Published in final edited form as:

J Subst Abuse Treat. 2016 December ; 71: 36–40. doi:10.1016/j.jsat.2016.08.005.

Structure of Problem Recognition Questionnaire with Hispanic/Latino Adolescents

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Abstract

Motivation is a prominent target for substance use interventions because it is theorized to increase engagement in therapy and predict treatment outcomes. Establishing the validity of measures relevant to motivation among Hispanic/Latino adolescents will improve the resources available for screening and measuring change processes in a multicultural population. We examined the structure of the Problem Recognition Questionnaire (PRQ; Cady, Winters, Jordan, Solberg, & Stinchfield, 1996) with Hispanic/Latino adolescents. Participants were adolescents ($n = 191$) in a randomized controlled trial for substance abuse. Data were collected during a baseline pre-treatment time point and post-treatment time point that was four-months post-baseline. Confirmatory factor analysis (CFA) showed that the three-factor structure proposed by Cady et al. (1996) had a poor fit with pre-treatment data. Follow-up exploratory analyses with principal axis factoring identified an alternate three-factor structure with pre-treatment data (Problem Recognition, Readiness, and Treatment Resistance). A second CFA showed this three-factor model fit data from participants at the post-treatment time point ($n = 155$). The results provide preliminary evidence for using our proposed factor structure for the PRQ subscales with Hispanic/Latino adolescents. We discuss the dimensions we identified in the context of similar measures and the implications for measuring Problem Recognition, Readiness, and Treatment Resistance.

Keywords

Hispanic/Latino; motivation; adolescent; factor analysis

1. Introduction

Motivation has been identified as a critically important construct because of its central role in change processes. A meta-analysis showed that individuals fare worse when entering

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treatment with lower levels of motivation, or at earlier stages of change, than when motivated and this finding is consistent across diagnoses, treatment settings, and theoretical approaches (Norcross, Krebs, & Prochaska, 2011). It is thought that motivation is linked with the receptiveness to interventions, as pre-treatment levels of motivation are positively associated with retention and therapeutic alliance during treatment (Simpson & Joe, 2004; Joe, Knight, Becan, & Flynn, 2014). Additionally, there is evidence that motivational constructs such as readiness act as mediators of change and show increases during treatment as well as accounting for variance in subsequent reductions of substance use (Apodaca & Longabaugh, 2009; Kelly, Myers, & Brown, 2000; Winters, Lee, Botzet, Fahnhorst, & Nicholson, 2014). Motivation and readiness for change may predict which clients “accept” interventions and these dimensions can be enhanced during the course of treatment to improve treatment effectiveness.

For this reason, interventions such as Motivational Interviewing (MI; Miller & Rollnick, 2013) and Motivational Enhancement Therapy (Miller, Zweben, DiClemente, & Rychtarik, 1992) have been developed to address low motivation to change by eliciting client’s change talk, such as reporting a desire and ability to change, and reducing sustain talk, such as reporting a desire to continue using and inability to change (Miller & Rose, 2009). It is expected that unmotivated clients would fare better when matched to motivational interventions and this hypothesis was supported in a reexamination of the Project MATCH study (Witkiewitz, Hartzler, & Donovan, 2010), despite the lack of these results in initial analyses (Project MATCH Research Group, 1997). Indeed, there is evidence that motivation-based interventions have unique effects on motivational processes and subsequent behavior change (Apodaca & Longabaugh, 2009; Winters et al., 2014). It is important to understand motivational constructs due to the potential benefits of matching unmotivated clients to interventions that elicit change.

