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The Willpower Scale for emerging adults: Development and initial psychometric evaluation

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ABSTRACT

The present study aimed to develop a brief and psychometrically sound measure of willpower for young adults. An initial pool of 20 items was generated from relevant theoretical frameworks. Following expert evaluations, the item pool was reduced to 14 items, and a pilot study involving 40 participants resulted in a 10-item form. The main analyses were conducted using data from 700 young adults, who were randomly divided into two independent subsamples. Exploratory factor analysis conducted on the first subsample ($n = 350$) resulted in the removal of one item and supported a final 9-item, single-factor structure explaining 49% of the total variance. This structure was subsequently examined using confirmatory factor analysis on the second subsample ($n = 350$). The confirmatory factor analysis indicated acceptable model fit, with CFI = 0.963, TLI = 0.949, RMSEA = 0.070, and SRMR = 0.042, providing evidence regarding the scale's internal structure. Internal consistency analyses yielded a Cronbach's alpha of 0.863 and composite reliability of 0.880. Overall, the findings provide preliminary evidence regarding the internal structure and internal consistency of the Willpower Scale in the current young adult sample.

KEYWORDS

Willpower; scale; self-regulation; volition; psychometric validation

Introduction

The notion of willpower has long captured the attention of scholars across diverse disciplines, including philosophy, psychology, and neuroscience, due to its relevance to intentional action and goal-directed behavior. Willpower is commonly conceptualized as a psychological capacity that enables individuals to persist in goal pursuit by exerting effort in the face of internal impulses or external challenges. While this capacity is closely related to broader self-regulatory processes, willpower specifically reflects the effortful maintenance of goal-directed action under conditions of strain, rather than the general monitoring or inhibition of behavior. Accordingly, willpower has been identified as a critical psychological resource supporting adaptive functioning, particularly in contexts that require sustained commitment despite competing demands (Baer et al., 2008; Baumeister, 2008). In contemporary digitalized and hyperstimulated societies, individuals are increasingly exposed to persistent distractions, information overload, and heightened demands on cognitive and emotional resources (Hofmann et al., 2012). Under such conditions, the capacity to sustain effort, resist momentary impulses, and remain aligned with long-term goals becomes especially salient. From this perspective, willpower plays a central role not merely in impulse control, but in the active continuation of goal-directed behavior amid ongoing regulatory challenges.

Baumeister (2008) argues that traditional psychological theories primarily emphasized environmental stimuli and behavioral consequences, often underestimating the autonomous and agentic role of willpower in intentional action. In response to this limitation, subsequent research has examined willpower-related processes under a variety of conceptual labels, including willpower strength (Metcalf & Mischel, 1999), ego strength (Lake, 1985), self-regulation and action control (Kuhl, 1985), and self-control (Carver & Scheier, 1982). Although these frameworks have contributed substantially to the understanding of volitional behavior, they differ in their conceptual scope and level of abstraction. More recent approaches have further situated willpower-related processes within broader constructs such as grit (Duckworth et al.,

2016), effortful control (Eisenberg et al., 2019), and executive functioning (Diamond, 2013), thereby highlighting the multidimensional and cross-domain relevance of volitional processes. However, embedding willpower within these broader constructs has also contributed to conceptual overlap, making it increasingly difficult to isolate willpower as a distinct, effort-based psychological capacity.

Rather than representing a singular or abstract trait, willpower is increasingly understood as a context-sensitive capacity that integrates multiple psychological processes involved in effortful goal pursuit. These processes include reasoning, decision-making, goal persistence, and behavioral regulation, which together enable individuals to act in accordance with personally endorsed values when confronted with competing demands. Within this framework, reasoning constitutes the cognitive foundation of willpower by allowing individuals to evaluate information, anticipate potential outcomes, and select among alternative courses of action (Kornblith, 1995; Turkish Language Association, 2024). Decision-making, in turn, reflects the translation of such evaluations into action and emerges from the interaction between environmental perception and personal deliberation (Adair, 2017; Evertsz et al., 2019). This process is shaped by both internal and external influences, including uncertainty, perceived risk, and culturally embedded values (Leotti et al., 2010). From a volitional perspective, freedom in decision-making should therefore be understood not merely as the absence of external constraint, but as the presence of reflective, reasoned, and effortful choice aligned with one's goals (Rosenthal, 2005).

In the present study, willpower is operationally defined as a conscious, sustained capacity to exert effort in decision-making and behavioral regulation to remain aligned with personally or socially meaningful goals when confronted with internal or external resistance. Rather than treating willpower as a single undifferentiated trait, the proposed scale conceptualizes it as an integrated set of volitional processes that become salient under conditions requiring intentional persistence. These processes include deliberate reasoning, value-based decision-making, emotional regulation, and goal-oriented persistence, all of which help maintain goal-directed action in challenging contexts.

