

# Will to Exist, Live, Survive and Fight (WTELS-F) Scale: Initial Psychometrics and Validation of a Long and a New Short Version

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## Abstract

The “will to exist, live, survive, and fight” (“WTELS-F”) scale was constructed using a pool of 26 items that were selected to represent the three factors of the construct: “will to exist,” “will to live,” and “will to survive and fight.” The study used two samples, one consisting of adolescents and young adults from Egypt (N = 610) and the other consisting of adults from Kuwait (N = 490). The study also used measures for resilience, post-traumatic growth (PTG), identity salience, and psychopathology. We conducted two exploratory factor analyses to examine the construct’s structural validity and its independence from similar constructs. The first was on the measure’s items, and the second was on the combined items of WTELS-F, resilience, and PTG. A confirmatory factor analysis was performed on the second sample. Correlation and structural equation modeling (SEM) analysis were conducted to establish discriminant, convergent, and predictive criterion validity. Multigroup invariance was conducted to check the invariance of the measure and SEM model across genders. Results showed that WTELS-F was independent of resilience and PTG and explained a significantly larger variance. The measure and its short version had high internal consistency, test-retest stability, and adequate discriminant, convergent, divergent, and predictive validity. The measure and the SEM model were strictly invariant between genders. Finally, the study’s potential and limitations were briefly discussed.

## Keywords

Will to Exist Live Survive and Fight, Resilience, Identity Salience, PTG, Social Support, Suicidality

## 1. Introduction

“Will to exist, live and survive, and fight” (WTELS-F) is a new emerging paradigm (Kira et al., 2014; Kira et al., 2020a; Kira et al., 2020b; Kira et al., 2021a; Kira et al., 2021b; Kira et al., 2021c; Kira et al., 2022). Its short 6-item measure claims to measure three connected components: Will to exist (WTE), will to live (WTL), and will to survive and fight (WTS-F). The hypothesized three-factor conceptual structure has never been tested. Additionally, WTELS-F may conceptually overlap with other close concepts of posttraumatic growth (PTG) and resilience, as they were highly correlated. The conceptual differentiation between them needs to be empirically verified. It was hard to do that using the 6-item version of the scale, especially since its three conceptual structures are highly correlated. While a short version is helpful and more useful in research, a long version will help clarify its different components and their differential impact.

The goal of the current research is to develop a relatively longer version of the scale that represents the three dimensions and tests the existence of the conceptually proposed three components (“will to exist,” “will to live,” and “will to survive/fight”). Another goal is to provide empirical evidence of the structural independence of “WTELS-F” from “resilience” and “PTG” and test “WTELS-F” primacy compared to resilience and PTG and “WTELS-F” relation to identity salience and executive self. The third goal is to provide evidence of the long measure and its three subscales’ robust psychometrics (reliability, test-retest stability, and convergent, structural, and predictive validity). Using various methods, the professional team developed a pool of 35 items. Using a focus group that rated each item, we ended up with 26 items representing the three dimensions of the previously defined concept (see **Table 1** and **Appendix 1** in the supplemental materials). We will use two samples. The first sample includes adolescents and young adults from Egypt (N = 610), and we will conduct an exploratory factor analysis of the developed pool of items (26 items). The second sample includes adults from Kuwait (N = 490), on which we conducted a “confirmatory factor analysis” to test the structural validity of the found components in the first sample in a different culture and age group. We also conducted “an exploratory factor analysis” on the Kuwaiti sample with all the items in WTELS-F, resilience, and PTG to examine their overlap and which was more salient, explaining more variance when they were put together. Additionally, we used a sample of 180 Syrian refugees in Turkey to conduct test-retest stability of the WTELS-F scale.

### Hypotheses:

**Hypothesis 1:** The structure of the “WTELS-F” scale has three distinct dimensions that are highly correlated in a one-second order structure.

**Hypothesis 2:** The “WTELS-F” is conceptually and structurally independent from the close concepts of resilience and posttraumatic growth and accounts for more variance than them, which gives WTELS-F more conceptual and structural primacy.

**Hypothesis 3:** The “WTELS-F” scale has adequate convergence and divergence and Criterion validity. It will highly correlate with resilience, PTG, social support, and identity salience, and negatively with internalizing, externalizing, thought disorder, suicidality, and addiction.

**Hypothesis 4:** The WTELS-F scale, its three subscales, and its short version will have adequate reliability and stability (test-retest).

**Hypothesis 5:** “Identity salience” has direct significant effects on “WTELS-F”, indicating that identity salience is one of the significant catalysts of WTELS-F. WTELS-F has large significant effects on positive coping (social support and resilience), and PTG. It had negative effects on suicidality and addiction.

## 2. Methods

### 2.1. The First Sample: The Egyptian Adolescents and Young Adults (N = 610)

**Participants:** Six hundred seventy-one participants were recruited from high schools and first-year college students in Cairo, Egypt. The final sample consisted of 610 after removing participants who failed at least half of the attention checks (N = 61). 71.5% were females, ages 12 - 19. For education, 76% were secondary and high school students, 11.1% were retail workers, 8.5% were manual workers, and 4.3% were college and university students. For marital status, 94.8% were single, 1.5% married, and 3.7 divorced. For SES, .5% were very poor, 2.2% were poor, and 97.3% were in the middle. For religion, 95.5% were Muslim, and 4.5% were Christians.

