Construction and Validation of the Meaning Formation Scale in Adolescents

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A r t i c l e   I n f o

A B S T R A C T

Objective: The present study aimed to construct and validate the Meaning Formation Scale for adolescents aged 12-20 years in the city of Isfahan during 2022-2023.

Methods and Materials: The research was conducted using a mixed-method approach with a sequential exploratory qualitative-quantitative design. The quantitative sample included adolescent girls and boys aged 12-20 years, from which 443 adolescents (248 girls and 185 boys) were randomly selected using cluster sampling. The Meaning in Life Questionnaire (Steger, 2010) was used to determine convergent validity, and the researcher-developed Meaning Formation Scale was completed by the researcher. Data were analyzed using SPSS-22 and Amos-26 software, employing correlation coefficients and confirmatory factor analysis. The content validity of this scale was confirmed by 15 psychology experts.

Findings: The results of the factor analysis for the Meaning Formation Scale in adolescents, with five factors—Conflict Creation, Conflict Expression, Conflict Confrontation, Conflict Engagement, and Solution Attainment and Integration—showed an acceptable fit with the collected data (χ^2/df = 1.82, CFI = 0.915, GFI = 0.903, AGFI = 0.859, and RMSEA = 0.043). Each component also demonstrated acceptable capacity for measuring the factors of the questionnaire. Additionally, the items related to each factor of the Meaning Formation Scale in adolescents exhibited acceptable internal consistency, with Cronbach's alpha coefficients for Conflict Creation, Conflict Expression, Conflict Confrontation, Conflict Engagement, and Solution Attainment and Integration being 0.83, 0.66, 0.71, 0.79, and 0.80, respectively, all of which were close to or above 0.70.

Conclusion: It can be concluded from this study that the 36-item Meaning Formation Scale in adolescents is a suitable tool for use in various psychological, educational, and research domains.

Keywords: meaning, adolescent, factor structure.

1. Introduction

Adolescence is a crucial and vital stage in personality development (Blakemore, 2019). Numerous physiological, psychological, and social changes occur within an individual during this period of life (Daniel & Benish-Weisman, 2019). Developmental theories consider exploration and discovery in response to the need to establish and create identity, occupation, and social roles as main characteristics of the adolescent and early adulthood years (Yoon et al., 2021). In other words, adolescence is a period during which an individual experiences more psychological conflict and turmoil than during childhood and engages in more searching to find personal meaning (Damon et al., 2019). Having meaning and purpose can help resolve the identity crisis that adolescents typically face during this time. Some view the search for meaning as a facilitator of identity development in adolescents (Lin et al., 2021).

Numerous psychologists have addressed the topic of meaning, among whom Viktor Frankl (King & Hicks, 2021) is recognized as a pioneer in this field. He does not limit the meaning of life to specific themes such as altruism, achievement, or fame. He believes that attaining personal life meaning begins with a search process, which may conclude after some time (Steger, 2012; Steger et al., 2006; Steger et al., 2009; Steger & Shin, 2010). Steger and colleagues (2009) also highlighted two important dimensions of meaning in life in their theory: the first dimension refers to the extent to which individuals perceive their lives as meaningful and purposeful, known as the "presence of meaning," while the second dimension pertains to the extent to which individuals are engaged in the "search for meaning in life" (Steger et al., 2009).

Given the framework of meaning formation, discrepancies or violations play a central role in initiating and maintaining the process of meaning formation. For instance, although individual differences exist, people generally believe their lives are predictable, orderly, and meaningful, and that the world is coherent and just (Furnham, 2023). It appears that one of the primary frameworks for examining meaning is developmental theories, such as Erikson's theory (1968) and Marcia's theory (1980). Although these theories are not inherently related to meaning, they have discussed changes in goals and perspectives in line with life transitions and passages (Glavan et al., 2019). From this perspective, the beginning of meaning development can perhaps be observed in the fifth stage of Erikson's developmental system (1968), during the conflict of identity versus role confusion (Hupkens et al., 2016). Redcoope (1990, as cited in Itzik et al., 2018) asserts that this phase of identity formation is vital and essential for future meaning development, as an individual must know who they are and have a self-definition before seeking personal views, goals, and meaning (Redekopp, 1990). In other words, one can consider the most important developmental tasks during these formative years to be shaping a personal worldview alongside identity development (Lin et al., 2021).

