

Performance of Alcohol and Safer Sex Change Rulers Compared With Readiness to Change Questionnaires

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As part of a larger intervention study, the authors hypothesized that change rulers created for alcohol and safer sex would be equivalent to longer questionnaires. Ninety-six male college students completed rulers and questionnaires for assessing behavior change readiness. Participants' scores on the rulers significantly correlated with their scores on the questionnaires ($r = .77$ for alcohol; $r = .77$ for safer sex). In both domains, the rulers outperformed the questionnaires in predicting behavioral intentions, suggesting that the rulers had at least comparable concurrent criterion validity. This finding is the first of its kind in the safe sex literature and suggests that quick assessments of readiness to change are possible. Because the rulers are a continuous measure, the results are consistent with the idea that the change process is continuous rather than a series of discrete stages.

Prochaska and DiClemente (1986) extensively studied how people change behavior across a wide variety of actions and contexts. They developed the *transtheoretical model of behavior change*, finding that people go through a series of stages when changing behavior. Miller and Rollnick (1991) used this model, also known as the *stages of change model*, in their seminal work *Motivational Interviewing*, which outlines their approach to preparing people to change behavior. They view the stages as a continuum of motivational readiness for changing behavior. Progress along the change continuum is an important aspect of a successful intervention, even if it does not immediately produce the desired behavioral change (Prochaska & DiClemente, 1992). Many researchers have used the stages of change model to develop the idea of "readiness to change," a measure of the motivation of participants to change a desired behavior. Researchers have studied readiness to change in many areas, including smoking cessation (Biener & Abrams, 1991; Herzog, Abrams, Emmons, & Linnan, 2000), reducing drinking (Carey, Carey, Maisto, & Pumine, 2002; Carey, Maisto, Carey, & Pumine, 2001; Rollnick, Heather, Gold, & Hall, 1992), and increasing condom use (Morrison-Beedy, Carey, & Lewis, 2002).

Measuring motivation is now an important aspect of alcohol and health-related research and practice. Researchers have developed several measures of motivation. These include the Stage of Change

Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996), the University of Rhode Island Change Assessment (URICA; McConaughy, Prochaska, & Velicer, 1983), and the Readiness to Change Questionnaire (RTCQ; Rollnick et al., 1992). The SOCRATES and RTCQ are measures specific to alcohol use. These measures contain between 12 and 32 items and attempt to determine the level of motivation of individuals by placing them in the appropriate stage of the change continuum.

Practitioners often need an assessment of readiness to change that is quick and able to identify patients who would best benefit from motivational enhancement therapies (Rollnick et al., 1992). A brief, inexpensive method could save time and money, especially in the realm of managed health care (Rogers et al., 2001). The *contemplation ladder* or *ruler*, developed originally for smoking cessation by Biener and Abrams (1991), is a brief and affordable assessment tool. The contemplation ladder lets participants self-report their intention to change their behavior on a continuum. Verbal anchors help participants assess their own level of readiness to change. Versions of the ladder have been developed for use in alcohol studies (Carey et al., 2002) and studies on needle-exchange users (Blumenthal, Gogineni, Longshore, & Stein, 2001). The verbal anchors make this continuum a concrete measure that may be useful when trying to assess readiness to change among persons with certain mental illness who may have trouble with abstract thought (Carey et al., 2001, 2002; Rogers et al., 2001).

If the ladder or ruler could show the same reliability and validity as longer questionnaires, it could be used as a quick, opportunistic measurement for readiness to change. The development of such a measure could save time and money in health care settings and aid in research protocols. As a piece of a larger intervention study, we hypothesized that change rulers created for alcohol and safer sex would be equivalent to longer questionnaires and would adequately predict measures of intention.