**Procedure:** The questionnaires were administered to participants from August 2021 to March 2022 in Egypt. We used Google Drive and developed a survey link. Once the participant completed the survey, it was sent anonymously to Gmail and then downloaded to the Excel file. All questionnaires were administered individually to participants. Participation was voluntary with built-in informed consent; each person took approximately 20 minutes to complete the questionnaire. The IRB of the sponsoring University approved the research protocol as part of a cross-cultural study of the impact of COVID-19. The research team decided on the questionnaire and designed the study.

#### Measures

**Connor-Davidson Resilience Scale (CD-RISC) 10-item version (Connor & Davidson, 2003).** The scale measures resilience. The participant scores each item on a 5-point Likert scale with (0) to true and (4) nearly all times. The measure showed adequate “reliability, test-retest stability, and discriminant, convergent, and divergent validity (Connor & Davidson, 2003). In current data, the measure had an  $\alpha$  of .81.

**“Social Support Survey (Sherbourne & Stewart, 1991)”.** The social support survey is a 12-item measure that assesses “Tangible Support” (4 items) and “Emotional and Informational Support” (8 items). The participant evaluates each item on a 5-point Likert scale, with (1) denoting none of the time and (5) meaning all

of the time. Studies supported four social support factors: emotional/informational, tangible, affectionate, and positive social interaction. The measure proved robust psychometrics (Sherbourne & Stewart, 1991). In current data, the measure had an  $\alpha$  of .92.

**“Posttraumatic Growth Inventory—Short Form (PTGI-SF;”** Cann et al., 2010). It is a 10-question scale assessing resilience. Each question is answered on a 6-point scale. The PTGI-SF has shown good internal consistency (Cann et al., 2010). The measure also appears to have sound psychometric properties in the Arabic language version (Kira et al., 2013), with an  $\alpha$  of .96 for the primary measure. The Cronbach’s alpha in the present study was .88 for the first sample and .92 for the second sample.

**“Psychopathology Screening Measure”** (Kira et al., 2017) is 18 item scale that measures the three factors of psychopathology (Internalizing, externalizing, and thought disorders found in various studies (e.g., Caspi et al., 2014; Laceulle et al., 2015). The subject is tasked with identifying whether the behavior or feeling occurred within the past month (scored 4), the last 2-3 months (scored 3), the last 3 - 12 months (scored 2), the past year or more (scored 1), or if it has never occurred (scored 0). The test-retest indicated high (.970 for internalizing, .908 for externalizing, for thought disorder subscales. The total psychopathology scale has an alpha of .91 in the current data. (alphas for externalizing is .70, 86 for internalizing, and .81 for thought disorder Subscales.

## 2.2. The Second Sample: Kuwaiti Adults (N = 490)

**Participants:** A total of 544 participants were recruited from different organizations and colleges in the city of Kuwait, Kuwait. The final sample consisted of 490 after removing participants who failed at least half of the attention checks (N = 54). Ages ranged from 18 to 60 (Mean = 24.97, SD = 9.10), with 66.3% females and 33.7% males. For marital status, 24.1% were married, 72.4% were single, 2.7% were divorced, and .8 were widows. The reported socioeconomic status (SES) indicated that 2.9% belong to low SES, 80% to middle SES, and 17.1% reported high SES. For religion, 99.6% were Muslims, and .4% reported other religions. The reported education levels include 1.2% with good writing and reading abilities, 9.2% with an intermediate level of schooling, 83.5% with a college or university degree, and 6.41% with graduate degrees.

**Procedures:** The data collection for the study went from October 2021 to January 2022. Participants were recruited from various online platforms and word of mouth. We used an online self-report survey (Google Forms®). The research team of four graduate students, under the supervision of the primary research leader, conducted the fieldwork. They used the snowball recruiting technique, utilizing social media platforms and applications (e.g., Facebook) and the e-mail lists developed by the team networks. Informed consent to participate was signed electronically at the beginning of the survey. The survey took between 25 and 30 minutes. The institutional review board (IRB) of Fayoum University, Egypt,

approved the research.

**Measures:** In addition to the measures used in the first sample, we added the following measures:

**“Identity Salience Scale (ISS)”**. The ISS (Kira et al., 2011) is a 10-item scale. Identity dormancy/salience describes the person’s specific identity (personal or group), Commitment, and militancy, whether peripheral or central. It consists of questions like, “Sometimes I wish to kill myself or somebody before my Group (e.g., ethnic or religious) or nation or any other group I belong to is eliminated, subjugated or harmed.” The response is rated on a 7-point Likert scale that ranges from 1 = entirely disagree to 7 = absolutely agree. Higher scores mean higher collective identity salience. Confirmatory and exploratory factor analysis confirmed two subscales: identity commitment and identity militancy. Internal consistency ( $\alpha$ ) for the measure was .80 for adolescents, and Test-retest reliability after three weeks was .76. The scale’s  $\alpha = .94$  for the current sample (.91 for Commitment and .90 for militancy).

**“The suicidality subscale of the Cumulative trauma disorders scale (CTD; Kira et al., 2012)”** is a three-item that assesses suicidal ideation, attempting, or contemplating suicide. The suicide subscale has an alpha of .86 in current data. Addiction propensity was measured by a single item from the CTD scale with good single-item psychometrics.