Motivation-based interventions have been identified as promising for Hispanic/Latino individuals in substance use treatment (Miller, Villanueva, Tonigan, & Cuzmar, 2007; Guerrero, Marsh, Khachikian, Amaro, & Vega, 2013). This claim is supported by a meta-analysis showing that effect sizes for motivational interviewing are twice the magnitude for racial/ethnic minorities than for White individuals (Hettema, Steele, & Miller, 2005). Also, Motivational Enhancement Therapy matched or outperformed other active treatments for Hispanic/Latino individuals (Carroll et al., 2009). It is argued that MI is fitting for Hispanic/Latino individuals (and other racial/ethnic minorities) due to client-centered elements that facilitate the ability for therapists to understand diverse worldviews (Feldstein Ewing, Wray, Mead, & Adams, 2012; Miller et al., 2007). However, it was found that therapists deliver MI less competently with Hispanic/Latino adolescents than with non-Hispanic/Latino adolescents and that the poorer delivery was associated with less responsiveness to treatment (Feldstein Ewing, Gaume, Ernst, Rivera, & Houck, 2015). Another motivational intervention had stronger effects among Hispanic/Latino adolescents that identified more strongly with their Hispanic/Latino heritage (Gil, Wagner, & Tubman, 2004) and this would not be expected if the motivational strategies are incongruent with their culture. There is theoretical and empirical support for the fit of motivational interventions with diverse populations and it may be possible to reduce disparities in the delivery of these interventions by improving tools for therapists working with Hispanic/Latino adolescents.

The strategy of tailoring interventions to address the unique needs of adolescents and their family (Santisteban, Mena, & Abalo, 2013; Santisteban, Mena, & McCabe, 2011) can be improved through adequate measurement of motivation and subsequent tailoring of treatments (e.g., delivering MI to clients whom would benefit). Research must investigate whether current measures of motivation are performing adequately with minority populations such as Hispanic/Latino individuals. The Problem Recognition Questionnaire (PRQ) was developed for adolescents (Cady, Winters, Jordan, Solberg, & Stinchfield, 1996) and uses some items taken from a measure to assess denial in adults (Owen, 1984). Higher or lower scores on each of the three-factors identified reflect membership in specific stages of change labeled Contemplation, Contemplation/Preparation, and Preparation. The PRQ has shown acceptable levels of internal consistency for Hispanic/Latino samples ($\alpha = .80$ to .83; Austin & Wagner, 2010; Gil et al., 2004). However, there have been no efforts to replicate the three-factor structure of the PRQ since its development and there are no studies examining the structure of the PRQ with Hispanic/Latino adolescents. The purpose of the investigation reported here was to investigate the structure of the PRQ in a sample of Hispanic/Latino adolescents in treatment for substance abuse.

2. Methods

The present study is a secondary analysis of data collected in a randomized clinical trial conducted in South Florida between the years 2010 and 2015 with Hispanic/Latino youth in treatment for substance abuse disorder (Santisteban, Mena, Zopluoglu, McCabe, & Stanforth, 2016). This study was approved by the University of Miami Institutional Review Board. Adolescents/families were referred by counselors and diversion programs in the juvenile justice system. Informed consent/assent was obtained from participants and family members involved in treatment. Participants and their families were randomized into one of two active treatment conditions: Culturally Informed and Flexible, Family-Based Treatment for Adolescents (CIFTA), or Traditional Family Therapy (TFT). Treatment included two sessions per week over a four-month time period. Participants in the CIFTA condition received individual, family, and psycho-educational interventions while TFT participants received family therapy and group therapy. Treatment was delivered by experienced (Ph.D. and Masters) therapists. There was no significant difference in the total amount of treatment received by participants in the two conditions. On average, CIFTA families received 24.25 (SD = 8.64) total sessions in the study while TFT participants received 22.12 (SD = 8.67). An initial assessment was completed prior to randomization and a post-treatment assessment was completed four months after baseline. Families were not compensated for the initial assessment and they received financial compensation of \$40 for completing the post-treatment assessment. Assessment and treatment were available in both English and Spanish so that recent immigrants were not excluded.

2.1. Participants

Participants were 191 adolescents. A subset of those participants ($n = 155$, 81%) provided data at the post-treatment assessment. Inclusion criteria were being 14–17 years old, living with at least one family member of an older generation born in a Spanish-speaking country (e.g., parent or grandparent), and meeting DSM-IV-TR criteria for substance abuse disorder

in the past year. Referrals were from juvenile justice services, school counselors, and other community agencies. On average, participants were 15.94 years old ($SD = 1.07$). About a fifth (21%) were girls, and 25% were born outside of the U.S. Those who were born outside of the U.S. lived in the U.S. for an average of 9.14 years ($SD = 4.53$). Average age of first drug use was 13.97 ($SD = 1.50$), and on average participants used 5.33 days out of the past 30 days ($SD = 8.00$).

