sexes

MDPI

Article

Revising the Original Antonovsky Sense of Coherence Concepts: A Mixed Method Development of the Sense of Meaning Inventory (SOMI)

Denise M. Saint Arnault [1,*] and Zeynep Zonp [2]

[1] School of Nursing, University of Michigan, Ann Arbor, MI 48109, USA
[2] College of Nursing, Wayne State University, Detroit, MI 48202, USA; zeynepzonp@wayne.edu
* Correspondence: starnaul@umich.edu

Abstract: Trauma recovery research requires the development of instruments that capture gender-based violence (GBV) survivor recovery phases. The salutogenic concepts in Antonovsky's Sense of Coherence (SOC) (manageability, comprehensibility, and meaning) could help capture trauma recovery stages, but the factorial structure of the SOC-13 has remained problematic. Moreover, most SOC revisions generally abandon the original intent of the SOC-13, developing scales that capture essential but different aspects of positive psychology. This study used mixed methods to develop the Sense of Meaning Inventory (SOMI), preserving the original concepts but updating the language, removing cultural idioms, and revising the response scales to stabilize the subscales. The qualitative phase evaluated and updated the items of the scale while retaining the original concepts. The quantitative phase conducted a two-sample psychometrics reliability and validity evaluation of the new scale with GBV survivors, finding a three-factor solution. This scale may be more amenable for international research and theory testing in GBV and other health conditions.

Keywords: sense of coherence; meaning and purpose in life; mixed methods research; trauma recovery; salutogenic; women's health

Citation: Saint Arnault, D.M.; Zonp, Z. Revising the Original Antonovsky Sense of Coherence Concepts: A Mixed Method Development of the Sense of Meaning Inventory (SOMI). *Sexes* **2024**, *5*, 596–610. https://doi.org/10.3390/sexes5040039

Academic Editor: Erika Limoncin

Received: 28 May 2024
Revised: 7 October 2024
Accepted: 14 October 2024
Published: 30 October 2024

1. Introduction

Gender-based violence (GBV) disproportionately affects women worldwide, regardless of socioeconomic conditions or ethnicity, and is any act of violence that results in physical, sexual, or psychological harm or suffering to women and girls [1]. GBV survivors are at increased risk of depression and suicide attempts, physical injuries, unwanted pregnancies, HIV, and other sexually transmitted diseases, and are at increased risk of being killed by a partner [2], as well as Post-Traumatic Stress Disorder (PTSD), depression, and suicidal ideation [3–5], substance abuse and dependence disorders, eating disorders, somatoform disorders, and other medically unexplained symptoms [6,7]. While most research examines the risk factors, our work is focused on protective factors that can mitigate the impact of trauma on health [8]. Protective factors include social support, self-efficacy, resilience, goal-directed coping strategies, and having a 'sense of coherence' [9–12]. This study focuses on the measurement of a sense of coherence.

1.1. Sense of Coherence as a Protective Factor After GBV

Sense of Coherence (SOC) is defined as "a global orientation that expresses the extent to which one has a pervasive and enduring, though dynamic, feeling of confidence that one's internal and external environments are predictable, and that there is a high probability that things can work out as well as can reasonably be expected" (Antonovsky, 1987, p. 19, [13]) [14,15]. The sense of coherence instrument (SOC-13) is a widely used seven-point semantic differential scale that examines the three hypothesized domains of the construct of the sense of coherence, including manageability, comprehension, and

meaning. These concepts are further divided into cognitive, behavioral, and motivational facets. Cognitive facets are the evaluation of one's life. Behavioral facets reference actions people take. Motivational facets refer to the aspects of our lives that motivate us to act. Comprehensibility is considered a cognitive facet of the SOC, characterized by individuals' capacity to comprehend their surroundings. The behavioral facet, termed manageability, pertains to the ability to handle situations independently or with the support of the larger social context. The motivational facet, termed meaning, refers to the capacity to derive significance from challenging circumstances. The SOC questionnaire has been translated into more than 60 languages and used in over 50 countries, and most translations and cultural validation studies have endeavored to preserve the original items. The SOC-13 (13-item short version) demonstrated internal consistency and test-retest reliability [16]. In addition, studies have shown construct validity [16,17] and convergent validity with other analogous measures [16]. A meta-analysis of 47 studies that examined the relationship between SOC and post-traumatic stress conducted by Schäfer et al. (2019) [18] found that high SOC-13 levels were linked to less severe PTSD symptoms after a traumatic or stressful life event. They also reported that SOC is a crucial moderator for PTSD symptoms. Furthermore, research shows a negative relationship between SOC-13 and psychopathology [18–20]. The protective effect of SOC may be related to the ability to manage stressors, accurate perception of stressors, and general feelings that life has meaning and value.

The original SOC questionnaire did not intend to differentiate between the three salutogenic components (manageability, comprehensibility, and meaning) as separate constructs because they were viewed as overlapping. While we agree with that theoretically, in trauma recovery research and practice, we need to ascertain how managing, perceiving, and making meaning of stressors, especially after traumatic stress, may map onto phases of trauma healing. The three subscales in the original SOC are essential in measuring trauma recovery for GBV survivors because they conceptually represent aspects of the recovery process. Literature has shown that symptom management might be an essential first step in recovery. However, understanding trauma history's role in one's life and current health is vital to recovery. It could potentially be captured in the comprehensibility concept. In the later stages of recovery, understanding oneself in the larger world and one's life's meaning and purpose may be a step in the trauma integration process, and assessing the meaning component of SOC is also essential. Therefore, preserving the original theorizing of the aspects of SOC can help measure trauma recovery and trauma recovery phases. This study explains the development and psychometric testing of the SOMI (Sense of Meaning Inventory), which was developed to retain the original concepts of the SOC and stabilize the factors for use in the evaluation of GBV recovery.

1.2. Psychometric Issues of the SOC-13 Measure

Studies have shown that the three components of the SOC construct do not appear every time a factor analysis is used. While the factor analyses of the original SOC13 often yield ambiguity, the original conceptualization of SOC and the questionnaire items' design precluded three separate subscales. This strategic design was because while any given item belongs to one of the three components, the items from each subscale share elements of the concepts from the other subscales [13,21]. Antonovsky (1993) [16] writes about the development of the original scale:

> "I made the conscious, theoretically guided choice to have each scale item include four facets that describe a stimulus and a fifth, the SOC facet, which expresses one of the construct's three components (comprehensibility, manageability, or meaning). Since the SOC is seen as a generalized orientation, I wanted to represent as wide a variety of stimuli as possible in the questionnaire".
>
> (Antonovsky, 1993, p. 726, [16])

There has been a longstanding and extensive evaluation of the construct or Sense of Coherence and its factor structure, and a thorough review is available in Eriksson and

Contu [22]. In their roundup, they note that some researchers report it as a unitary construct, while others report 2–5 subscales. They summarize the evidence related to the lability or stability of the sense of coherence subscales in various populations and across the life course. For example, in one study by Lerdal et al. [23], they used Rasch analysis with adults with morbid obesity in Norway. They found that collapsing categories at the low end of the 7-category rating scale improved the overall functioning of the scale and that two items demonstrated poor fit. Once deleted from the scale, the remaining 11-item scale (SOC-11) demonstrated an acceptable item fit. However, neither the SOC-13 nor the SOC-11 met the criteria for unidimensionality, and none of the subscales could distinguish between population subgroups. They concluded that more psychometric examination and refinement of the SOC 13 scale is warranted.