### 2.3. Test-Retest Sample

The sample consisted of 180 Syrian refugees in Turkey who completed a survey of different scales, including the WTELS-F scale, twice, ten weeks between times 1 and 2. The sample included 53.7% females, aged 18 to 67 (mean = 34.73, SD = 11.31). It included 65.0% married, 25.8% single, 4.2% divorced, 4.5% widowed, and .05% others. 96.1 Muslims, 3.9% Christians. For education, 32.9% have good reading and writing skills, 47.4% have a high school education, 6.1% have a college or university education, and 2.1 have graduate degrees.

**Statistical analysis:** We used Cohen’s (1992: p. 158) to decide the sample size needed to uncover a medium effect size at power = .80 for  $\alpha = .05$  for the number of variables used in the analyses. All data were prescreened to check for outliers and missing data. We conducted data analysis using IBM-SPSS 28 and AMOS 28. An “exploratory factor analysis” was performed on the WTELS-F scale items in the first sample. In the second sample, we conducted an exploratory factor analysis for all the items of WTELS-F, resilience, and PTG to check their conceptual independence or overlap. We conducted Parallel analysis to identify the number of factors to retain (Horn, 1965). Further, we conducted confirmatory factor analysis for the WTELS-F items in the second sample. We performed a correlation between variables in the two samples to check the convergent, divergent, and predictive Criterion validity of the scale. We followed Cohn’s recommendations for evaluating effect sizes in correlational research. According to Cohn, 1988, an effect size of .10 (or less) can be considered small; an effect size of .30 can be considered

medium size, while an effect size of .50 or more can be considered large. Additionally, we conducted alpha internal consistency for all the scales and subscales and test-retest stability in a separate study.

To further explore the predictive validity of WTELS-F and the dynamics of its interaction with other variables, we performed structural equation modeling (SEM) analysis on the second sample. The model included three latent variables: Identity salience as a latent variable predicted by its two components, identity commitment, and identity militancy; WTELS-F as a latent variable predicted by its three components (WTE, WTL, and WTS-F), and the latent variables positive coping as predicted by the resilience and social support. In the model, PTG, suicidality, and addiction were the outcome variables. We reported direct, indirect, and total effects as standardized regression coefficients. We followed Byrne's 2012 recommendations for good model fit that included a non-significant chi-square ( $\chi^2$ ), chi-square/degrees of freedom ( $\chi^2/d.f. > 5$ ), root-mean-square error of approximation (RMSEA) values  $< .08$ , and comparative fit index (CFI) values  $> .90$ . Bootstrap with 10,000 bootstrap samples was conducted to determine the significance of indirect, direct, and total effects and bias-corrected 95% confidence intervals for the variables.

Additionally, to check whether the measurement model (confirmatory factor analysis Model of the scale) and the SEM model are invariant across genders, we conducted a multi-group invariance analysis. Although there is broad consensus on the criteria for assessing the invariance of the models at each level, the criteria could be more precise. For example, Chi-square tests LRT is significantly sensitive to the sample size (e.g., Meade & Lautenschlager, 2004), potentially leading to an excessively conservative invariance test and is controversial to use with large samples. However, the null hypothesis of invariance should not be rejected when changes in CFI are less than or equal to .01 and RMSEA is less than or equal to .015 (Chen, 2007).

### 3. Results

#### The Construct Validity

**A) The structure of WTELS-F: Exploratory factor analysis results:** Exploratory factor analysis of the 26 items in the adolescents and young adults Egyptian sample using principal axis factoring and Oblimin rotation and the scree test criteria, complemented by parallel analysis, yielded three factors that explained 60.66% of the variance. The first factors were loaded on 12 items and accounted for 48.75% of the variance. However, we eliminated four items from them due to relatively high cross-loading. The items in this factor represent the will to live. The second factor loaded on ten items and accounted for 7.64% of the variance, representing the will to exist. We eliminated one item from them due to relatively high cross-loadings. The third factor loaded on five items representing the will to survive and fight, accounting for 4.27% of the variance. All the accepted items are loaded above .40. **Table 1** presents the items and their loading on each factor, including the deleted items.

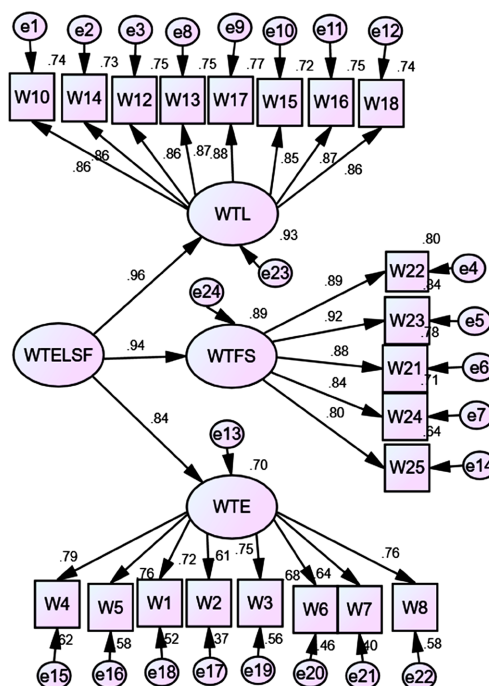
**Table 1.** Exploratory Factor analysis of the 26 items of the WTELS-F scale.