A study by Brassai and colleagues (2012) on 15-18-year-old adolescents showed that the search for meaning plays the most significant role in determining adolescent behavior. The results indicated that the presence and search for meaning were significant predictors of lower levels of violent behavior, antisocial behavior, and academic irresponsibility among adolescents (Brassai et al., 2012). Hamzagardeshi et al.'s (2019) case study demonstrated that factors such as mental health, identity styles, hope for life, religion, and social connections play important roles in attaining life meaning in adolescents (Hamzehgardeshi et al., 2019). Orang et al. (2018) found that, among age groups 17-25, 25-46, and 65-80 years, there were significant differences in the components of the presence of meaning, self-acceptance, positive relationships with others, personal growth, and purposeful living (Orang et al., 2018). Therefore, age can increase the meaning of life and psychological well-being. Furthermore, a literature review revealed that various tools have been developed to measure meaning. For instance, Schnell et al. (2009) designed a questionnaire with 26 sources of meaning, categorized into four dimensions: self-transcendence, self-actualization, religious sect, and well-being (Schnell, 2009). Steger et al. (2006) developed a questionnaire that measures the two dimensions of meaning in life, namely the presence of meaning and the search for meaning (Steger et al., 2006).

Most research in this field has focused on Western cultures, with fewer studies examining these sources and domains within the context of Iranian culture. Previous research has shown that cultural factors influence this structure. Additionally, most existing tools have assessed the meaning of life and its dimensions, while the primary focus of our research is on examining the process of meaning formation. Our study takes a broader view. Moreover, similar tools have primarily measured meaning in adult populations, but no tool was found that exclusively measured these aspects in adolescents. Thus, investigating

the process of meaning formation in adolescents addresses this research gap. Therefore, the present study sought to answer the question: What is the tool for measuring the formation of meaning in adolescents?

2. Methods and Materials

2.1. Study Design and Participants

The present study is applied in terms of purpose and uses a mixed-method approach with a sequential exploratory qualitative-quantitative design, appropriate for the research objectives. The quantitative research population consisted of adolescent girls and boys aged 12-20 years in 2022-2023. A total of 434 participants were selected based on the inclusion criteria: being aged 12-20 years, providing informed and voluntary consent to participate in the study, scoring above 24 on the Meaning in Life Questionnaire (Steger, 2010), and not having any prominent psychological disorders such as depression and anxiety, as diagnosed by a psychiatrist or clinical psychologist. They were randomly selected using cluster sampling from five regions: north, south, east, west, and central Isfahan. Some experts generally consider a sample size of 400 or even 3 samples per item sufficient, provided the percentage of variance explained and the factor loading exceed 0.80 (Lee et al., 2012). Therefore, given that determining the sample size depends on the number of items, and the current tool includes 36 items, ten times the number of items was considered, accounting for a 10% dropout rate, resulting in a final sample size. Additionally, 15 experts in counseling and psychology were selected to evaluate the initial items of the questionnaire.

In the qualitative part of the study, nine adolescents aged 12-20 years were selected through theoretical sampling based on the inclusion criteria (scoring above 24 on the Meaning in Life Questionnaire).

2.2. Measures

2.2.1. Researcher-Made Meaning Formation Scale

To measure the process of meaning formation in adolescents, a scale was developed by the researcher during the study. A qualitative study was conducted, and based on the findings, the scale was developed with five main factors (Conflict Creation, Conflict Expression, Conflict Confrontation, Conflict Engagement, and Solution Attainment and Integration) and 12 components (Problematic Coping, Emotional Confusion, Meaning Protest, Engaging with Unclear Feelings, Creating

