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Bradley Klontz
Kansas State University

Caesar Pacifici

Lee White

See next page for additional authors

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The Effectiveness of an Interactive Multimedia Psychoeducational Approach to Improve Financial Competence in At-Risk Youth: A Pilot Study

Authors

Bradley Klontz, Caesar Pacifici, Lee White, and Carol Nelson

The Effectiveness of an Interactive Multimedia Psychoeducational Approach to Improve Financial Competence in At-Risk Youth: A Pilot Study

Bradley T. Klontz, Psy.D.¹

Kansas State University

Caesar Pacifici, Ph.D.

Northwest Media, Inc.

Lee White

Northwest Media, Inc.

Carol Nelson, Ph.D.

Northwest Media, Inc.

In recent years, a growing number of initiatives have been aimed at increasing financial literacy among youth in America. However, these efforts have tended to target mainstream populations, and failing to adequately address the backgrounds, learning, and psychological needs of at-risk youth. This study piloted a curriculum on money management that presented a basic set of financial skills via story situations and characters that are meaningful to at-risk youth using a dynamic interactive multimedia online delivery to heighten youths' interest to learn. The approach also helped at-risk youth gain insight into their money beliefs and psychological barriers to success, integrating change theory and techniques designed to enhance their motivation to change. Eighty-eight Job Corps participants were randomly assigned to treatment and control conditions. Results showed that the interactive multimedia curriculum produced significant gains in youth's financial knowledge and confidence in money management skills.

Keywords: financial literacy; financial health; financial therapy; at-risk youth; transitional living; independent living; Job Corps; juvenile justice; life skills education; charter schools; foster care; emancipation

¹ Contact Information: Brad Klontz, Klontz Consulting Group, P.O. Box 520, Kapaa, HI 96746; 323-387-3009; brad@klontzconsulting.com

INTRODUCTION

Money management is a core life skill that at-risk youth need to learn *before* they emancipate, in order to achieve self-sufficiency and success in society (e.g., Cook, 1994; Mech, 1988; Pecora et al., 2003). For our current purposes, “at-risk” refers to socially disadvantaged teens that are facing emancipation and have failed, or are likely to fail, in mainstream educational settings or lack the life skills needed to emancipate successfully.

An emerging consensus is that youth in America do not receive adequate education in financial competencies. A recent study found that even 44% of mainstream high school students met the criteria for compulsive buying disorder (Dittmar, 2005). The absence of basic financial awareness and skills in American youth contribute to a variety of economic woes. According to the Bureau of Economic Analysis, U.S. Department of Commerce (2006), the personal savings rate in the United States in 2005 was in the negative for the entire year. *Consumer Reports* (2005) reported that the average credit card debt for U.S. families was over \$9,000 per household, with 70% of Americans reporting they carry so much debt that it is making their home lives unhappy (Warren & Tayagi, 2004). Since 2005, these statistics have become significantly worse.

Several national-level efforts have been launched to address financial literacy (Jump\$tart Coalition for Personal Financial Literacy, 1997; McKenna & Carroll, 1999; National Endowment for Financial Education, n.d.). These programs have had mixed results and some question whether or not these efforts lead to significant change. However, researchers agree there is a need for financial education and that existing approaches have some merit (Martin, 2007; Braunstein, & Welch, 2002). In their review of household survey data, Bernheim, Garrett, and Maki (1997) found a 1.5% higher savings rate five years post high school in students from states that mandate financial education curriculums in schools. This effect was stronger for students of non-frugal parents, suggesting that financial literacy programs are more effective for students who need it most.

Schreiner and colleagues (2001) concluded that financial education did improve savings rates; but to be effective, the programs must be tailored to meet the needs of consumers from different cultures and education levels. Unfortunately, few programs are designed to meet the educational needs of at-risk youth—those who face very different life circumstances and challenges (Johnson & Sherraden, 2007). The lack of financial competence has especially serious implications for at-risk youth who, without the support of family, face much more immediate and pressing demands to become self-sufficient compared to their mainstream counterparts (Garrett, 2000). At-risk youth have different concerns, learning styles, sensibilities, and life circumstances than their mainstream counterparts. They need materials that are accurate, but that also accommodate their learning styles and meaningfully reflect their life circumstances.