Items and their numbers in the survey	Factor		
	1	2	3
13) With all the pains I have or may have, I want to continue living.	<b>.859</b>	.022	.102
17) My will to live is generally:	<b>.823</b>	-.104	-.100
18) Please evaluate objectively and honestly and in general terms your will to live on a scale from 0 to 5, would you say that it is:	<b>.783</b>	-.068	-.043
12) I have an existential motivation to live.	<b>.766</b>	.078	.053
16) My life is worth living.	<b>.755</b>	-.078	-.116
10) I have good reasons to live and continue living.	<b>.688</b>	.115	-.019
14) I have been given this life and I plan to make the best out of it.	<b>.662</b>	.190	-.006
19) I have good reasons to live and fight for myself and for what I believe in.	<b>.643*</b>	.001	-.250
20) I am motivated to achieve my goals in life by a drive to live and win.	<b>.535*</b>	.020	-.335
26) Please evaluate objectively and honestly, and in general terms, your will to survive and fight for yourself, your beliefs, and the others you love on a scale from 0 to 5, would you say that it is:	<b>.530*</b>	.053	-.285
11) I want to live my life, even when I face life-threatening or life-limiting conditions; I will continue fighting for my life, even if I have to die.	<b>.527*</b>	.357	.082
15) My will to live is at the very core of me.	<b>.447</b>	.211	-.147
4) I am self-directed, self-dependent, self-determined, and persistent.	-.124	<b>.766</b>	-.136
5) I am striving to maintain meaning and significance, dealing with the existential challenges and the salience of living and dying.	.012	<b>.751</b>	.013
1) I have the motivation to be in full control of myself, my emotions, thoughts, and actions, and my life	.044	<b>.607</b>	-.064
3) I feel, think, make a decision, and act, this is who I am and how I operate	-.057	<b>.597</b>	-.058
6) My existence now (in real life and in real-time) is more salient than my mortality.	.206	<b>.589</b>	.155
2) To be or not to be, is the question.	-.003	<b>.559</b>	.021
8) I search to develop an understanding of who I am, what the world is like, and how I situate myself, fit in, and relate to others and the scheme of things.	.104	<b>.550</b>	-.097
7) You can buy anything, but you cannot buy my will.	-.001	<b>.525</b>	-.048
9) Please objectively, honestly, and in general terms evaluate your will to exist, be your own self, achieve your potential, and live a meaningful life on a scale from 0 to 5, would you say that it is:	.156	<b>.392*</b>	-.207
22) My strong agentic self-directed will help me to make it against the odds.	.062	.152	<b>-.729</b>
23) I have the will and appetite to fight and succeed till the end of my life.	.231	.106	<b>-.579</b>
21) I am determined, and persistent, and do not give up.	.212	.042	<b>-.543</b>
25) When I have experienced significant adversity in my life, I have become even more determined to succeed and thrive.	.175	.213	<b>-.513</b>
24) Existence is resistance.	.094	.226	<b>-.510</b>

\*: items eliminated for cross-loadings.

**B. The structure of WTELS-F: Confirmatory factor analysis results:** A confirmatory factor analysis was used on the adult Kuwaiti sample. The model that included one-second order factor and three first-order factors of WTL, WTE, and WTS-F had a good fit with data without any modification (Chi square = 626.656, d.f. = 186,  $p = .000$ , CFI = .952, RMSEA = .070). All items were highly loaded on their perspective latent factors (between .60 and .92). All the first-order factors were highly loaded on the second-order factor (between .80 - .92). WTL accounted for .93 of the variance, followed by WTS-F (.89). The results lent support to the structural validity of the model and the plausibility of using both subscales and the principal scale scores in subsequent research. **Figure 1** provides the details of these results.

WTELSF Scale: N = 490 Kuwaiti Adults  
 Chi Square = 626.656, d.f.= 186,  $p=.000$   
 CFI = .952  
 RMSEA=.070



**Figure 1.** Confirmatory factor analysis for the will to exist, live, and survive/fight scale (without modifications).

**C. The structural independence and primacy of WTELS compared to resilience and PTG:** To check if the measure of WTELS-F is conceptually independent of the concept of resilience and PTG and to determine the primacy of each concept, we conducted exploratory factor analysis with all the items of the three measures. We used the adult Kuwaiti sample to conduct principal axis factoring, Oblimin rotation, and the scree test criteria, complemented by parallel analysis. The analysis yielded three factors that explained 58.27% of the variance. The first

factors loaded on all the WTELS-F items and accounted for 45.25% of the variance. The second factor loaded on all PTG items and accounted for 7.45% of the variance, while the third factor loaded on all the resilience items and accounted for 5.56% of the variance. All items loaded significantly on their respective factors. While there was a non-significant overlap between the factors in some items, each factor was structurally independent. WTELS-F accounted for the highest variance, indicating its structural primacy. **Table 2** presents the factor analysis results.

**Table 2.** The factorial independence of WTELS-F, PTG, and resilience.

Items of the measures numbered	Component		
	1	2	3
WTEL13	<b>.921</b>	-.043	-.096
WTEL18	<b>.909</b>	-.006	-.103
WTEL20	<b>.900</b>	.008	-.010
WTEL17	<b>.899</b>	-.015	-.058
WTEL16	<b>.891</b>	-.013	-.067
WTEL14	<b>.868</b>	.015	-.072
WTEL12	<b>.862</b>	.008	-.018
WTEL10	<b>.858</b>	.032	-.022
WTEL19	<b>.855</b>	.024	-.009
WTEL23	<b>.839</b>	.034	.029
WTEL24	<b>.832</b>	-.030	.009
WTEL26	<b>.832</b>	-.001	-.046
WTEL22	<b>.812</b>	.021	.049
WTEL15	<b>.802</b>	.090	-.005
WTEL21	<b>.795</b>	.100	.022
WTEL11	<b>.751</b>	.044	.031
WTEL25	<b>.696</b>	.070	.087
WTEL9	<b>.648</b>	.061	.089
WTEL8	<b>.616</b>	.086	.094
WTEL6	<b>.527</b>	.083	.127
WTEL3	<b>.490*</b>	.075	.208
WTEL7	<b>.488</b>	.059	.148
WTEL1	<b>.484*</b>	.024	.266
WTEL5	<b>.477*</b>	.087	.261
WTEL4	<b>.473*</b>	.133	.279

