coping self-efficacy will provide evidence of convergent validity for the SACSEM.

To begin analyzing the data, I compared the means of CSI-SF engagement items, CSI-SF disengagement items, and SACSEM total scores across age groups in order to see if there were any significant differences between levels of coping between age groups, Results are shown in Tables 4 and 5**.** A series of one-way ANOVAs indicates that there are no statistically significant differences between age groups on self-reported scores of engagement coping (F[2,134] = .373, p = .689, η^2 = .006), disengagement coping (F[2,134] = 1.01, p = .367, η^2 = .015), or coping self-efficacy (F[2,159] = 1.92, p = .15, η^2 = .024).

To analyze how these levels of coping styles are correlated to coping self-efficacy, I correlated the mean SACSEM scores, the mean engagement scale items, and mean

disengagement scale items on the CSI-SF separately for each age group. The results are shown in Table 7. For adolescents, the correlation between coping self-efficacy and engagement style coping was .554 ($p < .001$); for emerging adults, the correlation is .329 ($p = .014$); for adults, the correlation is .428 ($p = .004$). The first hypothesis, that coping self-efficacy is positively associated with engagement coping styles, is supported by the results of the correlations in this sample, as all correlations are strong, positively associated, and statistically significant.

For adolescents, the correlation between coping self-efficacy and disengagement is -.190 ($p = .252$); for emerging adults, the correlation is -.263 ($p = .053$); for adults, the correlation is -.476 ($p < .001$). While the adolescent and adult correlations are not statistically significantly different ($z = -1.414$; $p = .079$), these findings are still contrary to the second part of the hypothesis to assess convergent validity, as coping self-efficacy has a weaker association with disengagement coping styles than predicted.

Table 7
Means and standard deviations of self-reported engagement, disengagement, and CSE by age group

Age Group	Engagement *M (SD)*	Disengagement *M (SD)*	CSE *M (SD)*
Adolescents	23.84 (6.74)	19.11 (4.55)	62.89 (17.67)
Emerging Adults	24.82 (5.76)	18.58 (4.69)	65.1 (17.46)
Adults	23.94 (6.14)	17.64 (5.1)	58.47 (18.17)

I also looked at the correlations between engagement and disengagement coping strategies across age groups, which are shown in Table 8. These correlations also show a pattern of being weak and not statistically significant in adolescents, contrary to the strong negative correlation that I hypothesized; however, among adults the correlation is stronger and negative, approaching statistical significance ($r = -.266$, $p = .081$). To say another way, adolescents are

engaging in engagement and disengagement strategies indiscriminately, while among adults, there is a clearer differentiation between the two styles of coping that is not seen in younger age groups.

Table 8

Correlations between engagement coping, disengagement coping, and CSE by age group

Age Group	*n*	ENG/CSE	*p*	DIS/CSE	*p*	ENG/DIS	*p*
Adolescents	54	.554*	<.001	-.190	.252	-.110	.510
Emerging Adults	57	.329*	.014	-.263	.053	-.120	.381
Adults	51	.428*	.004	-.476*	<.001	-.266	.081

Note. ENG refers to Engagement. DIS refers to Disengagement. CSE refers to Coping Self-Efficacy.
* indicates statistical significance at $p < .05$

CHAPTER IV

Discussion

Main Findings

The main findings of this dissertation emerge from the two main questions: is the SACSEM instrument invariant across age groups, and do the responses map onto another already validated measure of coping? Unfortunately, the SACSEM in this sample demonstrated suboptimal fit as a measure of coping self-efficacy as indicated by fit indices such as the CFI and RMSEA. However, a comparison of the fit indices between configural and measurement models indicated no significant differences between age groups in the structure of the SACSEM instrument, or in response patterns, indicating that, despite suboptimal fit, there were no systematic differences observed by age in how coping sexual assault coping self-efficacy can be measured. Given research indicating that trauma responses may differ by age (Hamblen & Barnet, 2016; Shaw, 2000), clinicians and researchers who may wish to assess or target coping self-efficacy may find it helpful to know that coping self-efficacy appears to be measured similarly across age groups.

The second part of this dissertation, which focused on establishing the convergent validity SACSEM by correlating it with a measure of coping strategies, yielded a difference in results based on age. I initially hypothesized that coping self-efficacy as measured by the SACSEM would be positively correlated with high scores of active coping strategies as measured by the CSI-SF, and negatively correlated with avoidant coping strategies. The initial part of this hypothesis was confirmed, as across all age groups, active coping strategies and coping self-efficacy were strongly correlated. However, the negative correlation between coping self-efficacy and avoidant coping strategies was not as strong, and in fact was weak and not

statistically significant among adolescents, was trending statistically significant among emerging adults, and only reached a strong correlation that was statistically significant among adults. That is, among younger age groups, avoidant coping strategies are not related to lower self-reported coping self-efficacy, while this is a strong relationship among adults. These findings cannot be explained by age groups using coping strategies in different amounts or reporting different levels of coping self-efficacy, as there are no observe differences between the age groups in their use of coping strategies or self-reported coping self-efficacy.

Additionally, while I anticipated a negative correlation between the use of active and avoidant coping strategies, this relationship was much weaker than anticipated. Among adolescents, there was no statistically significant relationship between these types of strategies, indicating that, among younger age groups, the use of active and avoidant style coping are used alongside each other more, with increased discrimination between strategies as age increases.