The key to effectively teaching money management skills to at-risk youth is being able to impart subject-matter practical importance. These youth often become turned off to learning through repeated failures in school, disrupted lives, and a lack of positive role-

models. Furthermore, traditional teaching methods often miss the mark with at-risk youth, who often prefer hands-on activities to academic study and practical applications over didactic instruction (Lerman, 1993). The normal developmental filters that turn teenagers off to the guidance of adults become a more profound and disabling alienation for this group. At-risk youth are more wary of and defended against failing when presented with traditional training approaches (Tobin & Sprague, 1999). Even when curricula incorporate more dynamic elements, such as media, interactivity, or creative instructional activities, programs still lack realistic and relevant contexts that make direct connections to the everyday lives of at-risk youth. As a result, current curricula undermine the motivation and readiness to learn these crucial skills among at-risk youth.

Targeting At-Risk Youth

Although at-risk youth comprise a very large and diverse group that eludes simple characterization, at-risk youth typically come from underprivileged backgrounds. The adjustment problems they frequently exhibit can be attributed to a variety of factors, including the limitations and stresses of the poverty they live in, the lack of stable and cohesive social support systems, and, often, the trauma of abuse and neglect (Tobin & Sprague, 1999).

One way at-risk youth are identified is through their affiliation with fail-safe agencies and institutions that provide them with specialized services. These most often include those in the Jobs Corps, the foster care system, the juvenile justice system, and alternative charter high schools. Over time, the same youth may receive life-skills training from several of these sources. Below, we briefly describe these services to give a sense of the scope of the at-risk youth population, their challenges, and their need for life-skills training.

Jobs Corps. The Job Corps is a national education and training program that provides comprehensive services to over 100,000 at-risk youth, ages 16-24 (U.S. Department of Labor, 2010; U.S. Department of Labor, Employment and Training Administration, 2009). The program aims to help trainees become employable and independent, to help participants find jobs, enter the military, or enroll in further education or training. A key service provided is life-skills training. Approximately 75% are high school dropouts; more than 30% are from families receiving public assistance; and the typical Job Corps student has never held a full-time job (U.S. Department of Labor, Employment and Training Administration, 2009). Program enrollees are among the nation's most at-risk youth, many of whom have been unable to succeed at living on their own.

Foster care. An estimated 90,000 children in foster care are 16 years or older (Adoption and Foster Care Analysis and Reporting System, 2009), with 20,000 to 25,000 youth "aging out" of the system every year (DHHS, 2006). These youth often lack the necessary skills and support for making a successful transition to independence (Courtney, Dworsky, Cusick, Havlicek, Perez, & Keller, 2007; Mallon, 1998). In general, not having a role model to support the development of financial literacy skills has been found to have a

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significant negative effect on asset building in early adulthood (Greeson, Usher, & Grinstein-Weiss, 2010). Although Independent Living Programs use a variety of training approaches, at-risk youth are often resistant to and tune out traditional educational approaches because they may not see the value of instruction in theory (Lerman, 1993). According to one survey on outcomes of foster youth, 80% were not sufficiently prepared to live independently within a year after leaving care and less than half felt they could obtain a steady job. Their greatest concern was with acquiring money management skills (Pecora, Williams, Kessler, Downs, O'Brien, Hiripi, & Morello, 2003).

Delinquency. In 2008, there were 2.1 million juvenile arrests (Office of Juvenile Justice and Delinquency Prevention, 2008). Youth with risk factors related to school failure are overrepresented in this group (Kids Count, 2004; National Center on Education, Disability, and Juvenile Justice, 2004). How the justice system responds to at-risk youth has shifted toward restorative rather than retributive justice (Maloney & Holcomb, 2001). The justification for doing so is to help youth build the life skills competencies they will need to succeed in society. To this end, many first-time offenders are referred to community-based social interventions rather than an institutional setting.

Alternative education. Alternative and charter high schools serve the educational and behavioral needs of students who are at risk of failing or dropping out of regular high school (Knutson, 1999). The nation's approximately 11,000 alternative schools serve around 280,000 youth, or 2% of all high school students (Grunbaum, Kann, Kinchen, Ross, Gowda, Collins, & Kolbe, 1999; National Center for Education Statistics, 2001). The central goals of these schools are to provide innovative educational approaches that ensure at-risk youth are prepared to transition to the workplace and independent living.