Researchers have found these assumptions about facets and subscales elusive and have often concluded that the inconsistency of the factor structure presents research challenges, particularly for research questions that aim to assess the subscales themselves. Various attempts have been made to improve the psychometric properties of the original scale 29-item version, most notably the development of the 13-item short version (SOC13). Still, researchers find the factor structure unstable [24]. Other studies have indicated a variety of shortcomings, including external validity [25] and stability [26]. In addition, the revisions generally abandon some or all the original intent of the SOC, developing scales that capture essential but different aspects of positive psychology. For example, a recent approach to solving these problems has been the development of the revised Sense of Coherence Scale (SOC-R) by Bachem and Maercker [27]. This instrument defines the SOC as the general ability to perceive life phenomena as connected and to balance positive and negative appraisals of life experiences [28]. However, there were substantial changes to the instrument, notable the factors of "Manageability", "Reflection", and "Balance" [29]. While this is consistent with the Antonovsky (1987) [13] Manageability concept, the Bachem and Maercker SOC-R version focuses on emotional processes and self-awareness processes in the reflection and balance subscales [30]. This version, therefore, omits the original scale's comprehensibility and meaning aspects, making it a measure of theoretical concepts different from the SOC.

1.3. Research Aims

This project sought to preserve the three concepts of SOC and to create a measure called the Sense of Meaning Inventory (SOMI). This new scale assumes that the factors have some interaction but are distinct, allowing researchers to use them as subscales. To do this, we approached the revision of the SOC-13 scale from a different angle. Instead of changing the focus of the SOC, we aimed to separate and clarify the items so that they could reliably measure the three concepts. Therefore, we focused on the semantic differential scale and the reversals, the outdated nature of some items, including a few cultural idioms, and items in the scale that are not explicitly related to the central definitions. We used a mixed-method approach to reworking the SOC-13 scale, starting with a qualitative analysis of the constructs, their concepts, and the items that represented them. This scale revision aimed to retain the original SOC constructs by updating the language, ensuring all the items measured only the SOC concepts, and revising the measurement strategy. A more standard cognitive interviewing stage followed this analysis. Secondly, in two samples, this study examined the resulting SOMI scale's psychometrics (which uses Likert-style items and no reversals) to discover whether our new scale retains the three-factor structure.

This project develops and tests a revision of the SOC-13 scale. We hypothesize that our revision will result in a valid scale with three subscales that are consistent with the original SOC-13 scale (meaning, comprehension, and manageability), that these subscales will demonstrate convergent and discriminate validity, and that the SOMI will explain the variance of depression and PTSD for GBV survivors.

2. Methods and Materials

This mixed-method study used an exploratory sequential approach consisting of a qualitative phase followed by a quantitative one [31]. The exploratory sequential design begins with qualitative methods and then uses the building to integrate those qualitative findings into a quantitative product and analysis [32]. The qualitative Phase 1 involved reviewing literature for contemporary manageability comprehension and meaning instruments and items, revising existing SOC items, and conducting cognitive interviewing with people identifying as women, most of whom were trauma survivors. The quantitative Phase 2 was performing a psychometric evaluation of the resulting scale.

2.1. Sampling

Qualitative Phase 1 sampling: The cognitive interviewing sample was a convenience snowball sample of 10 Americans aged eighteen years or older who self-identified as women.

Quantitative Phase 2 sampling: Quantitative data was gathered from samples recruited through a health system research portal that connects individuals who utilize the broader university healthcare system with research opportunities. Eligible participants were eighteen or older, self-identified as women, and had "experienced gender-based violence of any type". The first sample (n = 291) was gathered between July 2019 and February 2020, and the second (n = 296) was recruited between April and December 2022. The University of Michigan Institutional Review Board exempted all procedures and materials for study 1 (HUM00191183) and approved study 2 (HUM00205708).

2.2. Measures

The measures in this study were employed to conduct psychometric testing. Demographic variables included gender identity, GBV history, current violence, age, education, and employment. Known group reliability was evaluated based on the GBV history variable, categorized as either current or past, as well as depression and a post-traumatic stress disorder (PTSD) symptom severity subgroup. Depressive symptoms were assessed through the Patient's Health Questionnaire 8 (PHQ8) [33], which is an 8-item depression scale that does not include the suicidal thoughts item in the PHQ-9, making it suitable for community-based survey use. Statements are responded to on a 4-point Likert scale anchored at 0 = Not at all to 3 = Nearly every day, and scores are summed. A sum score of 10 or higher on the PHQ8 indicates probable major depression. Cronbach's reliability in our study was 0.90. PTSD was assessed with the Post-Traumatic Stress Disorder Checklist (version 5) scale (PCL-5), which is a 20-item assessment scale [33]. This study used the short-form 8-item version [34]. Statements are responded to on a 5-point Likert scale anchored at 0 = Not at all to 4 = Extremely, and scores are summed. A sum score over 19 indicates probable PTSD. Cronbach's reliability in our study was 0.91.

Convergent validity aims to investigate whether different measures are theoretically associated with each other and demonstrate this relationship practically. This study's convergent validity variables included trauma-coping self-efficacy and recovery. The Trauma Coping Self-Efficacy (CSE-T) scale is a 20-item measure that assesses general trauma-related coping self-efficacy perceptions. We used the 9-item scale [35]. Statements are responded to on a 7-point Likert scale anchored at 1 = Completely incapable to 7 = Completely capable, and responses are summed. Cronbach alpha reliability for our study was 0.85. The 18-item Healing after GBV (GBV-Heal) scale [36] was used to assess trauma recovery. This instrument measures five dimensions of healing on a 5-point Likert scale anchored at 1 = Does not describe my feelings to 5 = Clearly describes my feelings and responses are summed. Cronbach's alpha for our study was 0.95.

Divergent validity evaluates whether the measure effectively measures intended concepts and not closely related concepts and variables. This study examined divergent validity with trauma cognitions and barriers to help-seeking scales. The Post Trauma Cognitions Inventory (PTCI) is a 33-item scale that measures psychopathological trauma cognitions after trauma [37]. Statements are responded to on a 7-point Likert scale anchored

at 1 = Totally disagree to 7 = Totally agree, and responses are summed. Cronbach's alpha for our study was 0.83. The Barriers to Help Seeking-TR scale (BHS-TR) [38] is revised from the Barriers to Care instrument developed for the Ontario Mental Health Epidemiological study that examined service use in the past year. Our 34-item BHS-TR scale used the original 25 items plus an additional nine trauma-specific items [39]. Statements are responded to on a 4-point Likert scale anchored at 0 = Did not influence me to 3 = Strongly influenced me, and scores are summed. The full scale examines internal dimension barriers (I-BHS-TR), which is the sum of the shame, feeling frozen, and problem management beliefs sub scores, as well as external dimension barriers (E-BHS-TR), which is the sum of the discrimination, financial, and constraining forces in the environment sub scores. This study used only the I-BHS-TR dimension. Cronbach's alpha for the I-BHS-TR dimension of the scale in our study was 0.85.

