Is Your Program Assessing Adolescents' Readiness for Change? Considerations and Recommendations for the URICA

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Abstract

Understanding readiness for change can help care providers with treatment planning and family communication. The University of Rhode Island Change Assessment (URICA) is commonly used to measure readiness, but its design and language may be more suitable for adults than for adolescents. We examined the suitability of the URICA by exploring its psychometric properties with data from 119 youth who attended a live-in care program in Canada. A three-factor model (Precontemplation, Contemplation, and Action) using 16 of the original 32 items emerged as the most parsimonious approach. The results are discussed in the context of developmental and clinical issues.

Keywords: URICA, readiness for change, Item Response Theory (IRT), exploratory factor analysis, adolescents, addictive behavior

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Clinical interventions that support youth with mental health and addiction problems require developmentally attuned assessments for treatment planning and evaluation (Winters, 2003). Adult measures have sometimes been applied without modification for adolescents, thus disregarding developmental contexts and possibly affecting the applicability and interpretability of the assessment (Deas et al., 2000). Accordingly, developmental considerations must be paramount when selecting assessment tools for adolescents and young adults.

Winters (2003) noted important cognitive and social differences between adolescents and adults in assessing alcohol and substance use behavior, such as reasons for use, self-efficacy, and readiness for behavior change. Readiness for change is the focus of this paper, and in particular, how to understand readiness among adolescent clients. It is important to question the use and validity of readiness measures in the context of adolescent developmental capacities. Although it would be unreasonable to discard well-developed, valid, and reliable instruments, stakeholders are accountable to utilize assessment tools that are most beneficial for their clients. As such, giving appropriate scientific grounding, adjusting, and adapting tools for optimal efficacy is ideal. In the current study, we examined and recommended adolescent-appropriate amendments to one specific assessment tool: the University of Rhode Island Change Assessment (URICA; McConnaughy et al., 1983).

Readiness to Change

Readiness to change is a widely used concept in exploring client engagement and willingness to change before and during the therapy process. This concept is based on Prochaska and DiClemente's (1983) Transtheoretical Model (TTM) of intentional behavior change. Cohen et al. (2005) explained TTM as a multi-dimensional model of behavior change including: processes of changing, benefits and drawbacks of changing, challenges of changing, and self-efficacy. These processes of behavior change are fundamental to define and inform 'stages of change readiness.' Therapeutic change is a process of moving sequentially through Precontemplation, Contemplation, Preparation, Action, and Maintenance (Prochaska et al., 1994). Each stage represents a distinct constellation of attitudes, behaviors, and intentions. Precontemplation is marked by minimal awareness, low motivation, and weak intention to change. Contemplation is characterized by acknowledging the presence of a problem and thinking about the steps and actions for change. Preparation is when change is intended, and

small steps may be initiated. Action is the stage in which actual change occurs and is followed by Maintenance, which is characterized by sustaining the changes and integrating them into daily life (Prochaska et al., 1994). Clinicians' knowledge of the stage in which a client is functioning can guide treatment planning (Connors et al., 2013) and allow for collaborative therapeutic dialogue.

Stage of readiness is a predictor of treatment engagement and outcomes (Blanchard et al., 2003; Norcross et al., 2011). In a review, Tambling and Johnson (2019) noted that readiness for change is associated with reductions in addictive behaviors, disordered eating, spousal abuse, smoking cessation, weight loss and management, increased preventive health behaviors, and successful couples therapy. Thus, understanding of client readiness in the early treatment stage can be beneficial to individualized treatment approaches and client communication.

To optimize the value of assessing readiness for change, the assessment must be sensitive to and suitable for use with specific clients. For example, an adult assessment of readiness may not adequately measure the construct among adolescents as the two groups may have different motivations for the presenting behavior. Indeed, Winters (2003) explained that adolescents are less likely to foresee the adverse consequences of substance use than adults. The adolescent's short-term focus is linked to low motivation to seek help and low readiness for behavior change (Battjes et al., 2003). These developmental factors related to adolescent substance use highlight the need to ensure appropriate assessment tools and unique treatment approaches. In the present study, the URICA, an assessment of readiness for change, was examined to assess its suitability and applicability among adolescents engaged with treatment for substance use.