Acceptance Capacity, Recalling Experience, Deepening, Insight into Needs, Accepting Experience, Emergence of New Perspective, Manifestation of Agency, and Integrating with Previous Experiences), resulting in 36 items. The content validity of the scale was assessed by 15 psychology experts, and the final scale was developed. Scoring was done on a five-point Likert scale ranging from 1 (very rarely) to 5 (almost always), with responses determined based on the researcher's judgment. Several items were developed for each of the five main factors, and these items were reviewed by 15 experts. After making some changes to the items and final approval, the questionnaire was administered to 12-20-year-old adolescents in Isfahan, and the validity, reliability, and norms of the scale were evaluated. Internal consistency and Cronbach's alpha coefficient were reported to examine the inter-item correlations of the scale. Exploratory factor analysis was used to determine construct validity. Discriminant validity of the scale was assessed using differential analysis. Convergent validity was examined using the Meaning in Life Questionnaire (Steger, 2010). The correlation between the total meaning formation scale and its subscales was used to assess the subscale validity.

2.2.2. Meaning in Life

The Meaning in Life Questionnaire (Steger et al., 2006; Steger & Shin, 2010) measures two dimensions of meaning in life, namely the presence of meaning and the search for meaning, using 10 items based on a seven-point Likert scale ranging from 1 (absolutely untrue) to 7 (absolutely true). This questionnaire was validated by Majdabadi (2017). A score above 24 in the presence dimension and above 24 in the search dimension indicates an individual who feels their life has significant meaning and purpose, yet actively explores that meaning and purpose. A score above 24 in the presence dimension and below 24 in the search dimension indicates an individual who feels their life has significant meaning and purpose but does not actively explore or search for goals in their life. A score below 24 in the presence dimension and above 24 in the search dimension indicates an individual who likely feels their life lacks significant meaning and purpose but actively seeks something or someone to provide purpose or meaning. A score below 24 in both dimensions indicates an individual who likely feels their life lacks significant meaning and purpose and does not actively explore that meaning or search for meaning in their life. Items 1, 4, 5, 6, and 9 belong to the presence subscale, and for scoring this subscale, the rating of item 9 is

subtracted from the rating of item 8, and then added to the ratings of items 1, 2, 5, and 6. Scores range from 5 to 35. Items 2, 3, 7, 8, and 10 belong to the search subscale, and for scoring this subscale, the ratings of these items are summed. Scores range from 5 to 35. Research has shown the questionnaire's reliability and stability, as well as its convergent and divergent validity (Steger & Shin, 2010). Internal consistency (alpha coefficients between 0.82 and 0.87) was very good, and one-month test-retest reliability was satisfactory (0.70 for the presence subscale and 0.73 for the search subscale) (Steger, 2012; Steger & Shin, 2010).

2.3. Data analysis

In the present study, after obtaining the necessary permits from the ethics committee of Khomeini-Shahr Azad University and approval of the questionnaires, the sample individuals were selected and studied as described in the participants section. Before administering the questionnaires and receiving any information, participants were informed about the research objectives, how to complete the questionnaires, and the confidentiality of the information obtained to ensure ethical principles were followed, and their complete consent was obtained. In the qualitative part of this study, a semi-structured interview form with open-ended questions and follow-up questions was used to encourage participants to examine the process of meaning formation. All interviews were digitally recorded and transcribed verbatim immediately after recording. Data analysis was based on Glaser's method (1978) in seven stages: open coding, selective coding, memoing, sorting, theoretical coding, literature review, and theory writing. In total, the analysis of participants' experiences identified 120 open codes, 13 selective codes, and 5 theoretical codes. To confirm the validity and reliability of the extracted themes from the interviews in the qualitative section, the data credibility method was used to eliminate any ambiguities in coding. To measure the reliability of qualitative findings, two methods were used: test-retest reliability and inter-coder reliability. To develop the questionnaire for ease of understanding and to increase the validity of the items, participant's words were used as much as possible. From the total items obtained inductively and deductively (by comparing other meaning assessment tools), an item pool was created, and the research team reviewed the item pool and selected the best items. Items that were conceptually similar were removed or merged, and thus the constructs of the questionnaire (dimensions or factors and appropriate

items) measuring the process of meaning formation in adolescents were designed and evaluated based on perceived definitions in a methodological process. For each final code, 3 to 5 items were considered.