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Method

Participants

Ninety-six men, average age 20.58 ($SD = 2.45$), who reported drinking at least twice a week and having two or more sexual partners in the preceding 2 months, participated in the study. The study inclusion criteria provided participants whose drinking and sexual behavior put them at risk for negative outcomes resulting from both problem drinking and risky sex. Sixty-five percent of participants were White, 19% Hispanic, 10% Asian, and 6% Black. They drank on average 3.41 ($SD = 2.45$) times per week and consumed an average of 6.25 ($SD = 2.72$) standard drinks per drinking occasion. They averaged 3.23 ($SD = 1.80$) sexual partners in the previous 3 months and used a condom 58.5% ($SD = 33.08$) of the time during sexual intercourse. Table 1 contains means and standard deviations for the participants on variables of interest.

Measures and Procedures

Participants responded to items assessing demographic and behavioral characteristics, as well as two measures of motivation or readiness to change both their drinking and their condom use. They also responded to items assessing intended future drinking and condom use. Means and standard deviations on variables of interest are found in Table 1.

Motivation Measures

RTCQ (Rollnick et al., 1992). The *RTCQ*, designed to measure motivation to decrease drinking, contains 12 items. It formed three factors (Precontemplation, Contemplation, and Action), and persons received a score on each factor. The highest factor score represented the stage on the change cycle of the individual. Sutton (2001) critiqued the idea of discrete stages of change and proposed that researchers should view readiness to change as a continuous variable rather than as a series of discrete stages. Budd and Rollnick (1996) revised their initial *RTCQ* to reflect this ideal. Their subsequent research revealed a single higher order factor emerging from the *RTCQ*, which they called Readiness to Change. Items in the Precontemplation subscale were reverse coded and added to the scores of items from the other two factors. This single Readiness to Change factor served as a marker of motivation to decrease drinking.

A Readiness to Change Risky Sexual Behavior (*RTCQ-SB*) scale measured participants' willingness to engage in increased safer sex behaviors (i.e., to use a condom more often). This scale was adapted for this study

Table 1
Group Means and Standard Deviations for Behavior and Motivation Variables

Variable	<i>M</i> (<i>SD</i>)
Age	20.58 (2.46)
Number of sexual partners (lifetime)	10.92 (13.41)
Age at first sex	16.31 (1.86)
<i>RTCQ</i> (Alcohol)	3.46 (1.06)
Alcohol readiness to change ruler	2.52 (2.02)
Drinking intention I (drinks/month)	85.56 (66.13)
Drinking intention II (drinking days/month)	12.89 (4.96)
Drinking days/week (previous 3 months)	3.41 (2.45)
Drinks per occasion (previous 3 months)	6.25 (2.73)
<i>RTCQ-SB</i>	3.78 (1.31)
Safer sex readiness to change ruler	5.56 (3.34)
Condom use intention	5.56 (1.24)
Percentage condom use (all sex previous 3 months)	58.50 (33.08)

Note. *RTCQ* = Readiness to Change Questionnaire; *RTCQ-SB* = Readiness to Change Questionnaire—Sexual Behaviors.

from the alcohol *RTCQ*. The *RTCQ-SB* scale contained 11 items, which can be found in Appendix A. As with the *RTCQ*, the precontemplation items (Items 1, 5, and 10) were reverse coded and added to the contemplation and action items.

Readiness to change rulers. Participants completed two change rulers, scaled from 0 to 10, that asked them to rate their readiness to change their drinking and their readiness to change their condom use by circling the position on the rulers that best described them. The rulers, modeled on a ruler found on the Motivational Interviewing Web site operated by William Miller, are found in Appendix B.

Intention measures. Two items (intended drinking days per month and intended drinks per drinking occasion in the next month) combined to form an Intended Drinking Quantity \times Frequency index. Participants also responded to five items from the UCLA Multidimensional Condom Attitudes Scale that assessed intended future condom use (Helweg-Larsen & Collins, 1994). These items, which assessed intended condom use and intended negotiation of condom use on a Likert scale, were averaged to create the condom intention variable.