URICA

The URICA is a widely used (Field et al., 2009) readiness assessment with subscales that align with four readiness stages: Precontemplation, Contemplation, Action, and Maintenance. The URICA has been identified as sensitive to the motivation of adults seeking treatment for alcohol and drug abuse (DiClemente et al., 2004).

In studies conducted with adult samples, two methods have been used to classify stages of motivation and engagement in therapy. The first, cluster analysis (Beitman et al., 1994; Blanchard et al., 2003; Carney & Kivlahan, 1995; DiClemente & Hughes, 1990; Eden & Willoughby, 1999), is problematic because the number of clusters varied across different population samples. The

second method compares an individual's continuous readiness to change score with pre-determined benchmarks denoting each stage (Callaghan et al., 2008; DiClemente et al., 2004); however, Tambling (2019) noted that there are variations in the benchmarks proposed by different researchers. In both types of interpretation and analysis, there are issues with generalizability across diverse population groups.

Regardless of interpretive method, the URICA has been widely used in research with adults and has made a valuable contribution to examining longitudinal assumptions of TTM with reference to readiness to change, transition from one readiness stage to the next, and predicting substance use recovery (Callaghan et al., 2008). These benefits of measuring readiness for change may be best realized if the assessment is amended to be attuned to the intended client.

URICA with Adolescents

The predictive capacity and factor structure of the URICA has been assessed in studies of adolescents involved in outdoor behavioral healthcare/wilderness therapy (Russell, 2007), substance use (Callaghan et al., 2005), juvenile justice facilities (Cohen et al., 2005), and mental health programs (Greenstein et al., 1999). Russell (2007) used the URICA to assess motivation to change in an adolescent sample involved in wilderness therapy. He found that 27% of the adolescents were in the Action stage at pre-treatment and 90% were in the Action and/or Maintenance stage post-treatment. These findings support the use of the URICA as a tool to assess therapeutic motivation and progress.

Callaghan et al. (2005) examined URICA as a predictor of dropout among adolescents in treatment for substance use. Using the benchmarks proposed by DiClemente et al. (2004), Callaghan found that adolescents in the Precontemplation stage were most likely to drop out of treatment. According to these benchmarks, a continuous readiness score (ranging from -2 to +14) is computed by subtracting the mean Precontemplation score from the means of the Contemplation, Action, and Maintenance scores. The resulting scaled score is used to classify individuals in various stages of readiness based on cut offs established for adult populations. Greenstein et al. (1999) conducted a cluster-analysis based study of adolescents experiencing mental health issues and concluded that the URICA scale is useful in understanding motivation to change in an adolescent sample but noted that the language of nine of the scale items was not appropriate for adolescents, and as such, revised the language for those items.

Cohen et al. (2005) conducted a factor structure analysis in a study involving incarcerated male adolescents and found a three-factor solution was superior to the well-known four-factor model. Cohen et al. (2005) found that the Precontemplation and Maintenance factors aligned with the four-factor model but that the Contemplation and Action factors collapsed to one factor. More than half of the variance, however, was unexplained by either the three- or four-factor solutions, calling for further investigation. Yen et al. (2010) explored the factor structure of the URICA with Taiwanese adolescents involved in the treatment for drug use and found the three-factor solution had a better goodness of fit (*RMSEA* = .08; *CFI* = .96) than the four-factor solution (*RMSEA*= .10; *CFI*= .94).

