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Development of a Multi-Item Spending Behavior Assessment: An Application of the Transtheoretical Model of Change

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College is the first time many students assume responsibility for purchasing their own food, paying bills, making other routine expenditures, and balancing their spending with income. Many college students have not learned about personal financial responsibilities prior to being expected to perform these tasks (Lawrence, Cude, Lyons, Marks, & Machtmes, 2006). Yet, other students have been taught these basic personal finance skills from their parents while still at home or through other avenues. In terms of university curricula, education on wise spending and money management is rarely mandatory for students, but often can be obtained through students' self-initiative. However, unaware or unmotivated students are less likely to seek out this information on their own, leaving them without the financial knowledge and skills necessary to successfully transition into the financial world (Goetz, Mimura, Desai, & Cude, 2008).

In cases where financial education is mandatory, students of varying levels of motivation can be found participating in the same personal finance courses and programs. These motivational differences can affect the impact that financial education has on participants' financial outcomes. The goal of financial educators is to impart not only knowledge but also practices that will be adopted and applied by students. To this end, instruction is generally intended to help students adopt positive financial management behaviors. Thus, tailoring education to the motivational level of participants is likely to result in more effective financial education. The increased efficacy associated with tailoring educational and interventional materials to particular audiences' motivational and cognitive-behavioral characteristics is well-documented (Kreuter, Strecher, &

Glassman, 1999; Schumann et al., 2007). The Transtheoretical Model of Behavior Change (TTM) (Prochaska, Diclimente, & Norcross, 1992) suggests that students in a mandatory personal finance course will be at different stages of adopting or maintaining positive financial behaviors, and will respond differently to pedagogical and intervention methods targeting their current behavioral state (Shockey & Seiling, 2004).

This paper discusses the initial development and testing of a 31-item instrument that can be compared with other instruments based on its effectiveness of classifying students, and potentially other program participants, into different stages of behavioral change based on the TTM. The proposed instrument used in this study focuses on assessing general spending behaviors among students. Appropriate classification of students or other program participants based on their motivation and ability to change spending behaviors may allow educators to better tailor the instruction or counseling to the participants' specific situation.

Transtheoretical Model of Change

The Transtheoretical Model of Behavior Change (TTM) can be applied to many areas of behavior change, but has traditionally been applied to changing negative health behaviors such as alcoholism and smoking (e.g., Diclemente & Hughes, 1990; Prochaska & DiClemente, 1983; Schwarzer, 2008). TTM has also been used to change negative financial behaviors (e.g., Kerkmann, 1998; Shockey & Seiling, 2004; Xiao et al., 2004a, 2004b). The TTM framework proposed by Prochaska et al. (1992) is based on five stages of change with the presence of ten key processes facilitating progression from one stage to another. The five stages of change are precontemplation, contemplation, preparation, action, and maintenance. Individuals in the precontemplation stage often demonstrate, through denial or defensiveness, resistance to recognizing negative behaviors and to modifying those behaviors. In the contemplation stage, individuals know what changes they desire to make, but for whatever reasons are

not yet ready to make those changes. Individuals in the preparation stage are beginning to experiment with behavioral changes while continuing with cognitive change processes. The action stage is when individuals make intended and purposeful changes to their behavior, environment, or circumstances and is the most easily measured stage by observers. Finally, individuals in the maintenance stage are working to prevent relapses into undesired behavioral patterns. It should be noted that progression through the stages is not always linear and continuous, as many individuals attempt behavior change multiple times before succeeding.

The TTM also includes ten processes of change that are constructs conceptualized to be the impetus for progression between stages. For example, consciousness-raising, dramatic relief, environmental reevaluation, and social liberation are constructs that facilitate the progression from precontemplation to contemplation. Self-reevaluation and self-liberation aid in the progression from contemplation to preparation, respectively, while contingency management, counterconditioning, stimulus control, and helping relationships aid in the progression from preparation and action to maintenance (Xiao et al., 2004a; Cancer Prevention Research Center, 2007).

Recall that individuals in the precontemplation stage are often defensive, in denial, and resistant to behavior change, because they feel there is no need to change, or they perceive they are already practicing appropriate behaviors (McConnaughy, Prochaska, & Velicer, 1983). The characteristics of precontemplators have important implications regarding self-reported measurements. Individuals in this state may erroneously self-report that they are in a higher stage of change because of their denial of the problematic behavior. Tailored education or counseling, based on the erroneous classification of these individuals, can lead to frustration on the part of the instructor and participant. In addition, the effectiveness of such education, as measured by stage progression, may be significantly understated because of misclassification of the participant's initial stage, thus

reducing the educator's ability to document the true impact of the program. For many financial education programs, this concern is not as relevant since most individuals voluntarily choose to participate in these types of programs, suggesting that the participants are already beyond the precontemplation stage. However, more precontemplators are likely to be attending programs that require individuals to participate such as mandatory personal finance classes for students. In these instances, the issue of misclassification becomes more serious.