## Continued

WTEL2	<b>.428*</b>	-.016	.250
PTG6	-.077	<b>.842</b>	.069
PTG2	.068	<b>.801</b>	-.042
PTG7	.002	<b>.796</b>	.066
PTG4	-.045	<b>.793</b>	-.003
PTG9	.001	<b>.786</b>	.092
PTG3	.138	<b>.732</b>	.009
PTG5	.031	<b>.727</b>	-.121
PTG8	.050	<b>.715</b>	.057
PTG1	.025	<b>.708</b>	-.108
PTG10	-.015	<b>.622</b>	.002
RES 2	.007	.009	<b>.693</b>
RES 1	.174	.041	<b>.686</b>
RES 4	.075	.007	<b>.664</b>
RES 3	.124	-.007	<b>.629</b>
RES 6	.020	.018	<b>.616</b>
RES 7	.155	.017	<b>.615</b>
RES 5	.198	-.019	<b>.601</b>
RES 9	.263	.072	<b>*.560</b>
RES 10	.210	-.032	<b>*.512</b>
RES 8	-.142	.040	<b>.324</b>

Notes: \*Potential non-significant overlap; Notes PTG = posttraumatic growth (items numbered), WTEL = WTELS-F items numbers, RES = Resilience items numbered.

Further, we conducted the same analysis with the extracted short version (9 items instead of the full scale), PTG short form (10 items), and resilience short form (10 items). The results were similar to those using the full scale. The WTELS-F short-form item was the first factor that accounted for 40.466% of the variance, followed by PTG, 10.335%, and resilience, 6.682% of the variance. There was no significant cross loading and WTELS-F accounted for the highest variance. **Table 3** represents these results:

**Criterion, discriminant, convergent, divergent, and predictive validity:** WTELS-F and its subscales in the adolescents and young adults sample were highly associated with resilience, social support, and PTG, providing evidence of its convergent validity.

**Table 3.** The three factors of WTELS-F (short version), PTG and resilience.

Items	Factor Loading		
	F1	F2	F3
18) Please evaluate objectively and honestly and in general terms your will to live on a scale from 0 to 5, would you say that it is:	.843	.065	-.015
17) My will to live is generally:	.835	.050	.032
13) With all the pains I have or may have, I want to continue living.	.770	.055	.027
23) I have the will and appetite to fight and succeed till the end of my life.	.760	.099	.115
22) My strong agentic self-directed will helped me to make it against the odds	.732	.085	.131
21) I am determined, and persistent, and do not give up.	.711	.165	.106
4) I am self-directed, self-dependent, self-determined, and persistent.	.409	.172	.297
1) I have the motivation to be in full control of myself, my emotions, thoughts, actions, and my life.	.397	.082	.284
5) I am striving to maintain meaning and significance, dealing with the existential challenges and the salience of living and dying.	.396	.135	.284
PTG6	-.090	.828	.051
PTG2	.053	.799	-.048
PTG7	-.030	.792	.065
PTG9	-.020	.773	.090
PTG4	-.038	.756	-.010
PTG3	.107	.735	.021
PTG8	.029	.690	.071
PTG5	.035	.677	-.104
PTG1	.044	.661	-.109
PTG10	.025	.544	.015
I think of myself as a strong person when dealing with life's challenges and difficulties	.137	.018	.728
I try to see the humorous side of things when I am faced with problems	-.001	.000	.645
Having to cope with stress can make me stronger	.056	.007	.626
I am able to handle unpleasant or painful feelings like sadness, fear, and anger	.120	-.019	.610
I am not easily discouraged by failure	.153	-.014	.609
I believe I can achieve my goals, even if there are obstacles	.234	.066	.578
I can deal with whatever comes my way	.146	.021	.576
Under pressure, I stay focused and think clearly	.031	.003	.565
I can adapt when changes occur	.195	-.014	.480
I tend to bounce back after illness, injury, or other hardships	-.136	.038	.249

Note: factor 1+ WTELS-F, F2 = Posttraumatic growth (PTG), F3 = Resilience; Note: Extraction Method: Principal Axis Factoring, Rotation Method: Oblimin with Kaiser Normalization.

They were significantly negatively associated with externalizing behavior. WTL, WTS-F, and WTELS-F were significantly negatively associated with internalizing and thought disorders, providing evidence of their predictive validity. **Table 4** details the Zero-order correlations between the variables.

**Table 4.** Zero-order correlation between WTELS-F and its subscales with mental health and resilience variables in Egyptian adolescents (N = 601).