Thus, based on theoretical codes, a 36-item questionnaire was designed with comprehensive and organizing main and sub-themes. To evaluate its validity and reliability, it was distributed among 15 psychology and counseling experts, who were asked to provide their opinions on the difficulty level, appropriateness, and ambiguity of each item (face validity review). They were also asked to provide qualitative feedback on the tool regarding the use of appropriate words, necessity, importance, and placement of phrases. Content validity was analyzed qualitatively, and after summarizing and analyzing the experts' opinions, some lengthy items were shortened, and necessary corrections were made. Additionally, to determine content validity ratio (CVR), experts were asked to evaluate items based on a three-point scale ("essential," "useful but not essential," and "not essential"). Responses were calculated using the CVR formula, and content validity ratio for each item was determined. According to the Lawshe table, content validity was considered acceptable if the CVR value was 0.49 or higher, based on the feedback from 15 experts. To determine the content validity index (CVI), Waltz and Basel's index was used. After determining the CVR, 15 psychology and counseling experts were asked to rate the relevance of each item on a four-point Likert scale (1: not relevant, 2: somewhat relevant, 3: quite relevant, 4: highly relevant). The CVI for each item was calculated using the CVI formula. According to Polit et al. (2007), if the resulting value is greater than 0.79, the item is acceptable. If the value is between 0.70 and 0.79, it needs revision, and if the value is less than 0.70, the item is deleted. Based on this, after calculating the content validity index, 29 items were greater than 0.79, and 7 items with a CVI between 0.70 and 0.79 were revised. The overall content validity index of the tool, or the average CVI scores of the items, was estimated to be 0.93 in this study. According to Polit et al. (2007), an overall CVI of 0.90 or higher is considered acceptable. Finally, the 36-item questionnaire, after confirming validity and reliability, was distributed among the study population. A five-point Likert scale from 1 (very rarely) to 5 (almost always) was used for responses. Data analysis in the quantitative phase was performed using descriptive statistics and confirmatory factor analysis with SPSS 25 and AMOS 24.0 software, and the final model was confirmed.

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3.   Findings and Results

The qualitative study results indicated that the Meaning Formation Questionnaire for Adolescents includes four factors: Conflict Expression, Conflict Confrontation, Conflict Engagement, and Solution Attainment and Integration. The Conflict Expression factor consisted of three components: Problematic Coping (4 items), Emotional Confusion (5 items), and Meaning Protest (2 items). The Conflict Confrontation factor included two components: Engaging with Unclear Feelings (3 items) and Creating Acceptance Capacity (3 items). The Conflict Engagement factor comprised four components: Recalling Experience (3 items), Deepening (2 items), Insight into Needs (2 items), and Accepting Experience (3 items). Finally, the Solution Attainment and Integration factor consisted of three components: Emergence of New Perspective (2 items), Manifestation of Agency (3 items), and Integrating with Previous Experiences (3 items).

In the quantitative section of the study, 434 adolescents (248 girls and 185 boys) with a mean age of 14.97 years and a standard deviation of 1.83 completed the designed questionnaire. Before evaluating the model's fit with the data, the mean, standard deviation, skewness, and kurtosis of each item were examined. The highest mean belonged to item 5, and the lowest mean to item 17. Additionally, the skewness and kurtosis indices of all items were within the ±2 range, indicating a normal distribution of the data. The fit of the Meaning Formation model with the collected data was examined using confirmatory factor analysis and AMOS 24.0 software, employing the Maximum Likelihood (ML) estimation. Fit indices for four measurement models of the questionnaire were reviewed and compared. The first model was a one-factor model where all items were allowed to load onto a single factor. The second model was a four-factor model where each item was restricted to load only on the intended latent factor, and the latent factors were allowed to correlate. The third model was a hierarchical four-factor model where each item was restricted to load only on the intended component, and each component was restricted to load on the broader related factor. The broad factors were allowed to correlate. Table 1 shows the fit indices for the measurement models of the meaning formation questionnaire items.