2.3. Analyses

Qualitative Phase 1: For the scale revision aim of this study, we reviewed the literature and conducted a qualitative analysis of each item in the SOC13 to discern the concept it captured and simplify it. The exploratory analysis for phase 1 included (1) Clarifying and defining the constructs and concepts, (2) Rewording reversals into positive wording or rewording cultural idioms, (3) Simplifying questions that were double-barreled, and (4) Converting all items into a 5-point Likert scale. Next, we used cognitive interviewing to evaluate the clarity of the scale and the items [40]. With cognitive interviewing, we tried to understand how participants comprehend, process, and respond to the scale and the items. We asked participants to verbalize their thoughts while answering questions and any challenges they faced in understanding or responding to the items.

Quantitative Phase 2: The SOMI scale's psychometric properties were analyzed using exploratory factor analysis (EFA) with Direct Oblimin rotation (with sample 1) and confirmatory factor analysis (CFA) (with sample 2) for the construct validity. In the CFA, items with a factor loading lower than 0.30 were evaluated as potentially problematic items (such as being double-barreled, problematic wording, etc.). They were removed, and items that double-loaded at 0.30 or higher were excluded from further analyses [40]. Significance was assessed at $p < 0.05$ level. Also, the Kaiser–Meyer–Olkin (KMO) proficiency measurement and Bartlett's sphericity test were used to measure suitability for factor analysis [41].

Next, we used sample 2 two to evaluate the resulting scale using Confirmatory Factor Analysis (CFA), reliability analysis, confirmatory and discriminant analysis, and known group validity. The chi-square/degrees of freedom (CMIN/DF) for acceptable fit were used, and the *p*-value should be >0.05 [42]. The goodness of fit index (GFI) measures the fit between the hypothesized model and the observed covariance matrix. The adjusted goodness of fit index (AGFI) corrects the GFI, which is affected by the number of indicators of each latent variable. The GFI and AGFI range between 0 and 1, with a value of over 0.90, generally indicating an acceptable model fit. The GFI and the AGFI should be >0.95 and >0.90, respectively [43,44]. The comparative fit index (CFI) analyzes the model fit by examining the discrepancy between the data and the hypothesized model. CFI values range from 0 to 1, with larger values indicating better fit [45]. The root mean square error of approximation (RMSEA) [43,46]. The Normed Fit Index (NFI) of 0.95 indicates that the model improves the fit by 95 [43]. The Tucker-Lewis index (TLI) over 0.90 indicates that the model fits well [43]. The Incremental Fit Index (IFI) adjusts the Normed Fit Index (NFI) for sample size and degrees of freedom [47].

Discriminant validity was evaluated with the Average Variance Extracted (AVE) and Maximum Shared Variance (MSV) computations. AVE should exceed MSV, indicating that the latent variable has more in common with the related items than it has with related concepts [48,49]. Known group validity is a method used to assess the validity of a questionnaire by comparing the scores for two groups that are known to differ on a specific variable. We examined known groups' validity using *t*-tests for groups with reported current violence in the last year and those with probable depression and PTSD. We also

examined correlations and regression analysis to explore interrelationships between the SOMI and other key variables. Analysis was conducted with SPSS and Amos, version 29 [50].

3. Findings and Results

3.1. Participant Characteristics

The cognitive interviewing sample consisted of 10 women aged 35–65, and 2/3rd of them said "Yes" when asked if they had ever experienced GBV, but we did not ask about the type of violence. Two women had high school education, four had college degrees, and two had advanced college degrees.

Psychometric samples. The demographic data for both samples are shown in Table 1. Sample 1 comprised 291 GBV survivors with a mean age of 37.9 years (SD = 14.8), and about 46% had children. Over half of the sample had college degrees, and about half worked. Income, insurance status, and racial/ethnic identity were not assessed. Depression and PTSD screening tools assessed distress scores. Mean PHQ8 scores were 11.3 (SD = 6.5), and about 27.1% of the sample had probable depression. Mean PTSD screen scores were 2.1 (SD = 1.5), and almost half had probable PTSD (43.6%). About 25% experienced GBV in the last year or were currently experiencing GBV. The type of GBV was elicited as "all that apply", so the types were not mutually exclusive. Over half of the sample reported physical abuse, and 2/3rds reported a history of sexual abuse.

Table 1. Demographics.

Demographic Variables	***n* = 291**	***n* = 296**
	Sample 1	Sample 2
	M (SD.)	M (SD.)
Age	37.9 (14.8)	37.9 (14.8)
Migration history	5.5%	2%
Employment (not mutually exclusive)		
Working	46%	54%
Unemployed, looking for work, Working in the home	17%	25.%
Student	16%	23%
Retired or disabled	20%	15%
Education		
High school and/or technical school	22%	22%
College or college graduate	39.2%	60%
Postgraduate	29.2%	24%
Children	46.4%	Unknown
PHQ8		
Probable depression	27%	54%
PTSD		
Probable PTSD	44%	32%
GBV in the last year (missing = 8)		
Yes	72	85
No	211	211
Violence type (not mutually exclusive)		
Physical violence	55%	82%
Sexual violence	67%	71%

Sample 2 was comprised of 296 GBV survivors who had a mean age that was identical to sample 1: 37.9 years (SD = 14.8). About 5% of the sample identified as transgender or gender-non-conforming. The sample predominately identified as Caucasian (81%), with 7% identifying as Black/African American, 8% as Asian, 5% as Hispanic, and 2.4% as Native/Alaskan Native or Pacific Islander. Two percent indicated they had immigrated. About two-thirds of the sample had some college education, and half worked. Distress scores were

assessed by depression and PTSD tools. Mean PHQ8 scores were 10.9 (SD = 6.0), and about 54% of the sample had probable depression. Mean PCL-5 scores were 14.7 (SD = 8.2), and about one-third had probable PTSD (32%). About one-third experienced GBV in the last year or were currently experiencing GBV. Most of the sample reported either or both physical and sexual abuse histories.

3.2. Qualitative Phase 1: Scale Revision and Cognitive Interviewing

Phase 1 required working definitions of the three SOC-13 constructs and their sub-concepts. Manageability is understood as the instrumental or behavioral dimension of SOC. Manageability is defined in this study as the perceived ability to manage different types of stressors, the belief that one has adequate inner resources to meet life's demands, and a positive assessment of personal competencies. It is comprised of the sub-concepts of self-efficacy and emotional self-efficacy. Self-efficacy is a person's confidence in their ability to complete a task or achieve a goal. Emotional self-efficacy is confidence in one's ability to control emotions and emotional responses to situations.

Comprehensibility is understood as the cognitive dimension of SOC. Comprehensibility is defined in this study as the extent to which one perceives internal and external stimuli as predictable, understandable, explainable, orderly, coherent, clear, and structured. Comprehensibility is the basis for future expectations related to how one understands the world. It is comprised of the sub-concepts of sense-making and self-insight. Sense-making is the action or process of making sense of something, especially an ambiguous situation, and requires situational awareness and understanding of complexity or uncertainty to make decisions. Self-insight is the ability to perceive and understand what makes one who they are and why they do what they do, including their emotions and thoughts.

Meaning is understood as the motivational dimension of SOC. Meaning is defined in this study as the value and importance of one's life, the extent to which demands in life are viewed as worth investing in and engaging with, knowing what one's life is about, and how one fits into the world around them; feeling the significance of living; and enjoying the act of living. It comprises the sub-concepts of purpose in life and life satisfaction. Purpose in life is defined as goals or action-oriented motivational aims of one's life. Purpose in life can guide life decisions, influence behavior, shape goals, offer a sense of direction, and create meaning. Life satisfaction is a stable and long-lived general feeling about one's life and how pleased they are with how it's going.