Once a decision has been made, willpower is expressed through determination, which involves the sustained, consistent pursuit of a chosen goal despite obstacles or competing demands (Peterson & Seligman, 2004). This volitional process is further reinforced by a sense of responsibility, requiring individuals to align their behavior with moral, social, or personally endorsed standards (Tibbet, 2017). Within this framework, self-control does not constitute the core of willpower itself. Instead, it functions as a complementary regulatory resource that shapes how individuals manage temptations, regulate affect, and maintain attentional focus during goal pursuit (Baumeister et al., 2007). Although empirical research has consistently shown that higher levels of trait self-control are robustly associated with well-being, academic achievement, and interpersonal functioning (De Ridder et al., 2012; Duckworth & Gross, 2014; Galla & Duckworth, 2015), these findings primarily reflect stable individual differences rather than the situational exertion of effort that characterizes willpower in demanding contexts.

The present study adopts a dual theoretical foundation that integrates Roberto Assagioli's Psychosynthesis Theory with Baumeister and Vohs' Strength Model of Self-Control to conceptualize willpower as both an agentic and effort-based psychological capacity. In *The Act of Will* (1973), Assagioli conceptualizes willpower as a central psychological function that organizes and directs the transformation of impulses into deliberate action, distinguishing among strong, skillful, and transpersonal forms of will. This framework is particularly notable for its emphasis on conscious intention and purposeful direction, while also acknowledging unconscious and existential dimensions of volition, thereby offering a holistic account of human agency. Importantly, from this perspective, willpower is not treated as a fixed trait but as a trainable, developable capacity that can be strengthened over time through intentional practice (Taylor, 1967).

Complementing this perspective, the Strength Model of Self-Control conceptualizes willpower as an effort-based psychological resource that is temporarily susceptible to depletion under conditions of sustained demand, yet capable of recovery and strengthening through repeated use and adaptive regulation (Baumeister & Tierney, 2011; Muraven & Baumeister, 2000). Within this framework, fluctuations in self-regulatory capacity are understood as dynamic responses to contextual factors such as fatigue, stress, and multitasking, rather than as fixed individual limitations. Meta-analytic findings provide robust evidence for the model's predictive relevance across academic, health-related, and relational outcomes (Frieze et al., 2017; Hagger et al., 2010). At the same time, more recent research has refined the model by challenging rigid

interpretations of ego depletion and emphasizing the role of motivational beliefs, expectancy effects, and cognitive framing in sustaining or restoring effortful self-regulation (Inzlicht & Frieze, 2019; Job et al., 2010).

Although the Willpower Scale developed in the present study is primarily grounded in Psychosynthesis Theory and the Strength Model of Self-Control, the construct of willpower also conceptually interfaces with several complementary theoretical frameworks without being reducible to any single one. Within Self-Determination Theory, willpower can be understood as a volitional resource that supports autonomous regulation and sustained engagement in personally meaningful goal-directed behavior (Deci & Ryan, 2000). From a dual-process perspective, willpower facilitates the engagement of reflective processes that enable individuals to override impulsive responses generated by automatic systems, particularly under conditions of conflict or temptation (Strack & Deutsch, 2004). Similarly, executive function approaches highlight capacities such as inhibitory control, cognitive flexibility, and goal maintenance as cognitive mechanisms that support effortful self-regulation, which are functionally related to, but not synonymous with, willpower (Miyake et al., 2000). Taken together, these theoretical intersections underscore the construct validity and interdisciplinary relevance of willpower, while reinforcing the need for a focused measure that captures its distinctive role as an effort-based, goal-sustaining psychological capacity.

A range of psychometric instruments has been developed to assess willpower and closely related constructs, including the Free Will and Determinism Scale (Viney et al., 1982), the Free Will—Determinism Scale (Stroessner & Green, 1990), FAD-Plus (Paulhus & Carey, 2011), the Inventory of Volitional Components (Kuhl & Fuhrmann, 1998), the Self-Control Scale (Tangney et al., 2004), the Adolescent Will Scale (Okan, 2016), and the Will Septet Scale (Okan, 2019). Although these instruments have contributed substantially to the empirical understanding of volitional and self-regulatory processes, they differ considerably in their conceptual focus, theoretical grounding, and measurement scope. In particular, several existing measures are either relatively lengthy, anchored in fragmented or heterogeneous theoretical frameworks, limited to specific developmental groups, or less well-suited for brief, practical use in applied research settings. In light of these limitations, the present study aims to provide a concise, theoretically integrated measure of willpower. To illustrate the distinct contribution of the proposed scale, Table 1 provides a comparative overview of commonly used willpower-related instruments with respect to item count, factor structure, theoretical foundation, and target population.