Table 1

Fit Indices for Measurement Models of Meaning Formation Questionnaire Items

Fit Indices	One-Factor Model	Four-Factor Model	Initial Hierarchical Four-Factor Model	Revised Hierarchical Four-Factor Model	Cutoff
Chi-Square	2785.96	1660.32	1097.91	982.60	-
Degrees of Freedom	560	554	542	539	-
χ^2/df	4.98	3.00	2.026	1.82	< 3
GFI	0.623	0.793	0.892	0.903	> 0.90
AGFI	0.575	0.762	0.850	0.859	> 0.85
CFI	0.440	0.722	0.901	0.915	> 0.90
RMSEA	0.095	0.067	0.048	0.043	< 0.08

Table 1 shows that none of the fit indices support the acceptable fit of the one-factor model (χ^2/df = 4.98, CFI = 0.440, GFI = 0.623, AGFI = 0.575, RMSEA = 0.095) with the collected data. Additionally, except for the χ^2/df and RMSEA indices, other fit indices do not support the acceptable fit of the four-factor model (χ^2/df = 3.00, CFI = 0.722, GFI = 0.793, AGFI = 0.762, RMSEA = 0.067). Table 1 shows that, except for the GFI index, other fit indices support the acceptable fit of the hierarchical four-factor model of the Meaning Formation Questionnaire with the collected data (χ^2/df = 2.026, CFI = 0.901, GFI = 0.892, AGFI = 0.850, RMSEA = 0.048). Considering the importance of the GFI index, modification indices were evaluated, and based on them, covariances were created between the errors of items 25 and 27 (step 1), 5 and 6 (step 2), and 26 and 33 (step 3). The model was revised, resulting in fit indices that showed all fit indices support the acceptable fit of the measurement model of the Meaning Formation Questionnaire in adolescents (χ^2/df = 1.82, CFI = 0.915, GFI = 0.903, AGFI = 0.859, RMSEA = 0.043). Table 2 shows the factor loadings of each item in the integrated model of the Meaning Formation Questionnaire in adolescents.

Table 2

Standardized Factor Loadings in the Measurement Model of the Meaning Formation Questionnaire in Adolescents

Level	Latent Variables – Indicators	b	β	SE	t
First Order	Problematic Coping – Item 1	0.632			
	Problematic Coping – Item 2	1.104	0.670	0.110	10.05**
	Problematic Coping – Item 3	1.099	0.650	0.111	9.89**
	Problematic Coping – Item 4	0.931	0.550	0.105	8.84**
	Emotional Confusion – Item 5	1.000	0.689		
	Emotional Confusion – Item 6	0.886	0.625	0.068	13.05**
	Emotional Confusion – Item 7	0.889	0.672	0.073	12.12**
	Emotional Confusion – Item 8	1.155	0.799	0.084	13.75**
	Emotional Confusion – Item 9	0.859	0.623	0.076	11.36**
	Meaning Protest – Item 10	1.000	0.587		
	Meaning Protest – Item 11	0.992	0.529	0.128	7.72**
	Engaging with Unclear Feelings – Item 12	1.000	0.653		
	Engaging with Unclear Feelings – Item 13	0.809	0.517	0.097	8.02**
	Engaging with Unclear Feelings – Item 14	0.910	0.630	0.101	9.11**
	Creating Acceptance Capacity – Item 15	1.000	0.740		
	Creating Acceptance Capacity – Item 16	0.819	0.603	0.094	8.69**
	Creating Acceptance Capacity – Item 17	0.765	0.609	0.088	8.71**
	Recalling Experience – Item 18	1.000	0.655		
	Recalling Experience – Item 19	0.989	0.645	0.108	9.17**
	Recalling Experience – Item 20	0.708	0.442	0.099	7.14**
	Deepening – Item 21	1.000	0.562		
	Deepening – Item 22	1.384	0.750	0.156	8.85**
	Insight into Needs – Item 23	1.000	0.775		
	Insight into Needs – Item 24	0.521	0.364	0.114	4.56**
	Accepting Experience – Item 25	1.000	0.395		
	Accepting Experience – Item 26	1.019	0.474	0.231	4.42**
	Accepting Experience – Item 27	1.412	0.566	0.259	5.45**
	Emergence of New Perspective – Item 28	1.000	0.791		
	Emergence of New Perspective – Item 29	0.917	0.742	0.088	10.43**
	Manifestation of Agency – Item 30	1.000	0.595		
	Manifestation of Agency – Item 31	1.256	0.740	0.120	10.48**
	Manifestation of Agency – Item 32	1.158	0.731	0.111	10.43**
	Integrating with Previous Experiences – Item 33	1.000	0.548		
	Integrating with Previous Experiences – Item 34	1.316	0.674	0.149	8.85**
	Integrating with Previous Experiences – Item 35	1.228	0.663	0.140	8.80**
Second Order	Conflict Expression – Problematic Coping	1.000	0.680		
	Conflict Expression – Emotional Confusion	1.517	0.858	0.202	7.51**
	Conflict Expression – Meaning Protest	1.273	0.924	0.175	7.28**
	Conflict Confrontation – Engaging with Unclear Feelings	1.000	0.842		
	Conflict Confrontation – Creating Acceptance Capacity	0.638	0.463	0.115	5.55**
	Conflict Engagement – Recalling Experience	1.000	0.809		
	Conflict Engagement – Deepening	0.916	0.885	0.129	7.11**
	Conflict Engagement – Insight into Needs	0.977	0.685	0.127	7.71**
	Conflict Engagement – Accepting Experience	0.587	0.697	0.119	4.92**
	Solution Attainment and Integration – Emergence of New Perspective	1.000	0.708		
	Solution Attainment and Integration – Manifestation of Agency	0.838	0.764	0.111	7.52**
	Solution Attainment and Integration – Integrating with Previous Experiences	0.754	0.820	0.109	6.89**