The lead author evaluated each item of the SOC-13 based on the working definitions and was either retained, reworked, or dropped (see Table 2). For example, after creating the working definitions of the three concepts, items that examined different aspects were removed, or items that represented more than one concept were split. We dropped SOC-13 items #3, 5, and 9 because they did not map onto the concepts. We reversed the wording for items 1, 8, 10, 12, and 13 into positive wording. For clarity, we revised the wording for 1, 2, 4, 6–8, and 10–13. Finally, we created 12 new items to ensure we had enough items to capture some of the SOC-13's less explicated concepts accurately. The resulting 22-item scale was used in the next Cognitive Interviewing (CI) phase.

Table 2. Qualitative Evaluation of the SOC-13 Items.

SOC-13 Construct	SOC Concept	Original SOC Item	Qualitative Analysis of the Concept	Changes in the Item for Cognitive Interviewing	Final Item for Final CFA Psychometric Testing
Manageability		SOC3: Has it happened that people whom you counted on disappointed you?	Disappointment in social relationships (Similar to SOC2)	Dropped	
		SOC5: Do you have the feeling that you're being treated unfairly?	Fairness, justice	Dropped	
	Self-efficacy	SOC10: Many people—even those with a strong character—sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?	Feeling ineffective	New: I feel like I know what to do and how to do it	Item 1 Double loaded, dropped
				Reversed and revised: I believe I have the strength and capacity to deal with what life offers.	Item 2 Double loaded, dropped.
				New: I believe I am capable of being as emotionally strong as I need to be	Item 3 Double loaded, dropped
				New: I know how to manage the situations in my life	Item 4
	Emotional self-control	SOC13: How often do you have feelings that you're not sure you can keep under control?	Control of feelings	Reversed and revised: I believe that I can manage my negative feelings	Item 5 Double loaded, dropped
				New: I can express happiness and joy when things go well	Item 6 Low loading, dropped.
Comprehensibility	Sense-making, predictability, certainty	SOC2: Has it happened in the past that you were surprised by the behavior of people whom you thought you knew well?	Understanding the motives of others	Revised: I generally feel I understand the people in my social world	Item 7: I understand the people in my social circle; weak loading, dropped.
				New: I understand the way things work and my role within them	Item 8 double-loaded dropped.
		SOC6: Do you have the feeling that you are in an unfamiliar situation and don't know what to do?	Don't know what to do	Revised: I recognize what is happening and what I need to do	Item 9
		SOC11: When something happened, have you generally found that: 1 You overestimated or underestimated its importance: 7 You saw things in the right proportion	Things seem out of proportion	Revised: The world is understandable and predictable	Split after CI Item 10: I can understand why things in my life happen as they do. Item 11: I can usually predict how things will go in my life
	Self-insight; clarity of self-understanding	SOC8: Do you have very mixed-up feelings and ideas?	Understanding your own feelings	Reversed and revised: I understand why I feel the way I do	Item 12
				New: I usually have a clear sense of why I do what I do	Item 13: I have a clear sense of why I do what I do
				New: I can see the link between my situations and my feelings and behavior	Item 14: I can see the connection between my situations and my feelings
				New: I understand my motivations and my behaviors	Dropped after CI.
		SOC9: Does it happen that you have feelings inside you would rather not feel?	Painful feelings	Dropped	
Meaning	Purpose in life	SOC4: Until now your life has had: 1 No clear goals or purpose at all: 7 Very clear goals and purpose	Clear purpose	Revised: My life has clear goals and purpose	Item 15: My life has clear goals. Item 16: I think my life has a clear purpose.
				New: I understand what I want and how to accomplish it	Item 17: I understand what I want and need-Double loaded, Dropped.
				New: I am active in making my life the way I think it should be	Item 18
	Life satisfaction	SOC7: Doing the things you do every day is: 1 A source of deep pleasure and satisfaction: 7 A source of pain and boredom	Life satisfaction	Revised: My daily life is a source of satisfaction	Item 19
				New: I think my life is excellent	Item 20
	Sense of meaning	SOC12: How often do you have the feeling that there's little meaning in the things you do in your daily life? 1 Very often: 7 very seldom or never	Meaning	Reversed and revised: My life is meaningful and worth living	Item 21
		SOC1: Do have the feeling that you don't really care about what goes on around you? 1 Never happened: 7 Always happened	Apathy	Reversed and revised: I feel involved and interested in my life	Item 22
				New: I am a significant part of the world around me	Item 23: I believe I am a significant part of the world around me

Cognitive interviewing. Results from the cognitive interviewing included creating a stem for the overall scale that invites the participant to reflect on their life overall, using the phrase "in general" before each question, and framing the entire scale as looking at life overall. Interviewed participants reflected that the terms "understandable and predictable" and "goals and purpose" differed, so those items were broken apart. The concept of the social world (that we had developed) was changed to the social circle. In summary, one item was dropped (I understand my motivations and behavior), 2 items were split, and one was revised, leaving a 22-item revised scale that was then tested psychometrically with two samples of GBV survivors.

3.3. Phase 2: Psychometric Testing

3.3.1. Construct Validity and Principal Component Analysis

Exploratory factor analysis (EFA) was used to evaluate the construct validity of the SOMI with the first sample. Principal Component Analysis (PCA) with Direct Oblimin rotation was conducted, and three components with eigenvalues exceeding 1 were identified,

which captured 75.8% of the total observed variance. Eight items were either weakly loaded or double-loaded in the analyses (items #1–3, 5–8, and 17), so these items were removed. One item, #4 ("I know how to manage the situations in my life"), loaded on both factor 1 (meaning) and factor 3 (manageability), but we chose to keep it in the manageability factor since the item references management. The KMO value of sampling adequacy for the sample's responses is 0.949 for this final 3-factor model, indicating EFA's appropriateness [51]. Bartlett's sphericity test provided a p-value of 0.00 ($\chi^2(120) = 3840.205$), so the null hypothesis could be rejected, and the factorability of the correlation matrix was supported [52]. The final model included three components on the 15-item final scale that used a 5-point Likert scale, anchored from 1 (Seldom or never) to 5 (Always). Cronbach's alpha reliability values for meaning, comprehension, and manageability subscales of the SOMI were 0.94, 0.85, and 0.86, respectively. The pattern matrix is presented below in Table 3.

Table 3. Oblimin Principal Component Analysis Sample 2 (n = 296).