Unlike existing instruments such as the Self-Control Scale or the Inventory of Volitional Components, the present study introduces a concise, integrative Willpower Scale explicitly grounded in Psychosynthesis Theory and the Strength Model of Self-Control. As summarized in Table 1, many existing measures are either relatively lengthy, focused on broad self-regulatory traits or isolated volitional components, restricted to specific populations, or characterized by fragmented theoretical foundations. In contrast, the proposed scale comprises 9 items and is specifically designed to assess willpower as an effort-based, goal-sustaining psychological capacity that becomes salient under conditions of challenge. The scale targets emerging adults, a developmental group for whom demands related to autonomy, decision-making, and sustained goal pursuit are particularly pronounced. Moreover, the scale was developed with sensitivity to contemporary social and cultural contexts in which individuals are required to regulate behavior amid heightened cognitive, emotional, and environmental demands. Owing to its brevity and theoretical coherence, the

Table 1. Comparison of existing willpower and self-control scales.

Scale Name	Authors	Year	Items	Factors	Theory	Target Population	Limitations
Self-Control Scale (SCS)	Tangney et al.	2004	36	1	Strength Model	General Adult	Long, general, not theory-integrated
Inventory of Volitional Components	Kuhl & Fuhrmann	1998	96	6	Action Control Theory	Adults	Very long, not practical
Adolescent Will Scale	Okan	2016	24	3	Positive Psychology	Adolescents	Limited to high school students
Will Septet Scale	Okan	2019	28	7	Character Strengths	Adults	Fragmented, lacks theoretical unity
Willpower Scale (this study)	Author	2026	9	1	Assagioli+Strength Model	Emerging Adults	Theory-Driven and Brief

Willpower Scale is suitable for use in a range of research settings, including studies on self-regulation, well-being, academic functioning, and behavioral adaptation in young adult populations.

Drawing on the integrative framework established by Psychosynthesis Theory and the Strength Model of Self-Control, the present study translates these theoretical perspectives into a coherent set of content domains to guide item development. Rather than treating willpower as a collection of discrete traits, items were designed to reflect willpower as a unified, effort-based capacity that becomes salient in challenging contexts. Accordingly, the item pool was informed by several core volitional components emphasized across the theoretical framework: (a) commitment to personally or socially meaningful goals, (b) deliberate and reflective decision-making under pressure, (c) regulation of emotions and impulses that interfere with goal pursuit, (d) sustained effort and persistence in the face of obstacles, and (e) responsibility for aligning behavior with internal values and standards. These content domains were not conceptualized as separate dimensions but as interrelated manifestations of a single underlying willpower construct, providing the theoretical basis for developing a concise, unidimensional measurement instrument.

Overall, the present study aims to develop and validate a brief Willpower Scale that conceptualizes willpower as a unified, effort-based volitional capacity integrating classical theoretical perspectives with contemporary empirical insights. In line with this overarching aim, the study pursues several specific psychometric objectives. First, content validity is examined through expert evaluations to ensure that the items adequately represent the theoretically defined domain of willpower. Second, exploratory factor analysis is conducted to explore the scale's underlying factor structure and evaluate whether the proposed unidimensional construct is empirically supported. Third, confirmatory factor analysis is performed on an independent sample to assess the adequacy of the hypothesized factor structure and to provide evidence of construct validity. Fourth, the internal consistency of the scale is assessed using reliability coefficients to evaluate the coherence of the item set. Finally, additional evidence of validity is examined to support the scale's psychometric soundness further. By addressing both conceptual fragmentation and practical limitations observed in existing instruments, the present study seeks to contribute a theoretically coherent and methodologically rigorous measurement tool suitable for research on volition and self-regulation among emerging adult populations.

Materials and methods

Study design, sample, and data collection

The present study was conducted within a framework for the development of methodological scales. Data were collected from individuals aged between 18 and 30 years, consistent with the definition of emerging adulthood. The primary inclusion criteria were being between 18 and 30 years of age, residing in Türkiye, and providing informed consent to participate in the study, in line with methodological recommendations for psychometric research (Boateng et al., 2018). Before the primary analyses, a pilot study with $n = 40$ participants was conducted to assess item clarity and content adequacy.

A total of 740 emerging adults participated across all stages of the study. Of these, 40 participated in the pilot study and were not included in the main psychometric analyses. The main study sample therefore comprised 700 participants, who were divided equally into two independent subsamples for exploratory factor analysis (EFA; $n = 350$) and confirmatory factor analysis (CFA; $n = 350$). This split-sample approach was employed in accordance with best-practice recommendations for scale development and validation studies. In addition to item-based sample size heuristics, the adequacy of the sample size for EFA was further supported by considerations of expected communalities and factor loadings, as the methodological literature indicates that stable factor solutions can be obtained with samples of this size when communalities are moderate to high. For CFA, the sample size was considered sufficient relative to the number of freely estimated parameters in the hypothesized model, providing an acceptable ratio of observations to parameters for reliable model estimation and fit evaluation.