**p < .01

Table 2 shows that all factor loadings in the model are greater than 0.32. According to Tabachnick and Fidell (2007), factor loadings of 0.71 and above are considered excellent, loadings between 0.63 and 0.70 are very good, loadings between 0.55 and 0.62 are good, loadings between 0.45 and 0.55 are fairly good, loadings between 0.32 and 0.44 are low, and loadings below 0.32 are weak. Therefore, it can be concluded that the Meaning Formation

Questionnaire model in adolescents has an acceptable fit with the collected data, and each component also has an acceptable capacity for measuring the questionnaire's factors.

In this study, to assess the convergent validity of the Meaning Formation Questionnaire in adolescents, the correlation coefficients between its factors and the Meaning in Life Questionnaire were calculated and presented in Table 3.

Table 3

Means, Standard Deviations, Cronbach's Alpha Coefficients, and Correlation Coefficients between the Factors of the Meaning Formation

Questionnaire in Adolescents and the Meaning in Life Questionnaire

Variable	1	2	3	4	5	6
1. Conflict Expression	-					
2. Conflict Confrontation	-0.34**	-				
3. Conflict Engagement	-0.11*	0.33**	-			
4. Solution Attainment and Integration	-0.29**	0.40**	0.48**	-		
5. Meaning in Life – Presence of Meaning	-0.17**	0.21**	0.34**	0.51**	-	
6. Meaning in Life – Search for Meaning	-0.21**	0.19**	0.35**	0.48**	0.62**	-
Mean	34.43	16.53	30.11	24.93	23.26	26.75
Standard Deviation	8.73	4.08	7.36	6.18	7.63	7.26
Cronbach's Alpha	0.83	0.66	0.71	0.79	0.80	0.82

**p < .01, *p < .05.

Table 3 shows that the Conflict Expression factor of the Meaning Formation Questionnaire in adolescents is negatively correlated with the Presence of Meaning and Search for Meaning factors of the Meaning in Life Questionnaire. The Conflict Confrontation, Conflict Engagement, and Solution Attainment and Integration factors are negatively and significantly correlated with the Presence of Meaning and Search for Meaning factors of the Meaning in Life Questionnaire. These findings indicate the convergent validity of the Meaning Formation Questionnaire in adolescents. Additionally, the table shows that Cronbach's alpha coefficients for the factors of the Meaning Formation Questionnaire in adolescents are close to or above 0.70. Therefore, it can be concluded that the items related to each factor of the Meaning Formation Questionnaire in adolescents have acceptable internal consistency.