2.2. Measures

2.2.1. Problem Recognition Questionnaire—The PRQ is a 25-item self-report measure of motivation that was developed for use with adolescents with substance use issues (Cady et al., 1996). Items include positively worded prompts such as, “I want to change my life and get away from alcohol and drugs,” and negatively worded items including, “I am in treatment because of bad luck.” All items have four response options: “Strongly Disagree,” “Disagree,” “Agree,” and “Strongly Agree.”

2.2.2. Timeline Follow-back interview—A Timeline Follow-back interview (Sobell et al., 2003) was used to assess past-month use of drugs and alcohol. The interview was adapted to assess presence or absence of lifetime use of substances included in the assessment. Age of onset for use was also gathered with the adapted approach.

2.3. Preliminary analyses

Screening internal consistency of items and for outliers was completed prior to performing analyses. Internal consistency was examined with Cronbach’s alpha and two items had inter-item correlations that approached zero and reduced overall scale reliability (16: “I came to treatment because of school or legal problems” and 18: “People sent me to treatment to get me out of the way”). Item 16 was excluded from a prior analysis due to low inter-item correlations (Cady et al., 1996) and item 18 may be related to the nature of the treatment being delivered to the sample; outpatient treatments do not really get participants “out of the way.” Other items detracted from the reliability but were not removed because of potential relevance to theoretical constructs.

2.4. Analyses

CFA with maximum likelihood estimation in Mplus 7.11 were performed to evaluate the PRQ. Model fit was evaluated with common indices of fit (Keith, 2006) including the chi-square test of model fit, root mean square error of approximation (RMSEA) and 90% confidence intervals, comparative fit index (CFI), Tucker-Lewis Index (TLI), and Standardized Root Mean Square Residual (SRMR). Fit would be supported with a non-significant chi-square test of model fit, a RMSEA value below .05 for “good fit” or below .08 for “reasonable fit,” a CFI and TLI above .95 for “good fit” or above .90 for “adequate fit,” and a SRMR below .08 for “good fit” (Keith, 2006).

Follow-up exploratory factor analyses (EFA) with principal axis factoring were also performed in order to identify an alternate factor structure. A scree plot was visually examined to determine the number of factors to include in the final solution. Solutions were evaluated by the proportion of variance extracted by the factor solution, extracted item

communalities, and factor loadings (Costello & Osborne, 2005). Loadings were evaluated based on the proportion of variance that items shared with factors; a loading of .32 indicating 10% of item variance is shared with factor and is a “poor” loading, .45 for 20% and “fair” loading, .55 for 30% and “good” loading, .63 for 40% and “very good” loadings, and .71 for 50% and “excellent” loadings (Comrey & Lee, 1992).

3. Results

3.1. Original Factor Model

A CFA of the original factor structure (see Figure 1; Cady et al., 1996) had poor model fit with the observed data, $\chi^2(220) = 583.15$, $p < .001$, RMSEA = .093 [.084,.102], $PCLOSE < .001$, CFI = .793 and TLI = .762, SRMR = .101. Thus, there is not support for the original factor structure model and the results highlight a need to identify a different structure given the observed data.

3.2. Exploratory Factor Model

Exploratory analysis with principal axis factoring using promax rotation yielded a different three-factor structure. A visual examination of the scree plot led to the decision to retain three factors in the solution. Crossloading occurred in the solution and was undesired due to an interest in subscale construction. Crossloading items were removed from the analysis (i.e., at least a “poor” loading on more than one factor), as were items that did not have at least a “good” loading. Out of the 23 items entered in the initial analysis there were 11 items that were retained. See Table 1 for final exploratory factor model. The trimmed, three-factor model explained 67.67% of the variance in items. All three factors had eigenvalues greater than 1. The average extracted item communality was .564 with only one item communality less than .40. The first factor, labeled *Problem Recognition*, captured participants’ perceptions about the severity of their substance use problems. The second factor, labeled *Readiness*, captured the degree in which participants want to stop using. The third factor, labeled *Treatment Resistance*, was characterized by negative attitudes towards treatment.