Rationale

A client's readiness to change can impact their engagement with and response to treatment and can inform service providers for use in treatment planning, clinical dialogue, program evaluation, and quality improvement. Critically, however, readiness to change can be examined and used effectively in treatment programs only if its assessment is appropriate for the client. In this study, we examined the psychometric properties of the URICA completed by adolescents with addictive behavior to understand how to optimize the tool's utility for clients in this age group.

Method

This study is one investigation within a multi-dimensional research program. It was conducted at a 36-bed live-in treatment facility and wilderness experience in rural Canada for youth aged 13-19 with addictive behaviors and often co-occurring mental, relationship, and behavioral health issues. The program offers a blend of evidence-based practices in a treatment milieu, incorporating individual, group, and family therapy in a structured and supportive environment. This paper focuses on investigating the suitability of the URICA with adolescents and examining the number of factors as well as the appropriateness of the language of the individual questions with a sample of treatment-engaged adolescents.

Participants

From 2016-2020, 119 youth assented or consented to contribute to research and evaluation. For those who were under 16, parental consent was obtained. Youth mean age was 17.43 years (*SD* = 1.3); 65 identified as male, 53 identified

as female and one participant's gender was not specified. The average annual income by postal code was $71,539.1 (*SD* = 49,616.97).

Measures

At the time of admission, youth completed surveys that assessed mental, relationship, behavioral, and physical health along with treatment readiness using the URICA.

URICA

The URICA (McConnaughy et al., 1983) is a 32 item self-report measure rated on a five-point Likert type scale from '*Strongly Disagree*' (1) to '*Strongly Agree'* (5), with higher scores indicating higher readiness for change. Traditionally, it has been sub-scaled into four readiness stages: Precontemplation, Contemplation, Action, and Maintenance. The scale has been used extensively across different populations and has acceptable to good alpha reliability (between .75 to .87; Pantalon et al., 2002) and validity (Field et al., 2009).

Results

We used Item Response Theory (IRT) to analyze the psychometric properties of the URICA which was completed by adolescents. IRT is a modern robust model-based approach for characterizing the relationship between observed variables (i.e., scored responses) and latent variables (i.e., the true, underlying value for which the observed value is a proxy) (Lord, 1980). IRT is appropriate in the field of adolescent development because of its sensitivity to the unique characteristics of the respondents and each survey item (Toland, 014). Despite this, the properties of the URICA have not been tested using IRT.

Exploratory Item Response Theory

Considering the polytomous nature of the items, we estimated graded response models (Thissen & Wainer, 2001) using standard Expectation-Maximization and an oblimin rotation. In other words, we treated client responses as numerically ranked and used these observed or known scores to estimate latent variables. The latent variables were conceptualized as the readiness stages or factors. To understand model fit, we calculated the M_2^* statistic (Cai & Hansen, 2013) and its associated *p*-value. We also compared fit statistics to their benchmarks for close fit (Table 3): the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990); the Standardized Root Mean Square

Residual (SRMR; Hu & Bentler, 1999); Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) and the Comparative Fit Index (CFI; Bentler, 1990).

First, we examined the four-factor 32-item scale for model fit using the standard quadrature algorithms, but this model was weakly identified. We thus estimated the full four-factor, 32-item scale using a stochastic (MH-RM) algorithm. Again, the four-factor model did not exhibit adequate fit. Next, we examined a three-factor model similar to that suggested by Yen et al. (2010). The three-factor model, using the standard quadrature algorithms, also did not exhibit adequate fit, suggesting the potential for a better fitting model.

Greenstein et al. (1999) noted that nine items on the original URICA, predominantly from the Maintenance factor, would be better suited to an adolescent population after language modifications. Upon consideration of all items, we identified nine items that referenced past attempts to change. Among adolescents, however, previous treatment or attempts to change behavior may not be relevant. We thus excluded these nine items. We also excluded two items that were deemed linguistically challenging. The eleven excluded items were 6, 9, 15, 16, 18, 22, 26, 27, 28, 29 and 32.