Participants were recruited using a non-probability convenience sampling strategy. Data were collected online, and the survey link was disseminated through the researchers' personal and professional networks, including social media platforms, e-mail lists, and WhatsApp groups. This recruitment strategy was selected for its practicality and efficiency in reaching a large number of emerging adults within a limited timeframe;

Table 2. EFA and CFA samples.

	EFA Samples(N = 350)			CFA Samples(N = 350)		
	n	%	Ort ± Ss	n	%	Ort ± Ss
Marital Status						
Married	40	11.4		32	9.1	
Single	307	87.7		317	90.6	
Divorced/Widowed	3	0.9		1	0.3	
Education Level						
Primary school	3	0.9		4	1.1	
Middle school	8	2.3		9	2.6	
High school	77	22.0		82	23.4	
Bachelor	253	72.3		248	70.9	
Master's Degree-Doctorate	9	2.6		7	2.0	
Age			21.59 ± 3.24			21.29 ± 3.10

however, it does not allow for random selection or for full representativeness of the target population. According to data from the Turkish Statistical Institute, approximately 13 million individuals in Türkiye are aged 18–30 (Türkiye İstatistik Kurumu TÜİK, 2024).

All questionnaires were administered via Google Forms. To ensure data quality, responses were screened before analysis. Questionnaires with missing data, incomplete responses, or implausible response patterns were excluded. In addition, procedures were implemented to identify and remove potential duplicate entries, including checks for repeated submissions based on response timestamps and identical response patterns. Following these procedures, all retained questionnaires were complete and deemed suitable for analysis. Completion of the survey required approximately 10 minutes. Descriptive characteristics of the exploratory and confirmatory factor analysis samples are presented in Table 2.

When examining the characteristics of the samples used for the exploratory and confirmatory factor analyses, both groups were highly comparable on key demographic variables. In the exploratory factor analysis (EFA) sample, the majority of participants were single (87.7%), and most held a bachelor's degree (72.3%), followed by high school graduates (22.0%) and those with postgraduate education (2.6%). Similarly, in the confirmatory factor analysis (CFA) sample, 90.6% of participants were single, 70.9% held a bachelor's degree, 23.4% were high school graduates, and 2.0% had completed postgraduate studies. The mean age of participants was 21.59 in the EFA sample and 21.29 in the CFA sample. A detailed summary of the demographic characteristics of the EFA and CFA samples is presented in Table 2.

Ethical considerations

This research was conducted with the approval of the Bolu Abant İzzet Baysal University Ethics Committee for Human Research in the Social Sciences (Decision No: 2025/01). After being informed about the research, the participants agreed to participate by signing an informed consent form. Participants' responses were anonymized and kept confidential. No identifying information was collected.

Measures

This section provides information about the measurement tools included in the questionnaire used in the study.

Participant information form

To describe the demographic characteristics of the study participants, questions were asked regarding their age, marital status, education level, parental education level, family income, and employment status. This form facilitated the depiction of the sample group.

Willpower Scale

The Willpower Scale was designed and developed by the researchers. The final version comprises nine items representing a single-factor structure identified through exploratory factor analysis and subsequently supported by confirmatory factor analysis. Representative items include "I proceed in a planned manner

to achieve the goals I set for myself” and “I am confident in my ability to complete a task.” The scale uses a 7-point Likert response format, which allows participants to express their level of agreement with each statement across a broad range of options (Allen & Seaman, 2007). The response options are as follows: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neither Agree Nor Disagree, 5 = Slightly Agree, 6 = Agree, and 7 = Strongly Agree. The internal consistency of the final version of the Willpower Scale was satisfactory, with its Cronbach’s alpha coefficient exceeding the commonly accepted threshold of .70 (Cortina, 1993). Total scores range from 9 to 63, with higher scores indicating greater willpower. All items are positively worded and scored in the same direction; therefore, the scale does not include any reverse-coded items (Appendix 1).

Content validity and item refinement

Obtaining and evaluating expert opinions is essential for establishing the content validity of measurement instruments (Reynolds et al., 2010). In the present study, an initial pool of 20 items was generated based on a comprehensive review of the relevant literature, the theoretical framework integrating Psychosynthesis Theory and the Strength Model of Self-Control, and the operational definition of willpower adopted in the study. These items were designed to represent core volitional domains such as goal-directed planning, effortful persistence, decision continuity, impulse postponement, attentional focus, time management, and goal-related self-efficacy.