Psychologically-based, multi-item instruments assessing stages to change have been tested in other disciplines, such as psychotherapy and exercise (Cancer Prevention Research Center, 1991), but have not been utilized in financial counseling and education. Reliably classifying individuals into the precontemplation stage is critical to documenting true program success based on TTM, particularly for non-voluntary financial education programs. The purpose of this paper is to report the feasibility and initial characteristics of a multi-item instrument used to assess the stage at which students are at with regards to their spending behaviors. The assessment tool tested in this study was designed to classify students into one of four stages (precontemplation, contemplation, action, and maintenance), with the preparation stage being excluded (McConnauhy et al., 1983).

Literature Review

Several researchers studying financial education and counseling have used TTM in their research to classify participants according to their stage of behavior change (Lown, 2007; Schockey & Seiling, 2004; Xiao et al., 2004a). A number of different instruments have been used, but the inconsistency in the use of these instruments has created gaps and discrepancies in the research. Some instruments, such as those used by Shockey and Seiling (2004), are based on repeated, one-item assessments of psychological constructs. Other researchers have used one-

question assessments that have been augmented with additional questions used to assess processes of change, which in turn add some clarity to general stage assignment and likelihood of progression (Xiao et al., 2004a). Lown (2007) used a multi-question scale adopted from the *Retirement Personality Profiler* and intuitively mapped the stages of change to five personality profiles. A two-item instrument and a fifteen-item instrument were developed and modified to fit general financial planning purposes. With the exception of Lown, classification by stage of change has been based on very specific financial practices that researchers were either encouraging or investigating. While several instruments designed to assess stages of change have been tested, few instruments, if any, have been consistently applied and tested for validity and reliability across studies.

As previously discussed, individuals often have the option of participating in various financial education programs and so are choosing to seek out help for their situation. These individuals arguably have already exited the precontemplation stage of change. However, in contrast, some financial education programs are mandatory and individuals do not self-select into the course (O'Neill, 2007). Some examples of this include bankruptcy debtor education, high school personal finance classes mandated by state governments, undergraduate courses in personal finance required as part of a college's general education requirements, and homebuyer assistance programs. In such programs, it is important to accurately differentiate between participants in the precontemplation stage and those in higher stages of behavior change so that appropriate teaching techniques can be used and accurate assessments of program impact can be made. Eventually, a multi-item stage assessment tool needs to be compared with single-item assessment tools to determine which assessments result in more reliable and valid classification of participants who are attending a mandatory, versus a voluntary, financial education program. More robust initial, intermediate, and final classification of participants is likely to result in more accurate and reliable outcomes for program evaluations using TTM.

Methodology

A convenience sample consisting of students attending a southeastern university, who were enrolled in a sophomore-level consumer science course during the spring 2007 semester, were invited to participate in this research study. The course was required for some students and an elective for others. Of the 252 students enrolled in the course, 78 completed the surveys and consent forms necessary to be included in the sample. In order to encourage participation, a random drawing for a $50 gift card to the campus bookstore was held for students participating in the study. At the beginning of the semester, participants were asked to complete the stages-to-change assessment instrument and a demographic questionnaire. At the conclusion of the semester, students were again asked to complete the stages-to-change assessment instrument.

The stages-to-change assessment instrument was adopted from the Univeristy of Rhode Island Change Assessment - Long Form (URICA Long Form) psychotherapy measure. Permission to use and adapt the scale was received from Dr. Prochaska, Director of the Cancer Prevention Research Center. The original instrument was first developed by McConnauhy, Prochaska, and Velicer (1983) for psychotherpy and can be found at the University of Rhode Island's Cancer Prevention Research Center's website (1991). Our modified version of the instrument consisted of 32 items, the same number as the original instrument, with eight items relating to one of four stages of change – precontemplation, contemplation, action, and maintenance. The original items were modified so that they focused specifically on spending behaviors or problems. Similar to the original instrument's items, statements were left broad rather than specific. Some items from the original scale were left unchanged because they dealt in general with participants' attitudes about changing their behavior. One item related to the maintenance stage was dropped due to very low response rates for the item, resulting in 31 items on the final instrument. Each item asked participants to indicate how

much they agreed or disagreed with a specific statement regarding spending behaviors and spending problems. Participants' responses were based on a 5-point scale, ranging from "1=strongly disagree," "2=disagree," "3=undecided," "4=agree," and "5=strongly agree."