Results

Reliability of *RTCQ* Questionnaires

The single-factor alcohol *RTCQ* had adequate reliability ($\alpha = .72$; $M = 3.46$, $SD = 1.06$), consistent with Budd and Rollnick's (1996) findings. The *RTCQ-SB*, which assessed readiness to change condom use, was created for this study. The 11-item scale had adequate internal consistency ($\alpha = .84$; $M = 3.78$ [out of 7], $SD = 1.31$).

Equivalence of *RTCQ* and Change Rulers

The alcohol change ruler and the original alcohol *RTCQ* correlated highly, $r(95) = .772$, $p < .01$, as did the condom use change ruler and the *RTCQ-SB*, $r(95) = .771$, $p < .01$. The very strong relationships between the rulers and their respective *RTCQ* questionnaires suggest that the *RTCQ* and the change rulers are measuring the same underlying construct. Correlations across behavioral domains were not significant. The correlations between the *RTCQ* and the condom use change ruler, between the *RTCQ-SB* and the alcohol change ruler, and between the two change rulers were less than .20 and were nonsignificant. Thus, the readiness to change rulers appear to discriminately measure readiness to change of the particular behavior targeted.

Concurrent Validity

Correlations of the rulers to variables of intended future behavior measured concurrent validity. The alcohol ruler was significantly related to intended drinking days per month and intended total drinks per month (a Quantity \times Frequency index) for the upcoming month. The safer sex ruler was significantly associated with intended condom use. We next compared the ruler and the *RTCQ* correlations to the intention to change variables using Meng, Rosenthal, and Rubin's (1992) technique. The magnitude of the correlation between the ruler and the target intention was always larger than the same correlation between the full-scale *RTCQs* and the target intention. Two of the three were significantly larger. (See Table 2.) Therefore, the rulers appeared at least as good at predicting intentions as longer questionnaires.

Table 2
Pearson's Correlations for Ruler and RTCQ Measures With Intentions to Change

Variable	Pearson's <i>r</i>	<i>Z</i>
Condom intention		
Condom ruler	.297**	
RTCQ-SB	.065	3.50**
Intended drinking days per month		
Drinking ruler	-.324**	
RTCQ	-.219*	1.54
Intended drinks per month		
Drinking ruler	-.206*	
RTCQ	-.071	6.25**

Note. RTCQ = Readiness to Change Questionnaire; RTCQ-SB = Readiness to Change Questionnaire—Sexual Behaviors.

* $p < .05$. ** $p < .01$.

Discussion

This study assessed the efficacy of change rulers (as compared with longer questionnaires) in measuring motivation and in predicting behavioral intentions. Both of the rulers outperformed their longer counterparts, the RTCQ and the RTCQ-SB, in predicting behavioral intentions. The alcohol ruler was better at predicting an intended Quantity \times Frequency index than the RTCQ, whereas the safer sex ruler was better at predicting condom use intention than the RTCQ-SB. The rulers also correlated highly with the RTCQ scores, suggesting that the two measures assess the same construct.

Limitations to the study warrant discussion. This study compared the readiness to change rulers only with the RTCQ and not with either the SOCRATES or the URICA. However, because the rulers developed for this study were behavior specific and did not give a general measure of readiness to change, the URICA would not have been well suited for our analysis. As Sutton (2001) suggested, measuring readiness to change as a continuous variable may prove the more reliable approach. The SOCRATES and URICA, both of which measure readiness to change as discrete stages rather than along a continuum, might show even less internal consistency than the RTCQ scales. The RTCQ, however, allows for a continuous measure of readiness to change and therefore is better suited for testing the efficacy of the readiness to change rulers.