3.3. Replication of Exploratory Factor Model

We investigated the structural integrity of the modified three-factor model identified in Step 2 with a CFA using data from the post-treatment assessment point. The model had marginal fit to the data, $\chi^2(41) = 82.33$, $p < .001$, RMSEA = .081[.055,.106], $PCLOSE = .03$, CFI = .932, TLI = .908, SRMR = .059. Modification indices suggested the model would be improved by specifying a correlation between error terms for items 13 and 15: “Using alcohol or drugs is a real problem in my life” and “I have a bad alcohol or drug problem.” Model fit was good with this addition, $\chi^2(40) = 56.62$, $p = .04$, RMSEA = .052[.010,.081], $PCLOSE = .42$, CFI = .973, TLI = .962, SRMR = .051. All pattern coefficients loaded on the factors significantly and in the expected direction, with average pattern coefficients of .659, .828, and .648 for factors 1, 2, and 3, respectively. At the second assessment, these three subscales had internal consistencies of $\alpha = .808$ and average $R^2 = .448$ (*Problem Recognition*), $\alpha = .867$ and average $R^2 = .686$ (*Readiness*), and $\alpha = .675$ and average $R^2 = .473$ (*Treatment Resistance*).

4. Discussion

Our study is the first to evaluate the factor structure of the PRQ with Hispanic/Latino adolescents, and the first replication of the original study. Results of this study did not support the original three-factor structure of the PRQ (Cady et al., 1996). We identified an alternate three-factor model and provided partial evidence for this new three-factor model by testing the model at a second time point. Our study used factor analysis and this accounted for measurement errors, but principal component analysis techniques used by Cady and colleagues (1996) do not account for these errors and only seek to maximize explained variation, which may explain why the current structure was different than the original study.

The three factors we identified were *Problem Recognition*, *Readiness*, and *Treatment Resistance*. *Problem Recognition* captured beliefs about the problematic nature of individuals' substance use. This factor resembles similar constructs labeled Problem Recognition (Breda & Reimer, 2012) and Recognition (Maisto, Chung, Cornelius, & Martin, 2003). *Readiness* has also been recognized in other measures (Breda & Reimer, 2012; De Leon, Melnick, Kressel, & Jainchill, 1994). However, the previously mentioned studies identified readiness for treatment while the items in our factor reflect readiness for abstinence (Kelly et al., 2000). *Treatment Resistance* captures negative attitudes towards involvement in treatment and we are not aware of research that has specifically identified this dimension in a self-report measure of motivation. *Treatment Resistance* has similarities to a precontemplation dimension (McConaughy, Prochaska, & Velicer, 1983), in that item content implies limited interest in being in treatment (e.g., comparing University of Rhode Island Change Assessment item "Being here is pretty much a waste of time for me because the problem doesn't have to do with me" to PRQ item "I have more important things to do than go to treatment"). Although, items from the precontemplation scale include words such as "problem" and "change" that appear to have conceptual overlap with *Problem Recognition* and *Readiness*, respectively. The three factors are consistent with the origins of the measure, given that it was intended to measure problem recognition and motivation to change and that a measure of denial was used in its development (Owen, 1984). The factor structure from our study shows that the PRQ measures multiple constructs involved with motivation and these likely contribute to the process of changing substance use behaviors.

Our proposed structure shows the PRQ is a promising screening tool for tailored interventions (Santisteban et al., 2013) as it measures various motivational constructs and has structural integrity when used with Hispanic/Latino adolescents. There is potential to make tailoring decisions with the PRQ considering that motivation is involved with receptiveness to interventions (Witkiewitz et al., 2010) and dimensions of motivation are linked to mediational change processes (Apodaca & Longabaugh, 2009). For example, individuals endorsing *Treatment Resistance* may benefit from affirmations that emphasize autonomy and counter resistance; strategies can target resistance deconstructed as discord in the therapeutic relationship and/or expressions related to continuing use (Miller & Rollnick, 2013). Identifying resistance may also allow the culturally competent therapist to explore whether clients are considering alternative approaches (e.g., spirituality, willpower, and natural healers) in lieu of formal treatment, which should be better understood by the therapist. Likewise, individuals showing elevations on *Readiness* agree to statements