Table 1

Items Excluded from URICA for Use with Adolescents

Item	Reason
6. It worries me that I might slip back on a problem I have already changed so I am here to seek help.	Developmental
9. I have been successful in working on my problem, but I'm not sure I can keep up the effort on my own.	Developmental
15. I have a problem, and I really think I should work on it	Developmental
16. I'm not following through with what I had already changed as well as I had hoped, and I want to prevent a relapse of the problem.	Linguistic

Item	Reason
18. I thought once I had resolved the problem, I would be free of it, but sometimes I still find myself struggling with it.	Developmental
22. I may need a boost right now to help me maintain the changes I've already made.	Developmental
26. All this talk about psychology is boring. Why can't people just forget about their problems.	Developmental
27. I'm here to prevent myself from having a relapse of my problem.	Developmental
28. It is frustrating, but I feel I might be having a recurrence of a problem I thought I had resolved.	Developmental
29. I have worries, but so does the next guy.	Linguistic
32. After all I had done to try and change my problem every now and again it comes back to haunt me.	Developmental

We fit exploratory multidimensional models to the 21-item data with one, two, three, and four latent factors. To compare among these models, we used likelihood-based statistics (Table 2): Akaike Information Criterion (AIC); Bayesian Information Criterion (BIC); Sample-Size Adjusted BIC (SABIC); and Hannan-Quinn (HQ) Criterion. The three-factor model had good fit statistics and the lowest (best) fit statistics compared to models with one, two, or four factors (Table 2). As such, subsequent analyses were conducted using a three-factor model.

Table 2

Likelihood-Based Statistics from each Exploratory Model

Number of Factors	AIC	SABIC	HQ	BIC
One	5447.51	5408.14	5563.75	5733.76
Two	5298.11	5251.09	5436.91	5639.94
Three	5238.17	5183.89	5398.42	5632.80
Four	5274.18	5213.01	5454.74	5718.84

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; SABIC = sample-size adjusted BIC; HQ = Hannan-Quinn criterion.

The three-factor model showed good fit (Table 4) with clear delineation between the factors. Items 1, 2, 5, 8, 11, 13 and 23 loaded strongly onto a single factor ($f1\ f_1$) that represented Precontemplation. Items 3, 10, 14, 25 and 30 loaded strongly onto a separate factor (f_2) describing the Action construct. Items 19, 20, 21 and 24 strongly loaded onto a third factor ($f3\ f_3$): Contemplation. The factors correlated with each other predictably; Contemplation ($f_3 f3$) was moderately correlated with Precontemplation [f_1 (-0.418)] and Action [f_2 (0.4)], but $f1$ and $f_2 f2$ were weakly correlated (-0.2).

Table 3 presents the factor loadings and variance explained by all latent factors (communality) for the three-factor model fit to the 21-item dataset. The communality estimates for most items are in the moderate to high range with a maximum of 0.811 for item 24 ('*I hope that someone here will have some good advice for me*'), meaning this item is most correlated with all latent factors.

Table 3

Parameter Estimates from Three-Factor IRT Model of Items from the URICA Scale

Item	$\hat{\Lambda}$ (loadings)			Communality
	$f1$	$f2$	$f3$	
1. As far as I am concerned, I don't have any problems that need changing	0.749	-0.0198	-0.069	0.617
2. I think I might be ready for some self-improvement	-0.598	0.148	0.382	0.797
3. I am doing something about the problems that had been bothering me	-0.0557	0.773	-0.157	0.537
4. It might be worthwhile to work on my problem	-0.332	0.236	0.354	0.489
5. I am not the problem one. It doesn't make much sense for me to be here	0.876	0.0984	0.0638	0.704
7. I am finally doing some work on my problem	-0.376	0.473	0.0850	0.503
8. I have been thinking that I might want to change something about myself	-0.601	0.0659	0.293	0.631
10. At times my problem is difficult, but I am working on it	-0.00559	0.558	0.135	0.393