Results

Demographic characteristics of the individuals who participated in the study are presented in Table 1. An overwhelming majority of the sample ended up being female, single, and white, with only 10.3% of the sample being male and 2.6% being married. The largest race or ethnicity representation

Table 1
Sample Characteristics (N=78)

Sample Characteristics	Count (%)	Mean (Median)	Standard Deviation
Gender			
Male	8 (10.3)	-	-
Female	70 (89.7)	-	-
Completed Semesters of College	-	4.7 (5.0)	2.1
Marital Status			
Single	76 (97.4)	-	-
Married	2 (2.6)	-	-
Ethnicity			
White	66 (84.6)	-	-
African American	4 (5.1)	-	-
Asian	6 (7.7)	-	-
Hispanic	2 (2.6)	-	-
Other	3 (3.8)	-	-
Age	-	20.2 (20.0)	1.8
GPA	-	3.3 (3.3)	0.5
February 2007 Income			
Wages	-	220.9 (0.0)	332.3
Allowance and Gifts	-	345.6 (157.5)	455.1
Bills Paid by Others	-	547.1 (371.0)	526.4

in the sample, outside of white (84.6%), was Asian (7.7%), followed by African American (5.1%). On average, participants had completed 4.7 semesters of college and were 20 years old. The average GPA was 3.3 on a 4.0 scale. Wages, allowance and gifts, and in-kind living support (not including scholarships) for the month of February 2007 are also reported in Table 1.

Confirmatory principle component factor analysis was used to identify the stages of change within the instrument (McConnaughy et al., 1983). An oblique (Oblimin) rotation was used to account for the interdependent relationship between the factors. Separate factor analysis was conducted for both the initial and follow-up surveys.

Table 2 shows the beta coefficients from the pattern matrix of item loadings for the initial and follow-up assessments. Note that only items that loaded consistently on the initial and follow-up surveys with coefficients greater than 0.40 are presented in Table 2. Items that did not have a strong or consistent loading between the initial and follow-up administrations of the instrument were dropped. The resulting pattern matrices, components, and item loadings for the initial and follow-up surveys were compared. The results showed that 18 of the 31 items consistently loaded across the four stages on the initial and follow-up surveys.

Also note that resulting components and item loadings presented in Table 2 were somewhat consistent with components from the original psychotherapy instrument. Exceptions to this were items numbered 10 and 20 on the survey. Both of these were action items on the original instrument but were consistently classified as maintenance and contemplation items, respectively, on the modified instrument.

The inconsistent loadings of the other 13 items between the initial and follow-up surveys likely result from several sources, including measurement error and response shift bias. More specifically, measurement error, resulting from items not sharing the same variance as the underlying components, may have been one explanation for the inconsistency. Another may have been changes in self-awareness among participants resulting in response

Table 2

Factor loadings for initial and follow-assessment survey questions (N = 78)

		Factors	
Item	Question	Precontemplate	Contemplate
23.	I may be part of the spending problem, but I don't really think I am.	0.55 / 0.48	
26.	All this talk about spending behavior is boring. Why can't people just forget about their spending problems.	0.76 / 0.81	
29.	I have worries but so does the next guy. Why spend time thinking about them?	0.78 / 0.76	
31.	I would rather cope with my faults than try to change them.	0.59 / 0.53	
19.	I wish I had more ideas on how to solve the spending problem.		0.45 / 0.72
20.	I have started working on my spending behavior but I would like some help.		0.63 / 0.78
21.	Maybe someone will be able to help me change my spending behaviors.		0.59 / 0.81
3.	I am doing something about the spending problems that had been bothering me.		
7.	I am finally doing some work on my spending problem.		
14.	I am really working hard to change my spending behaviors.		
17.	Even though I'm not always successful in changing, I am at least working on my spending problems.		
25.	Anyone can talk about changing; I'm actually doing something about it.		
30.	I am actively working on my spending problem.		
6.	It worries me that I might slip back on a spending problem I have already changed.		
9.	I have been successful in working on my spending problem but I'm not sure I can keep up the effort on my own.		
10.	At times my spending problem is difficult, but I'm working on it.		
18.	I thought once I had resolved my spending problem I would be free of it, but sometimes I still find myself struggling with it.		
32.	After all I had done to try to change my spending problem, every now and again it comes back to haunt me.		