	Component		
	1	**2**	**3**
Meaning (α = 0.94; AVE = 0.68; MSV = 0.70)			
SOMI19 I feel my daily life is a source of satisfaction	0.857		
SOMI20 I think my life is excellent	0.826		
SOMI22 I feel involved and interested in my life	0.930		
SOMI23 I believe I am a significant part of the world around me	0.885		
SOMI15 I think my life has clear goals	0.669		
SOMI21 I find my life is meaningful and worth living	0.920		
SOMI18 I am active in making my life the way I think it should be	0.742		
SOMI16 I think my life has a clear purpose	0.813		
Comprehension (α = 0.85; AVE = 0.69; MSV = 0.63)			
SOMI14 I can see the connection between my situations and my feelings		0.778	
SOMI12 I understand why I feel the way I do		0.792	
SOMI13 I have a clear sense of why I do what I do		0.852	
Manageability (α = 0.86; AVE = 0.57; MSV = 0.70)			
SOMI11 I can usually predict how things will go in my life			0.849
SOMI10 I can understand why things in my life happen as they do			0.767
SOMI9 I Recognize what is happening in my life and what I need to do			0.616
SOMI4 I know how to manage the situations in my life	0.380		0.614
Cronbach's reliability for the 15-item scale was 0.95			

3.3.2. Confirmatory Factor Analysis

We used a second sample CFA to confirm the 3-factor model that we identified with EFA. The root mean square error of approximation (RMSEA) was within the range of reasonable fit at 0.088 for the scale [46], and the chi-square/degrees of freedom (CMIN/DF) value was 2.891, which showed an acceptable fit [42]. The scale's model's fit indices were improved by creating a covariance between e1 and e2, e3 and e6, e6 and e8, and e10 and e11. All fit indices were acceptable (see Table 4). The analysis further revealed a consensus between the scree plot and the 3-factor model fit. The 3-factor model for CFA is presented in Figure 1, and the CFA model fit indices are presented in Table 4.

Table 4. Fit Indices for the Confirmatory Factor Analysis (Sample 2).

Fit Index	Acceptable Values	Perfect Values	Actual Values for Sense of Meaning Inventory
CMIN/Df	$0 \leq \chi^2/df \leq 3$	$3 \leq \chi^2/df \leq 5$	2.010
GFI	$0.80 \leq$ GFI	$0.90 \leq$ GFI	0.932
AGFI	$0.80 \leq$ AGFI	$0.90 \leq$ AGFI	0.900
CFI	$0.85 \leq$ CFI	$0.95 \leq$ CFI	0.977
RMSEA	$0.0 \leq$ RMSEA ≤ 0.05	$0.06 \leq$ RMSEA ≤ 1.0	0.059
NFI	$0.80 \leq$ NFI	$0.95 \leq$ NFI	0.956
TLI	$0.80 \leq$ TLI	$0.90 \leq$ TLI	0.971
IFI	$0.85 \leq$ IFI	$0.95 \leq$ IFI	0.978

CMIN/Df: the chi-square/degrees of freedom, GFI: the goodness of fit index, AGFI: the adjusted goodness of fit index, CFI: the comparative fit index, RMSEA: the root means square error of approximation, NFI: the normed fit index, TLI: the Tucker-Lewis Index, IFI: the incremental fit index.

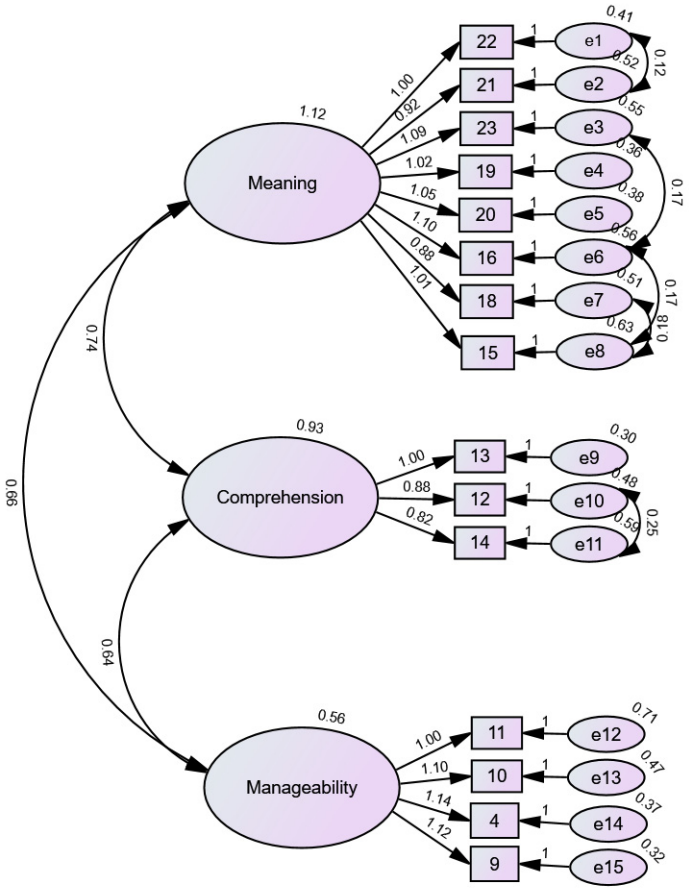

Figure 1. Unstandardized model of Confirmatory Factor Analysis for SOMI (Sample 2).

3.3.3. Convergent and Discriminant Validity

Convergent validity was assessed with the GBV-Heal scale and the Trauma Self-Efficacy scale (CSE-T). The SOMI showed a significant strong positive correlation with the GBV-Heal (r = 0.83) and a significant moderate positive correlation with the CSE-T (r = 0.56). Discriminant validity was assessed with the Post-Trauma Cognitions Inventory (PTCI) and the Barriers to Help Seeking Internal dimension scale (sums of the Problem Management, Shame, and Frozen subscales) (I-BHS-TR). There were strong significant positive correlations between GBV-Heal and SOMI-ME (r = 0.796), SOMI-CO (r = 0.641), and SOMI-MA (r = 0.685), as well as between CSE-T and SOMI-ME (r = 0.517). There were moderate significant positive correlations between CSE-T, SOMI-CO (r = 0.445), and SOMI-MA (r = 0.496). There was a strong significant negative correlation between SOMI

ME and PTCI ($r = -0.513$) and moderate significant negative correlations between PTCI and SOMI-CO ($r = -0.391$) and SOMI-MA ($r = -0.461$). There were weak significant negative correlations between Internal Barriers to Help Seeking (I-BHS-TR) and SOMI-ME ($r = -0.239$), SOMI-CO ($r = -0.227$), and SOMI-MA ($r = -0.221$). All correlations were significant at the 0.01 level. The intercorrelations among the variables are in Table 5.

Table 5. Correlation Matrix for Sample 2.

	PHQ8	PCL5	Heal	IBHS	PTCI	CSE-T	SOMI-ME	SOMI-CO	SOMI-MA
PHQ8	-----								
PCL5	0.782	-----							
Heal	−0.516	−0.421	-----						
IBHS	0.420	0.502	−0.298	-----					
PTCI	0.526	0.559	−0.493	0.524	-----				
CSE-T	−0.598	−0.641	0.571	−0.484	−0.564	-----			
SOMI-ME	−0.599	−0.529	0.796	−0.239	−0.513	0.517	-----		
SOMI-CO	−0.443	−0.331	0.641	−0.227	−0.391	0.445	0.609	------	
SOMI-MA	−0.476	−0.431	0.685	−0.221	−0.461	0.496	0.734	0.699	-----

PHQ8 = Patient's Health Questionnaire 8 item Sum; PCL5 = Post-Traumatic Stress Disorder Checklist Sum; PTCI = Post-Trauma Cognitions Inventory Sum; CSE-T = Trauma Self-Efficacy scale SUM; IBHS = Internal Barriers to Help-Seeking Scale Internal dimension Sum; Heal = GBV-Heal Sum; SOMI-ME = SOMI Meaning Subscale; SOMI-CO = SOMI-Comprehension subscale; SOMI-MA = SOMI Manageability subscale. All correlations are significant at $\leq$0.01 level (2-tailed).