Variables	1	2	3	4	5	6	7	8	9	10
1) WTL	1									
2) WTE	.60***	1								
3) WTSF	.75***	.64***	1							
4) WTELSF	.91***	.85***	.88***	1						
5) Resilience	.46***	.59***	.54***	.60***	1					
6) Social Support	.40***	.36***	.37***	.43***	.39***	1				
7) PTG	.46***	.46***	.51***	.53***	.43***	.27***	1			
8) Externalizing	-.21***	-.14***	-.20***	-.21***	-.09*	-.07	-.04	1		
9) Internalizing	-.20***	.03	-.11**	-.11**	.02	-.05	.07	.56***	1	
10) Thought Disorder	-.24***	.01	-.16***	-.15***	-.03	-.09*	.04	.62***	.73***	1

Notes. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

WTELS-F and its subscales were negatively associated with suicidality in the Kuwaiti adults sample, providing evidence of its discriminant and Criterion validity. They were negatively associated with addiction propensity. It was positively associated with identity commitment and militancy, emphasizing the relationship between WTELS-F and identity salience. They were also highly associated with resilience, social support, and PTG. **Table 5** presents the zero-order correlation between the variables.

**Table 5.** Zero-order correlation between WTELSF and its subscales with mental health and resilience variables in Kuwaiti adults.

Variable	1	2	3	4	5	6	7	8	9	10	11
1) WTL	1										
2) WTSF	.90**	1									
3) WTE	.81***	.88***	1								
4) WTELSF	.95***	.98***	.94***	1							
5) Resilience	.44***	.46***	.44***	.47***	1						
6) Social Support	.47***	.45***	.42***	.47***	.40***	1					
7) PTG	.39***	.44***	.47***	.46***	.37***	.19***	1				
8) Identity Militancy	.20***	.24***	.23***	.24***	.10*	.14**	.28***	1			

## Continued

9) Identity Commitment	.17***	.19***	.21***	.20***	.05	.15**	.30***	.80***	1		
10) Suicidality	-.35***	-.30***	-.27***	-.32***	-.12*	-.19***	-.01	.01	.05	1	
11) Addiction propensity	-.30***	-.30***	-.28***	-.31***	-.13*	-.14**	-.06	.01	.09	.62***	1

Notes. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Reliability and stability results:** The test-retest stability of the WTELS-F scale on a sample of 180 Syrian refugees in Turkey was .92 with ten weeks between times 1 and 2. Cronbach's alpha for the scale was .94 (.92 for WTL, .85 for WTE, and .90 for WTSF subscales) in the first adolescents and young adults sample and .97 (.96 for WTL, .89 for WTE, and .97 for WTSF subscales) in the Kuwaiti adults' sample.

**The WTELS-F short-form scale psychometrics.** Our decision to build the short measure was based on factor analysis. We take the first three items with the highest loading in each factor to build the WTELS-FS nine-item short measure. The short measure is highly correlated with the long measure ( $R = .98$ ,  $p < .0001$ ). The short measure had an  $\alpha$  of .92. Its three subscales had good  $\alpha$ 's: .91 (WTL) and .81 (WTE). .93 (WTS-F). See the appendix for the short measure.

**SEM analysis results:** The model fitted well "(Chi Square = 78.416, d.f. = 30,  $p = .001$ , CFI = .977, RMSEA = .066)". WTS-F accounted for the highest variance in the model ( $R^2 = .958$ ). Identity commitment and militancy were highly loaded on the latent variable of identity salience. WTE, WTL and WTS-F loaded highly on their latent variable WTELS-F. Identity salience had "low to medium size direct effects" on "WTELS-F". It had "direct" and "indirect" effects on PTG. Its "total effects" on PTG were medium to large. Its "direct effects" on "PTG" accounted for 77% of its total effects. It had small to medium-sized "indirect effects" on positive coping, including social support and resilience, as well as "WTS-F", "WTL", and "WTE".

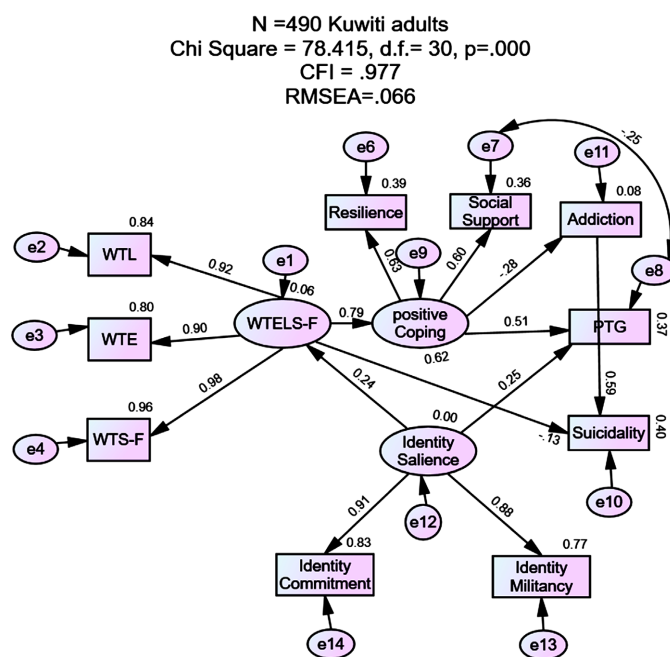
WTELS-F had "direct" large-sized effects on positive coping (.79,  $p < .01$ ) and "indirect" rather large effects on resilience (.49,  $p < .01$ ) and social support (.47,  $p < .01$ ). It had medium to large "indirect effects" on PTG (.40,  $p < .01$ ). It had "direct and indirect" negative effects on suicidality. Its total negative effects on suicidality were in the medium-sized range. Its "direct negative effects" on suicidality accounted for 50 % of its total effects. It had "indirect negative effects" on addiction propensity ( $-.22$ ,  $p = .01$ ).