Second, the study used behavioral intentions as a dependent measure in assessing criterion validity. Although intentions are often outcome measures in safer sex research, future studies should address the relationship between readiness to change rulers and actual change in target behaviors (i.e., reduced drinking or increased condom use). Do the rulers perform equivalently to longer questionnaires in predicting actual prospective behavior change? There is also some overlap between readiness to change and behavioral intention. However, the revealed relationships (correlations near .20–.30) suggest that, although similar, they are not the same construct (as compared with ruler and RTCQ correlations near .70). Furthermore, applications of the stage of change model (Miller & Rollnick, 1991) suggest that readiness level might be related to effectiveness of intervention type. The change rulers would allow future studies to determine whether stage-specific interventions (i.e., decisional balance, relapse prevention) might

apply at different readiness levels. In contrast, although it might be possible to think of matching interventions to intention level, it is not usually done, and it is further removed from the stages of change model. Thus, there are also theoretical reasons for considering readiness to change to be different from behavioral intentions.

Finally, the participants in this study came from a generally healthy population. The ruler may not predict behavioral intentions as well as longer questionnaires in a clinical population. The present study also had a limited sample size (in terms of both number and its all-male college student population), making it necessary for the results to be replicated before change rulers are widely advocated in both research and clinical settings. Nevertheless, these data suggest that these single-item rulers correlate highly with longer questionnaires that are currently used in health care and research settings, making them an ideal approach for decreasing participant burden in research or intervention. The ruler can be administered quickly in any setting. Doctors or case managers could give the ruler during a short meeting to quickly assess readiness to change a targeted behavior. In addition, these data reveal that the ruler, initially designed for readiness to change alcohol and drug use, adapts well to assessing readiness to change sexual behavior. Although more research is necessary, it appears that readiness rulers may be helpful in assessing motivation to change in numerous behaviors, potentially allowing clinicians to direct interventions more appropriately.

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Appendix A

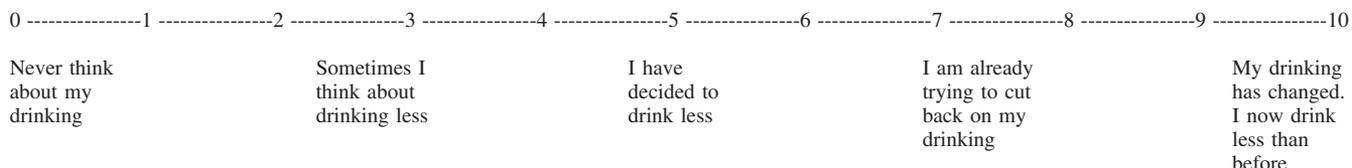
Readiness to Change Questionnaire: Sexual Behavior

1. I don't think I engage in risky sex.
2. I am trying to use a condom more than I used to.
3. Sometimes I have sex without a condom when I'd rather not.
4. Sometimes I think I should cut down on my unsafe sexual behavior.
5. It's a waste of time to think about my condom use habits.
6. I have just recently begun using condoms more.
7. Anyone can talk about wanting to do something about using condoms more often, but I'm actually trying to do something about it.
8. I am at a stage where I should think about changing my unsafe sexual behavior.
9. My not using a condom during sex is a problem sometimes.
10. There is no need for me to think about changing my sexual behaviors to be more safe.
11. I am actually changing my unsafe sexual behaviors right now.

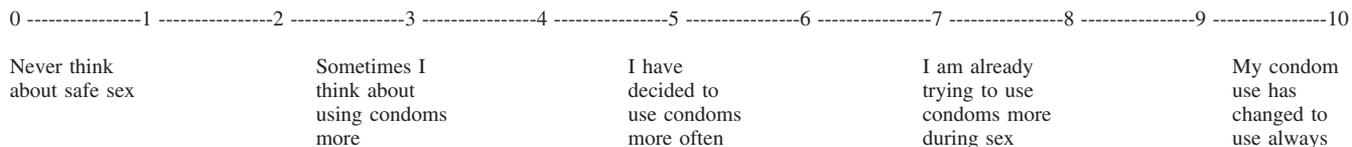
Appendix B

Readiness to Change Rulers for Decreased Drinking and Increased Condom Use

On the ruler below, please circle the number that best describes how you feel *right now*:



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