Discriminant validity was determined using AVE and MSV values. The Average Variance Extracted (AVE) values for factors SOMI-ME, SOMI-CO, and SOMI-MA were 0.68, 0.69, and 0.57, respectively. The Maximum Shared Variance (MSV) for factors SOMI-ME, SOMI-CO, and SOMI-MA were 0.70, 0.63, and 0.70, respectively.

3.3.4. Known Group Validity

We used independent samples *t*-tests to compare means for survivors who had experienced GBV in the last year, were depressed, or who had PTSD compared with their no recent abuse, non-distressed counterparts using the sum of the three SOMI subscales. SOMI sum scores were significantly lower for participants who reported violence in the last year (M = 39.8, SD = 12.5) compared with those who had had no violence in the last year (M = 46.7, SD = 14.2) $t(294) = 3.89$, $p < 0.01$. SOMI sum scores were significantly lower for the survivors in the depression group (PHQ8 < 10) (M = 38.0, SD = 11.3) compared with those who were not depressed (M = 52.7, SD = 12.9) $t(294) = 10.45$, $p < 0.0$. SOMI sum scores were also significantly lower for the survivors in the PTSD group (PCL5 8 item scale < 19) (M = 36.9, SD = 11.6) compared with those who did not exceed the threshold for PTSD (M = 48.3, SD = 13.9) $t(294) = 7.1$, $p < 0.01$).

Regression analysis for the relationship of SOMI sum scores on PHQ8 scores was significant, explaining 37% of the variability of the PHQ8 scores $F(1, 294) = 173.0$, $p < 0.001$. The relationship of SOMI sum scores on PCL5 scores was also significant, explaining 26% of the variability of the PHQ8 scores $F(1, 294) = 104.7$, $p < 0.001$.

4. Discussion

As far as we know, this is the first attempt to use mixed methods to evaluate and update a "classic" and well-used instrument. Preserving the original theoretically sound concepts was our primary goal rather than revising the SOC-13 with similar concepts that were often different from these original concepts. The qualitative approach in this endeavor was similar to the lead authors' semantic translation techniques [53], which evaluate concepts and their use within the culture and language. Using this approach allowed us to modernize phrases and remove idioms, which may have made translation difficult and may have been a component of the subscale instability.

For good discriminant validity, the MSV should be less than the AVE of the factors. In our case, the AVE values for the SOMI-CO factor were somewhat lower than the MSV.

Following Chin et al. [54], while we use caution, we also note that all other psychometrics are good. Therefore, we believe that additional research should be conducted with more extensive and more diverse samples in the future.

Some readers might note that validation analysis for this instrument should consider the subsamples in our population, such as history of GBV, age, gender identity, and education. Measurement invariance testing of the equivalence of variables across these groups could be conducted in the future for various groups using CFA [55].

The moderate to weak correlations of the instruments we selected for convergent and divergent validity of the SOMI suggest that the concepts in the SOMI were distinct. These instruments were selected because qualitative and theory testing suggested these were essential aspects of the trauma survivors' recovery experiences. For example, qualitative research has shown that internal barriers to help-seeking are essential for diverse survivors and may be related to self-understanding and understanding of the recovery experience [38,56,57]. Despite these moderate relationships, known group validity shows that the SOMI can explain significant variability in PTSD and depression scores. Future research must determine if this is true in other cultures and minority groups. While encouraging, future research with diverse cultural groups and other clinical populations is needed to confirm that the three-factor structure is stable.

The original SOC-13 used the semantic differential (SD) scale approach [22]. However, this scaling technique has been reported to have drawbacks. Semantic differential scales can be challenging to translate [58], partly because they assume a cultural logic of bipolar ends of a continuum. In addition, early research reports suggest that assumptions in SD scales may not be accurate, social desirability effects can be enhanced, and individual differences in size and character of understanding the semantic space held by the concept [59]. Others have reported that analysis of variance models of SD responses reveals that individuals' scores on a scale for a particular concept can be attributed to various sources [60]. We elected to stabilize this using Likert-type scaling. Future research must confirm whether this increases the ease of translation and the stability of the factor structure for various groups.

One impetus for this research was the need for stable factors that could be used in the clinical evaluation of trauma recovery. There has been limited research on SOC-13 in GBV survivors [61]. While the original SOC questionnaire didn't intend to differentiate between the three components as separate theoretical constructs, we still believe this development of a tool that conceptualizes distinct concepts can have value in trauma recovery research. For example, GBV recovery research has shown that at least the management of symptoms (which could be measured by the SOMI manageability subscale) and meaning-making (which could be measured by the SOMI meaning subscale) might be different phases of the recovery process [62–64]. Our theory testing in GBV populations also showed that meaning-making might result from trauma recovery [65]. Clinical research could evaluate whether manageability might be an initial step, followed by sense-making (comprehensibility) and meaning-making as a recovery outcome.

The generalizability of these findings is limited by the cross-sectional data from primarily American, Caucasian, employed people who identify as women. In addition, we developed this in a highly distressed population (GBV survivors), which can limit the generalizability with other, less distressed populations. Moreover, future research is needed to understand how this scale will operate with people from different cultures, socioeconomic statuses, ethnicities, and gender expressions. Of course, confining our research to GBV survivors limits our ability to discern the applicability of the scales to other clinical populations. However, this effort to retain the original concepts and many of the original SOC-13 items (albeit revised) makes this scale promising for broad applicability.

Author Contributions: Conceptualization, D.M.S.A.; methodology, D.M.S.A. and Z.Z.; validation, Z.Z.; formal analysis, D.M.S.A.; investigation, D.M.S.A.; resources, D.M.S.A.; data curation, D.M.S.A.; writing—original draft preparation, D.M.S.A.; writing—review and editing, D.M.S.A. and Z.Z. funding acquisition, D.M.S.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the University of Michigan School of Nursing and the University of Michigan Institute for Research on Women and Gender.

Institutional Review Board Statement: The University of Michigan Institutional Review Board exempted all procedures and materials for study 1 (HUM00191183; 11/13/2015 to present) and approved study 2 (HUM00205708; 6/27/2022 to present).

Informed Consent Statement: Informed consent for participation was obtained from all subjects involved in the study.

Data Availability Statement: De-identified data is available to share upon request.

Acknowledgments: We thank Avishai Antonovsky, Head of Research Division, Center for Mental Health Services, Medical Corps, Israel, for his insightful comments on earlier drafts of this manuscript.

Conflicts of Interest: The authors have no competing interests to declare.