Table 2 (continued)

Factor loadings for initial and follow-assessment survey questions (N = 78)

Item	Question	Factors: Action	Factors: Maintenance
23.	I may be part of the spending problem, but I don't really think I am.		
26.	All this talk about spending behavior is boring. Why can't people just forget about their spending problems.		
29.	I have worries but so does the next guy. Why spend time thinking about them?		
31.	I would rather cope with my faults than try to change them.		
19.	I wish I had more ideas on how to solve the spending problem.		
20.	I have started working on my spending behavior but I would like some help.		
21.	Maybe someone will be able to help me change my spending behaviors.		
3.	I am doing something about the spending problems that had been bothering me.	0.59 / 0.84	
7.	I am finally doing some work on my spending problem.	0.76 / 0.85	
14.	I am really working hard to change my spending behaviors.	0.78 / 0.67	
17.	Even though I'm not always successful in changing, I am at least working on my spending problems.	0.57 / 0.77	
25.	Anyone can talk about changing; I'm actually doing something about it.	0.85 / 0.47	
30.	I am actively working on my spending problem.	0.82 / 0.80	
6.	It worries me that I might slip back on a spending problem I have already changed.		0.58 / 0.62
9.	I have been successful in working on my spending problem but I'm not sure I can keep up the effort on my own.		0.71 / 0.86
10.	At times my spending problem is difficult, but I'm working on it.		0.58 / 0.55
18.	I thought once I had resolved my spending problem I would be free of it, but sometimes I still find myself struggling with it.		0.55 / 0.49
32.	After all I had done to try to change my spending problem, every now and again it comes back to haunt me.		0.51 / 0.44

shift bias. Participants with initially low self-awareness regarding their spending behaviors may have interpreted items differently on the follow-up survey after receiving education and completing assigned work. Increased self-awareness of spending behaviors relative to normative spending behaviors taught in the classroom may have also led to item inconsistency in the pattern matrix.

The reliability of each of the resulting factors associated with a particular stage was tested using Cronbach's reliability alpha. Table 3 presents the results. The reliability of each of the stage-related factors was consistent from the initial to the follow-up survey. With regards to the follow-up assessment, Cronbach's alpha scores, across all factors, ranged from a low of 0.71 for the precontemplation factor to a high of 0.90 for the maintenance factor.

Table 3

Reliability test results for each of the identified factors for the initial and follow-up assessments (N = 78)

Scale	Items	Initial Assessment Cronbach's Alpha	Follow-up Assessment Cronbach's Alpha
Precontemplation	4	0.71	0.74
Contemplation	3	0.86	0.84
Action	6	0.86	0.90
Maintenance	5	0.81	0.82

Conclusions and Implications

Consistent component loadings for the majority of items, coupled with reasonably high reliability, suggest that a multi-item scale assessment tool would be able to differentiate program participants based on the TTM stages of change. However, further development, modification, and testing of the scale presented in this paper are necessary before it can be used in practical settings. Initial results suggest that the assessment tool appears to capture important psychological constructs, such as the precontemplation

stage. Precontemplation, with its common characteristics of denial and defensiveness, may be difficult to assess using a single-question instrument with individuals whose participation is mandatory. Additional research is necessary to compare the consistency of validated, multi-item scales with single-item scales to determine whether the additional complexity of a multi-item scale provides substantial improvement in the classification of participants.

Educators and practitioners, particularly those working with program participants who are required to receive personal finance education or counseling, would benefit substantially from a TTM assessment tool that consistently and accurately classifies participants according to the TTM stages. This information can be used to tailor instruction and counseling, potentially resulting in better financial outcomes for program participants. Additionally, consistent stage classification could also result in more meaningful program evaluation results since change and program impact could be more accurately measured.

Some shortcomings of this research are the absence of a control group that lacks formal personal finance instruction. This study also used a convenience sample of students, which limits the generalizability of the findings to broader populations. Thus, it is important that future research validates the scale with other target populations such as financial counseling clients.

In sum, further research is required before this scale can be used by educators and practitioners. After additional validation, educators and practitioners may be able to use a modified version of this scale by simply summing standardized scores for the items associated with each stage and using the standardized scores to classify clients. While a multi-item scale can be more difficult to use, it has the potential to provide more accurate information for tailored pedagogical approaches and program evaluation. When working with individuals whose participation is required, it can also lead to improved documentation of program impact and greater support for programming from funders and sponsors.

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