The relationship between CSE and avoidant coping as a function of age is surprising, and to my knowledge there has not yet been a published comparison of this relationship by age groups. Extant literature establishing the relationship between CSE and coping styles typically focuses on adults (e.g., Bosmans et al., 2015), or on the positive correlation between CSE and active strategies (e.g., Rodkjaer et al., 2014). The lack of relationship between CSE and avoidant coping strategies was noted by Creaseley et al. (1997) in a sample of young children, though this finding was somewhat ancillary to the rest of the study and it being a product of younger ages was not emphasized.

One potential explanation for why avoidant coping strategies may not be correlated with CSE in younger ages is that these age groups tend to use coping strategies indiscriminately (i.e., employment of both active and avoidant strategies). Learning that different types of strategies are

associated with higher CSE may be an insight that emerges from age and from repeated use of these strategies as someone gets older. This is seen in the data by the strong differentiation observed among adults between active and avoidant coping strategy use. Additionally, it is possible that the avoidant coping strategies asked on the CSI-SF (e.g., "I hope the problem will take care of itself," "I hope for a miracle") represent a low level of control over the situation that is more typical for adolescents, whose lives are still largely controlled by their parents (Aldwin, 2011) but cause more distress for adults for whom this low level of autonomy presents a larger challenge. That is, because adolescents are already used to a lower level of control and autonomy in their lives, coping strategies that emphasize lack of control may be less distressing than they would be to adults.

Clinical Implications

This dissertation has several practical implications for clinicians. First, it emphasizes the importance of CSE as a major clinical consideration following sexual assault, as, even when sub-optimally conceptualized, it is strongly correlated with the use of active coping strategies across the lifespan. Clinicians who are working on building coping strategies and assessing for what strategies a client is already using should also be mindful that younger age groups appear to show less differentiation in their types of strategies employed, (i.e., they are more likely to engage in both active and avoidant strategies compared to older age groups). While adolescents are not yet reporting a strong relationship between avoidant coping strategies and self-efficacy, a strong negative correlation does appear as individuals age. Psycho-education and early interventions focused on the impacts of avoidant coping may be particularly helpful for adolescents in preparing them for learning how to employ active coping strategies when they are older. Because active coping strategies show strong positive correlations with CSE across age

groups, therapies that focus on building these skills (e.g., CBT, DBT) may be the most effective way to increase CSE in these populations.

Limitations

The findings of this dissertation should be considered alongside its limitations. Two of the main limitations are intertwined: the low sample size, and the suboptimal fit of the SACSEM. A power analysis conducted before any other statistical procedures were carried out indicated that I needed a minimum of 87 participants per group in order to be properly powered. This number was not met for any of the groups. Indeed, the fit statistics of a hypothetical model of the current sample in which all ages are included (N = 162) still does not meet this minimum sample size, but yields fit statistics much closer to the traditional ranges of acceptable fit (CFI = .898; RMSEA = .107), and closer to fit indices reported by other investigators analyzing the SACSEM before modification indices were applied. Gebregiorgis et al. (2021), for example, report CFI = .881 and RSMEA = .114 for a one-factor model before modification indices. With a large sample size, traditional methods to improve model fit such as using modification indices to allow errors to covary or deleting items may be a plausible solution to reaching appropriate fit, despite these methods resulting in only marginal changes in fit indices with the small sample size in this dissertation.

Data collection is a somewhat more challenging process for adolescents than it is for other age groups. Consultation with KCSARC staff indicated that adolescents are the age group least likely to have consistent, reliable access to either method of contact (phone, e-mail). They may rely on their parents' phone or a shared e-mail account or only be allowed access to the internet for certain periods of time or on certain days. Additionally, if the teen splits their time between parent households, their internet access dependent on which parent they are staying

with. While this does not pose a substantial barrier to survey completion for many of the adolescents who did answer the surveys in this sample, even having some of these additional barriers may have differentially impacted the ability to collect data from this age group. One possible solution is the ability to offer an in-person, paper-and-pencil version of the assessments offered while at KCSARC, so that survey completion is not determinant on access to internet at home.

Lastly, while this dissertation represents an attempt to study demographic variables that factor into sexual assault coping self-efficacy, it is still limited by not accounting for gender (only females are included in this study). Further, these analysis did not control for sexual orientation or race.

Future Directions

Future directions should focus on addressing the shortcomings of this study, and further analyzing reasons for the differences in the relationship seen between CSE and avoidant coping strategies in younger age groups. A future study with similar methodology but a larger sample size accrued over a longer period of time may produce more compelling results, specifically on the SACSEM's utility as a measure of CSE for adolescents and adults. Furthermore, analyzing data by demographics such as race, gender, and sexual orientation may offer further insight into how CSE and coping strategies may be influenced by these demographics. Sexual orientation may be a particularly important variable, given the high rate of individuals identifying as bisexual in the current sample compared to the general population. Research on males' responses to sexual assault has also been rare because of difficulties obtaining large enough samples and investigating coping responses in this population remains a critically under-researched area. Lastly, future research can look at the relationship between CSE and avoidant coping strategy

use in an attempt to explain how this relationship changes as individuals age. A more granular approach to measuring age could provide a deeper understanding of how this relationship evolves over time and studying additional variables such as perceived locus of control may offer additional insight into what other factors may be influencing this relationship.

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