References

1. United Nations General Assembly. *Declaration on the Elimination of Violence Against Women*; United Nations: Paris, France, 1993.
2. World Health Organization. *Women and Health: Today's Evidence Tomorrow's Agenda*; World Health Organization: Geneva, Switzerland, 2009.
3. Carlson, B.E.; McNutt, L.-A.; Choi, D.Y.; Rose, I.M. Intimate partner abuse and mental health: The role of social support and other protective factors. *Violence Against Women* **2002**, *8*, 720–745. [CrossRef]
4. Coker, A.L.; Smith, P.H.; Thompson, M.P.; McKeown, R.E.; Bethea, L.; Davis, K.E. Social Support Protects against the Negative Effects of Partner Violence on Mental Health. *J. Women's Health Gend. Based Med.* **2002**, *11*, 465–476. [CrossRef] [PubMed]
5. Zlotnick, C.; Johnson, D.M.; Kohn, R. Intimate Partner Violence and Long-Term Psychosocial Functioning in a National Sample of American Women. *J. Interpers. Violence* **2006**, *21*, 262–275. [CrossRef] [PubMed]
6. Crowne, S.S.; Juon, H.-S.; Ensminger, M.; Burrell, L.; McFarlane, E.; Duggan, A. Concurrent and Long-Term Impact of Intimate Partner Violence on Employment Stability. *J. Interpers. Violence* **2011**, *26*, 1282–1304. [CrossRef] [PubMed]
7. Pico-Alfonso, M.A.; Garcia-Linares, M.I.; Celda-Navarro, N.; Blasco-Ros, C.; Echeburúa, E.; Martinez, M. The impact of physical, psychological, and sexual intimate male partner violence on women's mental health: Depressive symptoms, post-traumatic stress disorder, state anxiety, and suicide. *J. Women's Health* **2006**, *15*, 599–611. [CrossRef]
8. Hoge, E.A.; Austin, E.D.; Pollack, M.H. Resilience: Research evidence and conceptual considerations for post-traumatic stress disorder. *J. Depress. Anxiety* **2007**, *24*, 139–152. [CrossRef]
9. Horn, S.R.; Feder, A. Understanding Resilience and Preventing and Treating PTSD. *Harv. Rev. Psychiatry* **2018**, *26*, 158–174. [CrossRef]
10. Institute of Medicine. *How Far Have We Come in Reducing Health Disparities?* The National Academies Press: Washington, DC, USA, 2012.
11. King, L.A.; Pless, A.P.; Schuster, J.L.; Potter, C.M.; Park, C.L.; Spiro, A., III; King, D.W. Risk and Protective Factors for Traumatic Stress Disorders. In *The Oxford Handbook of Stress Disorders*; Oxford University Press: Oxford, UK, 2012; pp. 333–346.
12. Thabet, A.A.M. Risk and Protective Factors in Relation to Trauma and Post Traumatic Stress Disorders: A Meta-Analytic Review. *EC Psychol. Psychiatry* **2017**, *2*, 122–138.
13. Antonovsky, A. *Unraveling the Mystery of Health: How People Manage Stress and Stay Well*; Jossey-Bass: San Francisco, CA, USA, 1987.
14. Mittelmark, M.B.; Sagy, S.; Eriksson, M.; Bauer, G.F.; Pelikan, J.M.; Lindström, B.; Arild Espnes, G. *Handbook of Salutogenesis*; Springer Nature: Singapore, 2022. Available online: https://library.oapen.org/handle/20.500.12657/52407 (accessed on 13 July 2023).
15. Super, S.; Wagemakers, M.A.E.; Picavet, H.S.J.; Verkooijen, K.T.; Koelen, M.A. Strengthening sense of coherence: Opportunities for theory building in health promotion. *Health Promot. Int.* **2016**, *31*, 869–878. [CrossRef]
16. Antonovsky, A. The structure and properties of the sense of coherence scale. *Soc. Sci. Med.* **1993**, *36*, 725–733. [CrossRef]
17. Frenz, A.W.; Carey, M.P.; Jorgensen, R.S. Psychometric evaluation of Antonovsky's Sense of Coherence Scale. *Psychol. Assess.* **1993**, *5*, 145–153. [CrossRef]
18. Schäfer, S.K.; Becker, N.; King, L.; Horsch, A.; Michael, T. The relationship between sense of coherence and post-traumatic stress: A meta-analysis. *Eur. J. Psychotraumatol.* **2019**, *10*, 1562839. [CrossRef] [PubMed]
19. Kazlauskas, E.; Gailiene, D.; Vaskeliene, I.; Skeryte-Kazlauskiene, M. Intergenerational Transmission of Resilience? Sense of Coherence Is Associated between Lithuanian Survivors of Political Violence and Their Adult Offspring. *Front. Psychol.* **2017**, *8*, 1677. [CrossRef]
20. Veronese, G.; Pepe, A. Sense of coherence mediates the effect of trauma on the social and emotional functioning of Palestinian health providers. *Am. J. Orthopsychiatry* **2014**, *84*, 597–606. [CrossRef] [PubMed]
21. Antonovsky, A.; Department of Health and Well-Being, Medical Corps, Ramat Gan, Israel. Personal communication, 2024.