4. Discussion and Conclusion

The present study aimed to construct and examine the psychometric properties of the Meaning Formation Scale in adolescents. To achieve this goal, a qualitative study was conducted, and its components were examined. The findings showed that the Meaning Formation Scale in adolescents has appropriate reliability and validity. In this study, exploratory factor analysis and convergent validity were used to assess the construct validity of the scale. Five components were

extracted in the exploratory analysis of the Meaning Formation Scale in adolescents.

The first factor identified was Conflict Creation, emphasizing that meaning formation in adolescents begins with the creation of conflict within the individual. According to the study's findings, individuals initiate the process of meaning formation, or rather engage in the process, when they encounter shocking and unbelievable events or issues, placing them in a state of confronting the problem or event. The items in this component align with prior proposed scales (Bellet et al., 2019; Howard et al., 2022; Hussain & Bhushan, 2009; Tehrani et al., 2002; Testoni et al., 2022; Ugwu et al., 2021). Survivors of disasters typically cope by constructing meaning. Active problem-solving, emotional regulation, and seeking social support can be beneficial post-disaster, but meaning-making is often the best or even the only option for recovery from profound trauma and loss. Meaning-making often involves altering the meaning attributed to the disaster, which may include changing global beliefs or goals. Individuals strive to reconcile the differences between their appraisal of the disaster and its global meaning, necessitating changes in either one or both to realign their global meaning with their experiences (Park, 2016, 2017).

The second factor identified was Conflict Expression. This component describes how, after creating conflict, adolescents seek ways to express and disclose their conflict regarding the issue or event. Adolescents employ various

strategies during this stage. Some attempt to forget the occurrence, others quickly seek to cut off the source of their problems, while some decide not to seek help from others and resolve issues independently. The items in this component align with those proposed in the prior scales (Bellet et al., 2019; Neimeyer et al., 2021; Niemeier et al., 2004). Emotional confusion refers to the emotional reactions of adolescents after encountering a significant event or issue. This reaction is described as conflict expression and depicts how adolescents react to the issue through their emotions. Emotional outbursts such as feelings of distress, sadness, fatigue, anger, feeling trapped, and loneliness manifest. Adolescents often feel they have lost control over their lives and may feel hopeless or uncertain about improving the situation. The behaviors and thoughts during the conflict protest phase help adolescents seek answers, address their emotions, and create a capacity for acceptance.

The third factor identified was Conflict Confrontation, emphasizing that after expressing conflict through emotional reactions and conflict protest, adolescents concluded that it was time to confront their conflict. This confrontation is essential in recognizing and understanding experienced emotions, addressing the conflict, and ultimately accepting it. The items in this component align with those proposed in the prior scales (Lancaster & Carlson, 2015; Neimeyer et al., 2021; Niemeier et al., 2004; Testoni et al., 2022). Addressing unclear feelings and primary pain (self-awareness) indicates adolescents entering the conflict confrontation phase and striving to understand their experienced emotions and pain. Creating acceptance capacity involves engaging in thoughts and behaviors that help adolescents address their conflicts. Having gained sufficient understanding of their experienced emotions and the reasons for their reactions, they seek ways to accept and address the issue. Adolescents in this study approached the issue impartially, analyzed their behaviors and those of others, and used inner dialogue to address the event.

The fourth factor identified was Conflict Engagement, emphasizing that adolescents moved beyond the initial shock of the event and began to reflect on the experience, analyze and examine it, identify unmet needs that caused these frustrating and distressing emotions, revisit their experiences, and attempt to reach subsequent stages of meaning creation. The items in this component align with those proposed in the prior scales (Chen et al., 2021; Davey et al., 2015; Lancaster & Carlson, 2015; Tedeschi & Calhoun, 1996; Testoni et al., 2022). Engaging with conflict is a crucial step in discovering and creating meaning,

indicating acceptance of the experience and striving to integrate the experience into life and the past. This factor includes four components: recalling experience, exploration, expansion and deepening, insight into unmet needs, and processing and accepting self and others' experiences. Individuals scoring high in recalling experience attempt to remember and review their experiences and memories, aiding in exploring, expanding, and deepening these experiences. High scores in exploration, expansion, and deepening indicate that after recalling the experience, adolescents begin reflecting on it. This process helps them remember the experience in detail, become aware of the feelings it evoked, and think about unmet needs, leading to processing and accepting their own and others' experiences. High scores in processing experience suggest that it can guide them towards solution generation and integrating the experience with previous ones. Overall, this stage of meaning formation indicates that after recalling and deepening experiences, adolescents identify unmet needs that contributed to their distressing experience. They used strategies such as viewing the issue from others' perspectives, comparing their viewpoints with others, and giving others the benefit of the doubt.