Resilience had "medium-sized direct negative effects" on the propensity to addiction ( $-.28$ ,  $p < .01$ ). It had "large-size direct effects" on PTG. It had "large-size direct effects" on social support (.60,  $p < .01$ ) and "small to medium negative indirect effects" on suicidality. In this model, there is a *loop in which resiliency affects positively other positive variables* (e.g., social support, PTG), and those variables mediate a further higher resilience. **Table 6** presents each variable's "direct", "indirect", and total effects and its "95% confidence intervals". **Figure 2** presents the direct paths between variables in the model.

**Table 6.** “The direct, indirect, and total effects and their 95% confidence intervals” of each variable in the model.

Causal Variables	Endogenous Variables											
	WTELSF	Positive Coping	Addiction	Suicidality	PTG	Identity Salience	Militancy	WTSF	WTE	WTL	Social Support	Resilience
<b>Identity Salience</b>												
Direct Effects	.24** (.12/.34)	—	—	—	.25** (.14/.33)	.91** (.81/.99)	.88* (.74/.99)	—	—	—	—	—
Indirect Effects	—	.19** (.10/.27)	-.05** (-.10/-.02)	-.06** (-.10/-.03)	.10** (.05/.15)	—	—	.23** (.12/.33)	.21** (.11/.31)	.22** (.11/.31)	.11** (.06/.16)	.12** (.06/.18)
Total Effects	.24** (.12/.34)	.19** (.10/.27)	-.05** (-.10/-.02)	-.06** (-.10/-.03)	.35** (.23/.43)	.91** (.81/.99)	.88* (.74/.99)	.23** (.12/.33)	.21** (.11/.31)	.22** (.11/.31)	.11** (.06/.16)	.12** (.06/.18)
<b>WTELSF</b>												
Direct Effects	—	.79** (.70/.88)	—	-.13* (-.24/-.06)	—	—	—	.98** (.97/.99)	.90** (.87/.92)	.92** (.89/.94)	—	—
Indirect Effects	—	—	-.22** (-.34/-.14)	-.13* (-.24/-.06)	.40** (.31/.49)	—	—	—	—	—	.47** (.39/.55)	.49** (.42/.56)
Total Effects	—	.79** (.70/.88)	-.22** (-.34/-.14)	-.26* (-.35/-.12)	.40** (.31/.49)	—	—	.98** (.97/.99)	.90** (.87/.92)	.92** (.89/.94)	.47** (.39/.55)	.49** (.42/.56)
<b>Resilience</b>												
Direct Effects	—	—	-.28** (-.40/-.17)	—	.51** (.40/.61)	—	—	—	—	—	.60** (.51/.71)	.63** (.54/.70)
Indirect Effects	—	—	—	-.17** (-.23/-.10)	—	—	—	—	—	—	—	—
Total Effects	—	—	-.28** (-.40/-.17)	-.17** (-.23/-.10)	.51** (.40/.61)	—	—	—	—	—	.60** (.51/.71)	.63** (.54/.70)
Squared R <sup>2</sup>	.057	.616	.081	.396	.367	.834	.769	.958	.803	.842	.365	.393

Notes. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure 2.** The direct paths between variables in the SEM model of the effects of WTELS-F.

**Multigroup invariance of the confirmatory model and the SEM model between genders:** The results indicated strict invariance of the measurement and structural models between genders in both analyses. The differences in unconstrained and constrained residuals model fit in the measurement and structural models in both analyses were not significant according to the criteria discussed earlier. **Table 7** details these results for both models.

**Table 7.** Multigroup invariance of the confirmatory model for WTELS-F scale between genders, and multigroup invariance for the SEM model for the effects of WTELS-F.

<i>Multi-group Invariance for the confirmatory factor analysis and the measurement model between genders</i>							
Model	Chi-square	<i>df</i>	<i>p</i>	<i>chi-square/df</i>	<i>CFI</i>	<i>RMSEA</i>	<i>IFI</i>
Unconstrained	1253.312	372	.000	3.369	.952	.049	.952
Measurement weights	1253.312	390	.000	3.214	.953	.048	.953
Measurement intercepts	1253.312	411	.000	3.049	.954	.046	.954
Structural weights	1253.312	413	.000	3.035	.954	.046	.954
Structural covariance	1253.312	414	.000	3.027	.954	.046	.954
Structural residuals	1253.312	417	.000	3.006	.954	.045	.954
Measurement residuals	1253.312	438	.000	2.861	.955	.044	.955
<i>Multi-group Invariance between genders for the SEM model</i>							
Model	Chi-square	<i>df</i>	<i>p</i>	<i>chi-square/df</i>	<i>CFI</i>	<i>RMSEA</i>	<i>IFI</i>
Unconstrained	99.414	60	.001	1.657	.981	.042	.982
Measurement weights	108.299	68	.001	1.593	.981	.040	.981
Measurement intercepts	123.233	78	.001	1.580	.979	.040	.979
Structural weights	125.195	81	.001	1.546	.979	.038	.979
Structural residuals	128.745	84	.001	1.533	.979	.038	.979
Measurement residuals	154.855	95	.000	1.630	.971	.041	.972

#### 4. Conclusion and Discussion

We developed the WTELS-F using a construct-oriented factor analytic approach. WTELS-F demonstrated adequate internal consistency, good test-retest stability, and a factor structure theoretically congruent with the WTELS-F conceptual construct in this exploratory study. The constructed measure demonstrated considerable psychometric strength with good construct and concurrent and predictive Criterion validity. The study showed that WTELS-F is a multidimensional construct related to yet distinct from resilience and PTG. It had incremental predictive power of positive coping (social support and resilience) and PTG. The scale demonstrated its validity and appropriateness in different age groups, including

adolescents, young adults, and adults from different age groups, and it was strictly invariant between genders. Further, WTELS-FS (short version) possesses robust psychometrics and is highly correlated with the long version scale.