To evaluate content validity, the draft scale and item evaluation forms were sent to a panel of 10 experts, including academics and professionals with expertise in psychology, social work, and psychometrics. Experts were asked to assess each item in terms of relevance to the construct, clarity, and appropriateness of wording. Based on expert feedback, the Content Validity Ratio (CVR) was calculated for each item using Lawshe’s (1975) formula:

$$CVR = \frac{Nu - N/2}{N/2}$$

Equation 1: Calculation Formula for Content Validity Ratio.

where N_e represents the number of experts who rated an item as essential, and N represents the total number of experts. CVR values range from -1 to $+1$, with higher values indicating stronger content validity. In line with methodological recommendations, CVR values of .80 or above were considered acceptable given the number of experts involved (Ayre & Scally, 2014; Yeşilyurt & Çapraz, 2018). Items meeting or exceeding this threshold were retained, whereas items with lower CVR values or those characterized by overlapping content, ambiguous wording, or overly absolute expressions were revised or removed (Çam and Arabacı, 2010). Based on expert panel evaluations, item-level CVR values ranged from .80 to 1.00, indicating that all retained items met or exceeded the minimum acceptable threshold for content validity. In addition, the scale-level content validity index based on the average method was .80, indicating an acceptable level of expert agreement regarding the relevance and representativeness of the items. As a result of this expert-based evaluation, the initial 20-item pool was reduced to 14 items. Further refinements were guided by qualitative expert comments aimed at improving clarity and behavioral specificity; for example, items reflecting general self-control tendencies were revised to emphasize effortful goal pursuit, and items containing absolute statements (e.g., “always” or “never”) were eliminated to reduce potential social desirability bias.

Pilot study

Following the content validity assessment, a pilot study was conducted with 40 participants to evaluate further the clarity, comprehensibility, and linguistic appropriateness of the revised items. Participants were asked to review the items and provide feedback regarding their understanding and wording. Feedback indicated that while most items were clear and easily understood, several items were perceived as semantically redundant or overly similar in meaning. Based on this feedback, four additional items were removed to enhance parsimony and avoid content overlap. As a result of this iterative refinement process, a 10-item

form was retained for subsequent exploratory factor analysis, reflecting a balance between theoretical coverage and measurement economy. Participants involved in the pilot study were not included in subsequent analyses.

Statistical analysis

Descriptive statistics and reliability analyses were conducted using IBM SPSS Statistics version 25.0 (IBM SPSS, Turkey). Exploratory factor analysis (EFA) was performed using the Principal Component Analysis (PCA) extraction method to examine the underlying factor structure of the scale. The number of factors was determined based on inspection of the scree plot and the eigenvalue-greater-than-one criterion, both of which supported a single-factor solution. Accordingly, the scale was interpreted as measuring a unidimensional construct, with all items loading on a single underlying factor representing willpower. Subsequently, confirmatory factor analysis (CFA) was conducted using AMOS version 24.0 to test the adequacy of the hypothesized measurement model. Model fit was evaluated using multiple fit indices, including the Comparative Fit Index (CFI), Tucker—Lewis Index (TLI), Normed Fit Index (NFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Values above .90 were considered acceptable for CFI and TLI, and SRMR values below .08 were regarded as indicative of adequate model fit (Hu & Bentler, 1999). The normality of the data was assessed using the Kolmogorov—Smirnov test. Scale reliability was evaluated through item—total correlations and Cronbach's alpha coefficients. Descriptive statistics were reported using frequencies, percentages, means, and standard deviations.

Results

This study section presents the analyses and interpretations conducted during the scale development.

Validity

Construct validity

Initially, exploratory factor analysis (EFA) was conducted to group items measuring the same construct. To assess the suitability of the correlation matrix for factorization, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated, yielding a value of .912. Following this, Bartlett's test of sphericity was conducted, resulting in a value of 1135,146 ($df = 36$, $p < .001$). Following the removal of Item 3, item-level communalities (h^2) were reexamined to evaluate the extent to which the extracted factor accounted for variance in each retained item. The updated communality values ranged from .343 to .664, indicating that the single-factor solution adequately represented the variance of all remaining items. Although several items demonstrated moderate communalities, all retained items exceeded commonly accepted minimum thresholds for item representation in exploratory factor analysis, supporting the interpretability and coherence of the unidimensional factor structure (Table 3).

The 10-item form retained after the pilot study was developed from theoretical constructs derived from Assagioli's typology of will and supported by relevant literature. During the exploratory factor analysis, all items demonstrated acceptable factor loadings ($\geq .40$). However, examination of item-level communalities revealed that Item 3 exhibited a notably low communality value ($h^2 = .163$), indicating that the extracted factor did not adequately explain a substantial proportion of its variance. Given this weak representation in the single-factor solution, Item 3 was removed from the scale to enhance the measure's overall coherence and construct representation. Following this refinement, the final version of the Willpower Scale consisted of 9 items, all of which demonstrated adequate factor loadings and communalities, supporting their meaningful contribution to the unidimensional construct of willpower.