The fifth factor identified was Solution Attainment and Integration, emphasizing that adolescents thoroughly explored their experiences and deepened their understanding. This deepening helped them accept their own and others' experiences and seek new ways to live with the new experience. The items in this component align with those proposed in the prior scales (Heidari et al., 2019; Lancaster & Carlson, 2015; Schnell, 2009; Steger et al., 2006; Testoni et al., 2022). Adolescents scoring high in Solution Attainment and Integration have accepted their experiences and others' experiences, think differently than before, seek better ways to cope with the experience, and behave more flexibly towards it. Thus, new perspectives and interpretations emerge, helping them regain control of their lives, feel empowered, and make new decisions. Self-restoration, agency (decision-making), and creating new experiences, accepting the experience, and the emergence of new perspectives help adolescents regain a sense of control over their past lives and feel empowered. Consequently, they make new life decisions and strive to acquire new experiences. A significant part of the changes in this stage is related to the sense of empowerment in learners and their actions to make new life decisions, with many decisions aimed at avoiding similar painful experiences. In this stage, adolescents integrate their experiences with previous ones,

accept the issue as part of life, create new narratives, dismantle old feelings and behaviors, and reflect on the meaning derived from the experience. They feel released, the event's place in their life is clarified, and it blends with new experiences.

Based on the results of this study, the total amount of shared variance explained by the five factors supports a substantial portion of the multidimensional nature of meaning formation. The five components of meaning formation were examined through confirmatory factor analysis, and all components of meaning formation showed good fit indices. Additionally, all components and items were examined through factor analysis, and the exploratory factor analysis results confirmed the five factors of the meaning formation construct, indicating that the obtained model fits well with the research data. Moreover, the obtained root mean square error of approximation (RMSEA) indicates a good model fit. The reliability of the constructed Meaning Formation Scale in adolescents was assessed using internal consistency and test-retest methods, with results reported in the findings section. Overall, the results show that the constructed scale has desirable and satisfactory reliability.

5. Limitations & Suggestions

Finally, considering that the Meaning Formation Scale was standardized only for adolescents aged 12-20 years and conducted in an urban population, caution should be exercised when generalizing the findings to other age groups, regions, and minorities. It is suggested that a nationwide survey be conducted using the Meaning Formation Scale for all adolescents, both girls and boys. Additionally, given the importance of meaning formation for other age groups, it is recommended to develop diverse content such as educational protocols for meaning formation in adolescents. Given that the Meaning Formation Scale has acceptable reliability and validity, it can be used in schools, high schools, and counseling centers to determine and assess meaning formation. After evaluating and assessing adolescents' meaning formation, educational courses should be conducted to enhance their meaning formation.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. The present article is derived from the first author's doctoral dissertation, registered under the ethics code 1401.019.IR.IAU.KHSH.REC. The ethical considerations in this study included obtaining informed voluntary consent for participation. Participants expressed their understanding and agreement to participate without any pressure. The researcher provided sufficient and comprehensible information about the research purpose and procedure to the participants. According to the withdrawal principle, the researcher recognized each participant's right to withdraw from the study at any time, for any reason, or none at all, and participants were informed of this right. Participants' privacy was acknowledged as a right, and they were informed about their rights regarding confidentiality and anonymity. The principle of non-harm to participants was observed, meaning that the information provided by participants that could jeopardize their privacy, family life, and social relationships remained confidential. The researcher did not establish emotional or friendly relationships with participants and did not involve individuals with whom they had emotional, friendly, or family relationships in the study. The researcher fully accepted the responsibility for publishing the study's findings and published all relevant information completely and without omission.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Authors' Contributions

All authors contributed equally.

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