22. Eriksson, M.; Contu, P. The sense of coherence: Measurement issues. In *The Handbook of Salutogenesis*; Springer: Berlin/Heidelberg, Germany, 2022; pp. 79–91.
23. Lerdal, A.; Opheim, R.; Gay, C.L.; Moum, B.; Fagermoen, M.S.; Kottorp, A. Psychometric limitations of the 13-item Sense of Coherence Scale assessed by Rasch analysis. *BMC Psychol.* **2017**, *5*, 18. [CrossRef] [PubMed]
24. Gana, K.; Garnier, S. Latent structure of the sense of coherence scale in a French sample. *Pers. Individ. Differ.* **2001**, *31*, 1079–1090. [CrossRef]
25. Strümpfer, D.J.W.; Gouws, J.F.; Viviers, M.R. Antonovsky's Sense of Coherence Scale related to negative and positive affectivity. *Eur. J. Pers.* **1998**, *12*, 457–480. [CrossRef]
26. Volanen, S.-M.; Suominen, S.; Lahelma, E.; Koskenvuo, M.; Silventoinen, K. Negative life events and stability of sense of coherence: A five-year follow-up study of Finnish women and men. *Scand. J. Psychol.* **2007**, *48*, 433–441. [CrossRef]
27. Bachem, R.; Maercker, A. Development and psychometric evaluation of a revised sense of coherence scale. *Eur. J. Psychol. Assess.* **2016**, *34*, 206–215. [CrossRef]
28. Arciero, G.; Guidano, V.F. Experience, explanation, and the quest for coherence. In *Construction of Disorder: Meaning-Making Frameworks for Psychotherapy*; Neimeyer, R.A., Raskin, J.D., Eds.; American Psychological Association: Washington, DC, USA, 2000; pp. 91–118. [CrossRef]
29. Yaccarini, C.; Simkin, H.; Bachem, R.; Azzollini, S. Validation and Adaptation into Spanish of the Revised Sense of Coherence Scale (SOC-R): A Scale Associated with Life Satisfaction. *J. Consum. Satisf. Dissatisf. Complain. Behav.* **2022**, *35*, 146–156.
30. Mc Gee, S.L.; Höltge, J.; Maercker, A.; Thoma, M.V. Evaluation of the revised Sense of Coherence scale in a sample of older adults: A means to assess resilience aspects. *Aging Ment. Health* **2018**, *22*, 1438–1447. [CrossRef]
31. Creswell, J.W. *A Concise Introduction to Mixed Methods Research*; SAGE Publications: Los Angeles, CA, USA, 2021.
32. Fetters, M.D.; Curry, L.A.; Creswell, J.W. Achieving Integration in Mixed Methods Designs—Principles and Practices. *Health Serv. Res.* **2013**, *48*, 2134–2156. [CrossRef] [PubMed]
33. Kroenke, K.; Strine, T.W.; Spitzer, R.L.; Williams, J.B.; Berry, J.T.; Mokdad, A.H. The PHQ-8 as a measure of current depression in the general population. *J. Affect. Disord.* **2009**, *114*, 163–173. [CrossRef] [PubMed]
34. Blevins, C.A.; Weathers, F.W.; Davis, M.T.; Witte, T.K.; Domino, J.L. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *J. Trauma. Stress* **2015**, *28*, 489–498. [CrossRef] [PubMed]
35. Price, M.; Szafranski, D.D.; van Stolk-Cooke, K.; Gros, D.F. Investigation of abbreviated 4 and 8 item versions of the PTSD Checklist 5. *Psychiatry Res.* **2016**, *239*, 124–130. [CrossRef]
36. Benight, C.C.; Shoji, K.; James, L.E.; Waldrep, E.E.; Delahanty, D.L.; Cieslak, R. Trauma Coping Self-Efficacy: A context-specific self-efficacy measure for traumatic stress. *Psychol. Trauma Theory Res. Pract. Policy* **2015**, *7*, 591–599. [CrossRef]
37. Sinko, L.; Özaslan, Z.Z.; Schaitkin, C.; Saint Arnault, D. Psychometric Evaluation of the Healing After Gender-Based Violence Scale: An Instrument for Cross-Sectional and Longitudinal Assessment of Recovery Progress for Women-Identifying Survivors. *J. Fam. Violence* **2021**, *37*, 1161–1179. [CrossRef]
38. Foa, E.B.; Ehlers, A.; Clark, D.M.; Tolin, D.F.; Orsillo, S.M. The post-traumatic cognitions inventory (PTCI): Development and validation. *Psychol. Assess.* **1999**, *11*, 303. [CrossRef]
39. Saint Arnault, D.; Zonp, Z. Understanding help-seeking barriers after gender-based violence: Validation of the Barriers to Help Seeking-Trauma version (BHS-TR). *Arch. Psychiatr. Nurs.* **2022**, *37*, 1–9. [CrossRef]
40. Lin, E.; Goering, P.; Offord, D.R.; Campbell, D.; Boyle, M.H. Use of mental health services in Ontario: Epidemiological Findings. *Can. J. Psychiatry* **1996**, *41*, 572–577. [CrossRef]
41. Miller, K.; Chepp, V.; Willson, S.; Padilla, J.-L. *Cognitive Interviewing Methodology*; John Wiley & Sons: Hoboken, NJ, USA, 2014.
42. Tabachnick, B.G.; Fidell, L.S. Principal components and factor analysis. *Using Multivar. Stat.* **2001**, *4*, 582–633.
43. Hooper, D.; Coughlan, J.; Mullen, M. Evaluating model fit: A synthesis of the structural equation modeling literature. In Proceedings of the 7th European Conference on Research Methodology for Business and Management Studies, London, UK, 19–20 June 2008.
44. Byrne, B.M. *Structural Equation Modeling with EQS and EQS/Windows*; Sage Publications: Los Angeles, CA, USA, 1994.
45. Hu, L.T.; Bentler, P.M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct. Equ. Model. Multidiscip. J.* **1999**, *6*, 1–55. [CrossRef]
46. Bentler, P.M. Comparative Fit Indexes in Structural Models. *Psychol. Bull.* **1990**, *107*, 238–246. [CrossRef]
47. Browne, M.W.; Cudeck, R. Alternative ways of assessing model fit. *Sociol. Methods Res.* **1992**, *21*, 230–258. [CrossRef]
48. Bollen, K.A. A New Incremental Fit Index for General Structural Equation Models. *Sociol. Methods Res.* **1989**, *17*, 303–316. [CrossRef]
49. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50.
50. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E. *Multivariate Data Analysis*, 7th ed.; Prentice-Hall: Hoboken, NJ, USA, 2009.
51. IBM Corp. *IBM SPSS Statistics for Windows*; Version 28.0; IBM Corp.: Armonk, NY, USA, 2021.
52. Cerny, B.A.; Kaiser, H.F. A Study of a Measure of Sampling Adequacy for Factor-Analytic Correlation Matrices. *Multivar. Behav. Res.* **1977**, *12*, 43–47. [CrossRef]
53. Saint Arnault, D.; Hatashita, H.; Suzuki, H. Semantic Examination of a Japanese Center for Epidemiologic Studies Depression: A Cautionary Analysis Using Mixed Methods. *Can. J. Nurs. Res.* **2016**, *48*, 80–92. [CrossRef]

54. Chin, W.W.; Gopal, A.; Salisbury, W.D. Advancing the Theory of Adaptive Structuration: The Development of a Scale to Measure Faithfulness of Appropriation. *Inf. Syst. Res.* **1997**, *8*, 342–367. [CrossRef]
55. Putnick, D.L.; Bornstein, M.H. Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Dev. Rev.* **2016**, *41*, 71–90. [CrossRef]
56. Saint Arnault, D.; O'Halloran, S. Using mixed methods to understand the healing trajectory for rural Irish women years after leaving abuse. *J. Res. Nurs.* **2016**, *21*, 369–383. [CrossRef]
57. Sinko, L.; Burns, C.J.; O'Halloran, S.; Saint Arnault, D. Trauma Recovery Is Cultural: Understanding Shared and Different Healing Themes in Irish and American Survivors of Gender-based Violence. *J. Interpers. Violence* **2019**, *36*, NP7765–NP7790. [CrossRef] [PubMed]
58. Heise, D.R. Some methodological issues in semantic differential research. *Psychol. Bull.* **1969**, *72*, 406–422. [CrossRef]
59. Finstuen, K. Use of Osgood's semantic differential. *Psychol. Rep.* **1977**, *41* (Suppl. S3), 1219–1222. [CrossRef]
60. Sagara, M.; Yamamoto, K.; Nishimura, H.; Akuto, H. A Study on the Semantic Structure of Japanese Language by the Semantic Differential Method. *Jpn. Psychol. Res.* **1961**, *3*, 146–156. [CrossRef]
61. Zonp, Z.; Saint Arnault, D. The Reliability and Predictive Validity of Sense of Coherence Scale for American Survivors of Gender-Based Violence. *Violence Against Women* **2023**, *29*, 1670–1686. [CrossRef]
62. Sinko, L.; Hughesdon, K.; Grotts, J.H.; Giordano, N.; Choi, K.R. A Systematic Review of Research on Trauma and Women's Health in the Nurses' Health Study II. *Nurs. Women's Health* **2022**, *26*, 116–127. [CrossRef]
63. Kita, S.; Kamibeppu, K.; Saint Arnault, D. "Knitting Together the Lines Broken Apart": Recovery Process to Integration among Japanese Survivors of Intimate Partner Violence. *Int. J. Environ. Res. Public Health* **2022**, *19*, 12504. [CrossRef]
64. Koutra, K.; Burns, C.; Sinko, L.; Kita, S.; Bilgin, H.; Saint Arnault, D. Trauma Recovery Rubric: A Mixed-Method Analysis of Trauma Recovery Pathways in Four Countries. *Int. J. Environ. Res. Public Health* **2022**, *19*, 10310. [CrossRef]
65. Kita, S.; Zonp, Z.; Saint Arnault, D. Initial testing of components of the cultural determinants of trauma recovery (CDTR) theory amongst American Gender-Based violence survivors: Structural equation modelling. *J. Adv. Nurs.* **2022**, *79*, 1476–1492. [CrossRef]