A confirmatory factor analysis (CFA) was conducted to examine the adequacy of the single-factor measurement model of the Willpower Scale. The results indicated an acceptable to good model fit, as evidenced by the following goodness-of-fit indices: RMSEA = .070, NFI = .944, CFI = .963, TLI = .949, SRMR = .042, and $\chi^2/df = 2.705$ (Table 4). All standardized factor loadings were statistically significant

Table 3. Exploratory factor analysis of the Willpower Scale

Factors	Items	Factor Loading	Communalities	Factor Explained Variance	Cronbach's α
Willpower Scale	WILL6	.815	.439	49.095	.863
	WILL9	.779	.541		
	WILL10	.747	.362		
	WILL2	.736	.343		
	WILL7	.683	.664		
	WILL1	.663	.466		
	WILL8	.662	.438		
	WILL4	.602	.607		
	WILL5	.586	.558		
	Total Explained Variance			49.095	
KMO					.912
Bartlett's Sphericity Test				Chi-Square	1135.146
				df	36
				p	<.001

Note: KMO: Kaiser-Mayer-Olkin Score.

($p < .001$) and ranged from .577 to .803, indicating that each item contributed meaningfully to the underlying latent construct. Squared multiple correlations (R^2) values ranged from .333 to .645, suggesting that the single-factor model explained a substantial proportion of variance in each item. Overall, these findings provide evidence regarding the internal structure of the Willpower Scale in the current sample (Table 4).

The path diagram of the confirmatory factor analysis corresponding to the model fit indices reported above is presented in Figure 1:

Modification indices were reviewed during confirmatory factor analysis, and a covariance was added between the error terms of WILL1 and WILL2 due to their conceptual similarity and shared item content. The reported fit indices therefore represent the revised model. The theoretical coherence and statistical adequacy of the single-factor structure supported its retention with this theoretically justified modification. Composite reliability was satisfactory ($CR = .88$), although the average variance extracted was slightly below the recommended threshold ($AVE = .44$).

Reliability

Internal consistency analysis

The scale's internal consistency was assessed using Cronbach's alpha. The analysis revealed that the reliability coefficient exceeded .70 in both sample groups. Specifically, Cronbach's alpha was .86 in the exploratory factor analysis group and .86 in the confirmatory factor analysis group, indicating adequate internal consistency for the scale.

Item-total correlation analysis

The item-total correlations for the scale items ranged from 0.529 to 0.728 (Table 5).

Table 4. Confirmatory factor analysis goodness-of-fit indices ($N = 350$).

Item	λ	R^2	B	C.R.	p	θ	Index	Goodness-Fit
W1	.582	.338	1.000			1.112	SRMR	.042
W2	.668	.446	1.064	11.254	***	.800	CFI	.963
W4	.652	.425	1.283	9.506	***	1.267	NFI	.944
W5	.586	.343	1.246	8.813	***	1.689	TLI	.949
W6	.803	.645	1.416	10.832	***	.627	CMIN/DF	2.705
W7	.686	.471	1.158	9.837	***	.858	RMSEA	.070
W8	.577	.333	1.117	8.717	***	1.420		
W9	.707	.500	1.221	10.035	***	.847		
W10	.705	.498	1.060	10.018	***	.645		

Note: RMSEA = Root Mean Square Error of Approximation; NFI = Normed Fit Index; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; TLI = Tucker-Lewis Index; CMIN/DF = Chi-square fit index; λ = standardized factor loading; R^2 = squared multiple correlation; B = Unstandardized factor loading; C.R. = critical ratio; θ = error variance.

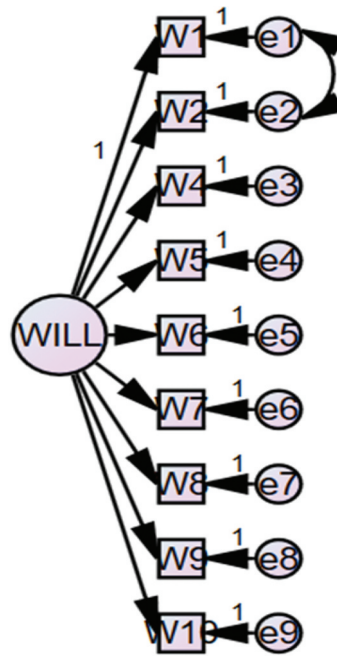


Figure 1. Path diagram.

Table 5. Corrected item–total correlations and internal consistency of the Willpower Scale ($n = 350$).