expressing desires, reasons, and needs to change which are forms of preparatory change talk (Miller & Rollnick, 2013). These individuals may benefit from more directive or change-focused strategies. Using the PRQ in this way may improve delivery of MI to Hispanic/Latino individuals by showing when clients would benefit from client-centered strategies versus from prescriptive strategies, which may improve the consistency between the intervention and clients' needs (Feldstein Ewing et al., 2012). Seemingly contradictory responses on the PRQ could also inform the clinical approach with adolescents, such as adolescents with high levels of both *Readiness* and *Treatment Resistance*. Adolescents presenting with this profile may be genuinely interested in reducing substance use and have reasons to view treatment unfavorably, such as disliking drug tests, disliking the specific modality offered, or perceiving treatment as culturally insensitive.

4.1. Limitations

There are notable limitations despite the standardization of the assessment process and treatment delivery and the use of a Hispanic/Latino sample. The initial EFA had a participant to item ratio below 10:1. This is a rough guideline, but may have led to misclassification of items with factors or an incorrect solution (Costello & Osborne, 2005). However, item trimming increased the participant to item ratio to approximately 17:1, which likely increased the probability of a correct solution. Additionally, the limited sample size prevented us from using cross-validation. The study would have been strengthened by replicating the structure with different participants entering treatment.

One method of demonstrating cross-cultural validity of measures includes examination of constructs across cultural groups (Hui & Triandis, 1985) and the factor structure from our sample differed from a predominantly White sample (Cady et al., 1996). We are unable to determine if these differences are linked to culture or other factors, such as the analytical approach, due to the selection of only Hispanics/Latinos in our study. Whereas *Problem Recognition*, *Readiness*, and *Treatment Resistance* may be linked with culture, the similarities between the PRQ factors in the present study with other measures suggests that culture does not solely explain the differences between our study and the prior study (Cady et al., 1996). Future studies should examine the link between culture and motivation by examining the structure of the PRQ across various populations. If differences are observed, analyses should be conducted to determine if cultural factors, such as cultural values, account for differences in measurement.

4.2. Conclusion

Our study provides preliminary support for use of the PRQ with Hispanic/Latino adolescents with dimensions for Problem Recognition, Readiness, and Treatment Resistance. Further support for use of the PRQ could be provided by performing a replication study with a larger sample representing various racial/ethnic groups. The PRQ may be further supported by providing evidence for construct validity by examining the measure in relation to change processes. Results from this study highlight a need to reevaluate the structure of the PRQ with a general population of adolescents and to examine these motivational constructs in relation to culture and processes of change.

Acknowledgments

Research reported in this publication was supported by the National Institute on Drug Abuse of the NIH under award number 5R01DA027920 to Daniel Santisteban (PI). “The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.”

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Highlights

- We examined the Problem Recognition Questionnaire with Hispanic/Latino adolescents
- The original factor structure of the PRQ was not supported
- An alternate factor structure was identified and fit data from a second time point
- Factors included Problem Recognition, Readiness, and Treatment Resistance

Figure 1.
Original PRQ factor structure (Cady et al., 1996); excludes items 16 and 18.

Table 1

Exploratory Factor Analysis Pattern Matrix

Item content. (Item # from Cady et al., 1996)	Factor		
	Problem Recognition	Readiness	Treatment Resistance
1. My problems are caused by alcohol or drugs. (4)	.856	.006	.060
2. I have a bad alcohol or drug problem. (15)	.724	-.230	-.043
3. My use of alcohol or drugs has caused many problems in my life. (1)	.716	.084	.101
4. Using alcohol or drugs is a real problem in my life. (13)	.671	.059	-.216
5. My use of alcohol or drugs has hurt others.	.613	.099	.059
6. I want to change my life and get away from alcohol and drugs. (7)	-.040	.904	.023
7. There are many good reasons for me to stop using alcohol or drugs. (9)	.077	.772	-.015
8. I need to stop using alcohol or drugs completely. (20)	-.032	.724	-.035
9. I was forced into coming for treatment. (24)	.092	.019	.827
10. I have more important things to do than go to treatment. (21)	-.051	-.037	.709
11. I am in treatment because of bad luck. (10)	-.010	-.012	.559

Note. Loadings that are bolded indicate the implied factor structure based on loadings greater than .32 in magnitude.