Item	$\hat{\Lambda}$ (loadings)			Communality
	$f1$	$f2$	$f3$	
11. Being here is pretty much of a waste of time for me because the problem doesn't have to do with me	0.893	-0.0131	0.0960	0.739
12. I am hoping this place will help me to better understand myself	-0.355	-0.000343	0.528	0.562
13. I guess I have faults, but there's nothing that I really need to change	0.877	0.00346	-0.0281	0.789
14. I am really working hard to change	0.0485	0.803	-0.0657	0.596
17. Even though I am not always successful in changing, I am at least working on my problem	0.0563	0.455	0.394	0.481
19. I wish I had more ideas on how to solve my problem	0.0764	-0.0635	0.851	0.637
20. I have started working on my problems, but I would like help	-0.0989	0.245	0.627	0.648
21. Maybe this place will be able to help me	-0.198	-0.0826	0.725	0.638
23. I may be part of the problem, but I don't really think I am	0.779	0.00846	0.0771	0.561

Item	$\hat{\Lambda}$ (loadings)			Communality
	$f1$	$f2$	$f3$	
24. I hope that someone here will have some good advice for me	0.0624	0.0395	0.909	0.811
25. Anyone can talk about changing, I am actually doing something about it	0.0698	0.589	0.246	0.498
30. I am actively working on my problem	0.0698	0.626	-0.0061	0.376
31. I would rather cope with my faults than try to change them	0.202	-0.135	-0.169	0.145

Five items did not exhibit strong communality, or they cross-loaded on more than one factor. Item 31 ('*I would rather cope with my faults than try to change them*') is least correlated with the three latent factors with a communality estimate of 0.145 and exhibits low cross-loadings across all factors. Item 4 ('*It might be worthwhile to work on my problem'*) had moderate communality but cross-loaded on all three factors. Item 7 ('*I am finally doing some work on my problem')* cross-loaded on factors one and two. Item 12 ('*I am hoping this place will help me to better understand myself'*) cross-loaded on factors one and three; and item 17 ('*Even though I am not always successful in changing, I am at least working on my problem')* cross-loaded on factors two and three, as shown by the numerically similar factor loadings.

Our approach to modify the URICA based on developmental appropriateness or language challenges resulted in an adequate fitting three-factor model with five items showing cross-loading and/or low communality. One approach to deal with the five items would be to align each with the factor for which they had the highest loading among those with which it was cross-loaded. We chose a more statistically based approach: we explored the psychometric properties of the assessment after removing the five items. Specifically, for our final analysis, we

fit the model to only the strongly loaded 16 items. This three-factor model fit was substantially improved and demonstrated good fit statistics (see Table 4).

Table 4

Fit Statistic Benchmarks and Fit Statistics for All Examined Models

	M_2^*	*df*	M_2^* *p*-value	RMSEA	95% CI	SRMSR	TLI	CFI
Benchmarks	--	--	$p > \alpha$	< 0.05	--	< 0.08	> 0.95	> 0.95
4-Factor 32-Item	350.48	280	<.01	0.053	[0.032, 0.069]	0.075	0.94	0.96
3-Factor 32-Item	416.02	309	<.001	0.062	[0.045, 0.076]	0.083	0.91	0.93
3-Factor 21-Item	100.43	89	0.19	0.037	[0, 0.069]	0.065	0.97	0.98
3-Factor 16-Item	26.45	29	0.60	0	[0, 0.067]	0.057	1	1

Note. RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMSR = standardized root-mean square residual; TLI= Tucker-Lewis index; CFI = comparative fit index.

Discussion

URICA measures motivation to change which is associated with engagement, progress, and success of treatment (DiClemente et al., 2004; Krebs et al., 2018; Prochaska et al., 1992). As with many adult measures that are used for assessing adolescents (Deas et al., 2000), the URICA should be reviewed and assessed for relevance, reliability, and structure (Srinath et al., 2019). In the current study, the psychometric properties of the URICA were assessed based on a sample of adolescents seeking substance use treatment.