Factors	ITEMS	Item-Total Correlation	Cronbach's α
WILLPOWER SCALE	WILL1	,579	,863
	WILL2	,634	
	WILL4	,590	
	WILL5	,529	
	WILL6	,728	
	WILL7	,637	
	WILL8	,562	
	WILL9	,639	
	WILL10	,631	

Discussion

In this study, the content and construct validity of the *Willpower Scale* were examined to assess individuals' levels of willpower. Consistent with recommended procedures for scale development, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted (Tabachnick & Fidell, 2015). About CFA results, RMSEA values below .05 or .06 are generally interpreted as indicating close fit, whereas values between .05 and .08 are considered acceptable (Gunzler et al., 2021; Whittaker & Schumacker, 2022). In the present study, the RMSEA value of .070 fell within the acceptable range. The SRMR value (.042) was also below the recommended upper threshold of .08 (Sureshchandar, 2023), indicating adequate residual fit. In addition, CFI, NFI, and TLI values exceeded commonly accepted cutoff criteria (Zyphur et al., 2023), and the χ^2/df ratio (2.705) was within the acceptable range of 1 to 3 (Boateng et al., 2018). Taken together, these indices suggest that the single-factor measurement model demonstrated an acceptable overall fit to the data (Table 4).

At the item level, standardized factor loadings ranged from .577 to .803, indicating that all items met the minimum retention criterion ($\geq .40$) and contributed meaningfully to the latent construct. Although factor loadings above .70 are often interpreted as evidence of a well-defined structure (Hair et al., 2019), methodological sources also emphasize that loadings above .30 reflect a meaningful association between an item and its factor, particularly in psychological constructs that encompass complex and multifaceted processes (Tavakol & Wetzel, 2020). In this context, the observed range of factor loadings supports the

integrity of the single-factor structure without overstating item strength beyond what is empirically demonstrated.

Multiple indicators provided evidence regarding the scale's internal consistency in the current sample. Cronbach's alpha exceeded the recommended threshold of .70, indicating satisfactory internal consistency (Kline, 2015). In addition, item-total correlations were above .30, a criterion commonly used to indicate adequate item discrimination within a scale (Field, 2013). These findings suggest that the items function cohesively in measuring a common underlying construct.

Beyond internal consistency, convergent evidence was further evaluated using composite reliability (CR) and average variance extracted (AVE). While the AVE value fell slightly below the conventional .50 threshold, this finding should be interpreted cautiously rather than as an indication of poor validity. On short, unidimensional scales, AVE values may remain below .50 despite adequate factor loadings and strong reliability coefficients, particularly when the construct reflects broad, integrative psychological capacities rather than narrowly defined behaviors. In the present study, the relatively high CR value and statistically significant factor loadings provide compensatory evidence supporting the convergence of the indicators. Composite reliability (CR) and average variance extracted (AVE) were also examined. CR was satisfactory (.88), whereas AVE (.44) was below the conventional .50 threshold. Therefore, these findings provide additional information regarding internal consistency and item convergence but should not be interpreted as establishing convergent validity on their own.

From a theoretical perspective, the unidimensional structure of the Willpower Scale is consistent with Assagioli's conceptualization of will as a functionally integrated psychological process. Although Assagioli (1973) distinguished between different types of will—such as strong, skillful, good, and transpersonal—these categories are primarily conceptual and may not manifest as independent psychometric dimensions in everyday functioning. In practical contexts, volitional behavior often involves the simultaneous engagement of perseverance, moral responsibility, emotional regulation, and deliberate decision-making. For example, pursuing a morally valued goal may require both sustained effort and strategic self-control. The emergence of a single dominant factor in the present study suggests that these theoretically distinct aspects of will converge into a unified volitional capacity in lived experience. This interpretation aligns with prior work emphasizing the interdependent nature of motivational, emotional, and cognitive control processes (Kuhl & Fuhrmann, 1998; Taylor, 1967). Considerations of parsimony and practical applicability also guided the choice of a single-factor solution. Although alternative multifactor models were explored during the analytic process, they did not yield improved model fit or substantively clearer interpretations. Given the aim of developing a brief and efficient assessment tool, the single-factor structure was deemed appropriate for capturing willpower as a global, effort-based capacity rather than a set of narrowly differentiated subdimensions. This approach is consistent with contemporary scale development practices that prioritize theoretical coherence and usability alongside statistical fit.

Compared with existing instruments, the Willpower Scale offers a concise, theoretically integrated measure grounded in both psychosynthesis theory and the strength model of self-control. Its focus on a unified volitional capacity distinguishes it from measures that fragment self-regulatory processes into multiple subscales or that emphasize behavioral control in isolation. These features enhance the scale's potential utility in research contexts where brevity and conceptual clarity are essential.