Results provided evidence of the proposed tri-dimension structure, its independence from resilience and PTG, and its primacy over them as it accounts for much higher variance in the factor analysis. The measure, its three subscales, and its short version possess adequate test-retest stability and internal consistency.

However, the concept of WTELS-F has close relatives that were not included in the analysis. For example, love of life (Abdel-Khalek, 2007), Excellencism or the pursuit of excellence (Gaudreau et al., 2022), perfectionistic striving (e.g., Rice et al., 2013), and hardiness (Kobasa, 1979) are examples. Future studies need to disentangle the relationship between WTELS-F and such close relative concepts. While more investigation is needed to clarify the nature of the relationship between WTELS-F and other close relative concepts, the findings of the independence and primacy of WTELS-F compared to resilience and PTG gave the researchers confidence in the robustness of the new measure and its structure.

However, given the non-representative samples used in the present study, this finding may have limited generalizability. Further, using a cross-sectional design is not preferred to conclude predictive validity. Longitudinal designs are preferred to reach such conclusions. Despite such limitations, the results indicate that WTELS-F has significant potential conceptually and clinically. These results and findings from previous investigations on a short form of the scale demonstrate construct validity and test-retest and internal reliability of the WTELS-F, which provide empirical evidence that the WTELS-F and its short form are reliable and valid measures. As in developing any new scale, the WTELS-F requires further refinement and cross-validation with other non-clinical and clinical samples.

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## Informed Consent

Informed consent was obtained from all individual participants included in the study.

## Data Availability

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

## Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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## Appendix

### WTELS-F Scale and subscales

#### WTELS-F Measure

Will to exist, live, survive, and fight is the expression of an instinct of beings and existing and growing to fight for self-fulfillment and striving for a life worth living as you see it. WTELS is the determination to exist physically, personally, and collectively (Socially), by continuing living (not dying), and as an independent, autonomous actor, with the social and economic status, he/she desires, and as an intricate part of any of different groups (e.g., religious, ethnic and cultural group) that are well respected. The goal of these questions is to know how much “your will to live” as we defined above means to you. Please rate the following statements on a scale of 0 - 5 according to your experience and feelings.

- 1) I am self-directed, self-dependent, self-determined, and persistent.
- 2) I am striving to maintain meaning and significance, dealing with the existential challenges and the salience of living and dying.
- 3) I have the motivation to be in full control of myself, my emotions, thoughts, and actions, and my life.
- 4) I feel, think, make a decision, and act, this is who I am and how I operate.
- 5) My existence now (in real life and in real-time) is more salient than my mortality.
- 6) To be or not to be, that is the question.
- 7) I search to develop an understanding of who I am, what the world is like, and how I situate myself, fit in, and relate to others and the scheme of things.
- 8) You can buy anything, but you cannot buy my will.
- 9) With all the pains I have or may have, I want to continue living. Very much agree, (4) Agree, (3) I am not sure, (2) somewhat disagree, (1) completely disagree
- 10) My will to live is generally: (5) Very strong, (4). Strong, (3). Neutral, (2) Drained/depleted, (1). Extremely depleted, (0) I have no will to survive or fight.
- 11) Please evaluate objectively and honestly and in general terms your will to live on a scale from 0 to 5, would you say that it is: (5) Very strong? (4). Strong, (3). Neutral, (2) Drained/depleted, (1). Extremely depleted, (0) I have no will to survive or fight.
- 12) I have an existential motivation to live.
- 13) My life is worth living.
- 14) I have good reasons to live and continue living.
- 15) I have been given this life and I plan to make the best out of it.
- 16) My will to live is at the very core of me.
- 17) My strong agentic self-directed helped me to make it against the odds.
- 18) I have the will and appetite to fight and succeed till the end of my life.
- 19) I am determined, and persistent, and do not give up.
- 20) When I have experienced significant adversity in my life, I have become even more determined to succeed and thrive.
- 21) Existence is resistance.

***Subscales scoring:***

Will to exist Subscale: items 1 - 8.

Will to live Subscale: items 9 - 16.

Will to survive and fight Subscale: 17 - 21.

WTELSF Scale: 1 - 21.

**WTELS-F Short form**

- 1) With all the pains I have or may have, I want to continue living.
- 2) My will to live is generally:
- 3) Please evaluate objectively and honestly and in general terms your will to live on a scale from 0 to 5, would you say that it is:
  - 4) I am self-directed, self-dependent, self-determined, and persistent.
  - 5) I am striving to maintain meaning and significance, dealing with the existential challenges and the salience of living and dying.
  - 6) I have the motivation to be in full control of myself, my emotions, thoughts, actions, and my life.
  - 7) My strong agentic self-directed will helped me to make it against the odds.
  - 8) I have the will and appetite to fight and succeed till the end of my life.
  - 9) I am determined, and persistent, and do not give up.

Scoring;

WTL = 1 - 3.

WTE: 4 - 6.

WTS-F: 7 - 9.