Two previous studies (Cohen et al., 2005; Yen et al., 2010) suggested three, rather than four, readiness factors for adolescents: Precontemplation, Contemplation/Action and Maintenance. Models in both studies, however, showed that some items loaded on both the Contemplation and Maintenance factors. The authors of these studies regarded their factor structures as preliminary and emphasized the need for further investigation with adolescent samples. In our analyses, we found a three-factor solution fit better than a four-

factor solution, with themes of Precontemplation, Contemplation, and Action, with no factor that represented Maintenance.

Our exploratory IRT factor analyses highlighted the need to review each item for its developmental sensitivity. The item review revealed some linguistically challenging items which may undermine the validity of the scale for an adolescent sample (Menold, 2020), along with items that focus on previous treatment history and relapse. Such items may be relevant for adults with a history of addictive behavior, treatment, and relapse. For adolescents, however, substance use is likely less chronic and young people may have had less experience with treatment (Winters, 2003). Therefore, items referencing previous treatment history and relapse were excluded. Specifically, we removed eleven problematic items and re-fit the model. Five items still presented issues of cross-loading and/or low communality. After removing these five items, the final three-factor, 16-item scale indicated optimal model fit.

From a clinical standpoint, treatment decisions are guided by assessments which need to be developmentally sensitive. In the current study, we examined the developmental sensitivity of the URICA and found that the 16-item URICA is psychometrically robust and suitable for the adolescents. This revised version responds to the recommendations of Cohen et al. (2005) and Greenstein et al. (1999), who suggested that the items of the URICA need to be revised and adapted for adolescents due to developmental and linguistic challenges. Future work should ensure that the revised URICA is sensitive and informative for stage assignment and clinical decision making with adolescents.

This was the first study to adopt an IRT approach to examine the psychometric properties of the URICA for adolescents. Our findings support a three-factor approach as suggested by previous research and expand current knowledge to suggest a more parsimonious 16-item model. Using a modified URICA may lead to better treatment planning and progress monitoring among treatment-engaged adolescents. We strongly recommend further study to advance knowledge about optimal approaches to understanding readiness for change and treatment progress among adolescents (see Table 5).

Table 5

Final Recommended URICA for Use with Adolescents

Item	Factor
1. As far as I am concerned, I don't have any problems that need changing	Precontemplation
2. I think I might be ready for some self-improvement	Precontemplation
3. I am doing something about the problems that had been bothering me	Action
5. I am not the problem one. It doesn't make much sense for me to be here	Precontemplation
8. I have been thinking that I might want to change something about myself	Precontemplation
10. At times my problem is difficult, but I am working on it	Action
11. Being here is pretty much of a waste of time for me because the problem doesn't have to do with me	Precontemplation
13. I guess I have faults, but there's nothing that I really need to change	Precontemplation
14. I am really working hard to change	Action
19. I wish I had more ideas on how to solve my problem	Contemplation
20. I have started working on my problems but I would like help	Contemplation

Item	Factor
21. Maybe this place will be able to help me	Contemplation
23. I may be part of the problem, but I don't really think I am	Precontemplation
24. I hope that someone here will have some good advice for me	Contemplation
25. Anyone can talk about changing, I am actually doing something about it	Action
30. I am actively working on my problem	Action

Limitations

This study includes two predominant limitations. First, our sample size of 119 was small in the context of psychometric analyses. Considering the clinical nature of the sample, however, the size may be considered sufficient. Also, random sampling is always optimal; however, our data were drawn from a convenience sample: youth who were engaged with treatment. Given these limitations, we encourage future researchers to continue to investigate the psychometric properties of the URICA for adolescent clients.

Declaration of Interest

There is no conflict of interest.

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Ethical Approval

The work was approved by Research and Ethical Board (REB) of York University and the certificate number is e2020-187.

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