Conclusions

The findings provide preliminary evidence regarding the internal structure and internal consistency of the Willpower Scale among emerging adults in the current sample. The final version consists of nine items, with possible total scores ranging from 9 to 63. All items are scored in the same direction, with higher total scores indicating greater willpower. The scale was developed as a brief self-report instrument designed for efficient administration in research and applied contexts involving young adult populations. From a structural perspective, both exploratory and confirmatory factor analyses supported a single-factor model, suggesting that willpower can be represented as a unified volitional capacity rather than as a set of empirically separable subdimensions within this sample. The confirmatory factor analysis yielded acceptable model fit indices, indicating that the proposed unidimensional measurement model adequately fit the observed data. Moreover, internal consistency indices, including Cronbach's alpha and composite reliability, exceeded

commonly accepted thresholds, while item-level analyses demonstrated that all retained items contributed meaningfully to the latent construct. Taken together, these findings support the internal coherence and reliability of the scale within the studied sample.

Taken together, these findings suggest that the Willpower Scale is a brief, theoretically grounded measure with preliminary evidence regarding its internal structure and internal consistency in the current sample. Additional evidence is needed to establish its validity, temporal stability, and practical utility in other populations and contexts.

Implication for practice

This study introduces a brief self-report measure that may support research in sociology, social work, and psychology, particularly among populations similar to the emerging adult sample examined in the present study. The Willpower Scale may be used to investigate the relationships between willpower and variables such as depression, anxiety, life satisfaction, religious sensitivity, and work perceptions. Its potential utility in group therapy or psychoeducational settings in which willpower may be relevant should be evaluated in future studies before its use in such contexts can be recommended.

Future research may examine the potential relevance of the Willpower Scale in educational, clinical, addiction and rehabilitation, sports, spiritual or religious, organizational, and social work contexts. In educational and youth research, studies could investigate the relationships of willpower scores with academic focus, procrastination, delay of gratification, impulsivity, and learning motivation. Clinical and addiction research could similarly explore their associations with therapy-related motivation, treatment adherence, emotional regulation, behavioral change, and other recovery-related processes. In sports and organizational settings, future studies may examine relationships with discipline, persistence, goal commitment, performance, leadership, and professional well-being.

The scale's potential relevance to social work merits particular attention. Future research could examine how volitional strength relates to goal pursuit, self-determination, and engagement with interventions among different client groups, as well as to ethical decision-making, emotional regulation, reflective practice, and burnout among practitioners. In collectivist societies, studies may also explore how family expectations, religious values, and cultural norms shape the experience and expression of willpower. Longitudinal and intervention-based studies are needed to establish criterion-related and predictive validity, test—retest reliability, measurement invariance, and sensitivity to change. Until such evidence is available, the scale should not be recommended for clinical decision-making, intervention planning, progress monitoring, relapse-risk assessment, personnel evaluation, or other professional applications.

Limitations and future research directions

This study has several limitations. First, the sample was restricted to emerging adults, most of whom were young and single, which may limit the generalizability of the findings. Although participants varied in educational level and marital status, measurement invariance across demographic subgroups was not examined using multi-group confirmatory factor analysis. Therefore, it remains unclear whether the Willpower Scale functions equivalently across different groups. Future studies should replicate the findings in more diverse samples and examine configural, metric, and scalar invariance across variables such as gender, age, educational level, occupational status, and marital status.

Second, the validity evidence examined in this study was limited to content validity and internal structure analyses through EFA and CFA. Criterion-related validity was not assessed by relating the scale to theoretically relevant constructs such as self-control, grit, or other psychological and behavioral outcomes. Test—retest reliability, predictive validity, diagnostic accuracy, clinical cutoff scores, and sensitivity to change were also not examined. Accordingly, the findings should be interpreted as preliminary evidence regarding the scale's content, internal structure, and internal consistency within the current sample rather than as comprehensive evidence that it is valid and reliable. Future research should examine its convergent, discriminant, criterion-related, and predictive validity, as well as its temporal stability. Until such evidence is available, the scale should not be recommended for diagnostic purposes, progress monitoring, relapse-risk estimation, or other professional applications.

Finally, the Willpower Scale was developed and tested exclusively within the Turkish cultural context, and its psychometric properties may differ across societies. According to Hofstede's cultural dimensions theory, factors such as individualism—collectivism, power distance, and uncertainty avoidance may influence how willpower is experienced and expressed (Hofstede, 2001). For example, willpower may be associated more closely with personal autonomy and self-fulfillment in individualistic societies, whereas it may be linked to social obligations and family expectations in collectivist cultures. Future studies should therefore adapt and evaluate the scale in diverse cultural settings and examine cross-cultural measurement invariance before making meaningful comparisons across societies.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Appendix. Final Version of the Willpower Scale

	1	2	3	4	5	6	7
I proceed in a planned manner to achieve the goals I set for myself.							
When I encounter challenging situations, I continue to exert effort.							
I do not easily abandon the decisions I have made.							
I can remain focused on my work despite distractions.							
I do not easily give up before accomplishing what I set out to do.							
When necessary, I can motivate myself to achieve my goals.							
I make an effort to use my time efficiently.							
The obstacles I encounter do not deter me from pursuing my goals.							
I am confident in my ability to complete a task.							