Unfortunately, at-risk youth in all these support programs encounter the same dearth of financial skills training materials that are appropriate, engaging, and researched-based. Traditional approaches assume prerequisite skills and outlooks that ignore the fact that at-risk youth have not had opportunities to learn basic financial management skills at home. Many are visual learners and cannot effectively assimilate text-based or didactic approaches. Moreover, the social contexts and real-life circumstances of at-risk youth are generally not reflected in the curricular materials.

Instructional Content

The program under study sought to address these challenges by creating and delivering an instructional approach specifically designed for at-risk youth. It was developed by Northwest Media, Inc., an innovative, research-based company that has been producing media-based materials on social learning for at-risk populations for over 25 years. As described in more detail below, the program addressed the instructional needs of at-risk youth by presenting a set of essential concepts and skills on managing money in the context of stories and characters that were relevant to the target population. The information was presented dynamically, using an online interactive multimedia approach. To enhance engagement and momentum towards change, the curriculum integrated

change theory (Prochaska, Norcross, & DiClemente, 1994) and motivational enhancement (Miller & Rollnick, 2002) throughout the program, with the goal of moving at-risk youth from the precontemplation to the contemplation stages of change around financial literacy. It also incorporated financial psychology concepts such as money scripts (Klontz, Britt, Mentzer, & Klontz, 2011; Klontz & Klontz, 2009) to help youth foster a deeper understanding regarding their cognitive frames around money and how these belief patterns impact their relationship with money.

The curriculum, titled *Money Medical: Healthy Money Management*, presented an integrated sequence of instruction that alternated between segments of an animated teen story, showing how teens came to understand and acquire a set of life skills, and interactive activities that provided opportunities for users to practice applying the skills. Users could stop or resume training at any time. The first time through the curriculum, viewers followed the prescribed sequence of instruction. The curriculum also included printable handouts.

The *Money Medical: Healthy Money Management* curriculum was designed to be integrated into Vstreet.com, a comprehensive web-based training site created to help at-risk youth who are transitioning toward independent living develop life skills. The site provides a highly visual, attractive, and interactive environment with curricular activities that encourage youth to learn and apply a variety of practical and social life skills. Vstreet.com is available by subscription, primarily to youth affiliated with social service agencies. Users enter the site through a virtual room, a personal space that can be customized to a user's tastes. Youth click on icons in their room (e.g., curriculum books on a shelf) that are associated with specific features and curricula. Full-length training curriculums on Vstreet.com include looking for an apartment, discovering career preferences, keeping a job, managing anger, social problem solving, buying a used car, preventing HIV and other STIs, as well as the program in the current study. Features on the site include: email, a personal address book and calendar, message board, chat room, art and poetry galleries, a file cabinet for storing work, a personal journal, a library of *Getting Ready* eZines on independent living, a mini soap opera series on emancipating, and a hotline for critical social services. The site also has an administrative component with curriculum guides and controls for regulating content and supervising user activities. The same curricular training programs on Vstreet.com are also individually produced on CD-ROM or DVD to meet the technical needs of different agencies.

Research findings have lent strong support to the efficacy of this interactive multimedia approach in (a) improving knowledge and confidence in apartment hunting (Pacifi, White, Cummings, & Nelson, 2005); (b) increasing knowledge of sexually transmitted illnesses and positive attitudes towards prevention (Pacifi, White, Cummings, & Nelson, 2003); (c) improving knowledge relating to understanding and managing anger (Northwest Media, Inc., 2005); and (d) improving job readiness (Northwest Media, Inc., 2003). All four studies showed very high user satisfaction ratings for the curriculums, in addition to their efficacy in teaching life skills.

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Money Medical: Healthy Money Management consisted of seven units of instruction, prefaced by an interactive self-assessment exercise based on the Financial Health Scale (Klontz, Bivens, Klontz, Wada, & Kahler, 2008), which was designed to assess financial health regarding money, spending, saving, meeting financial goals, and guilt, shame, or pride in financial situations and behaviors. Items were revised for adolescents and young adults, and scores yielded five categories of low to high risk. The units of the curriculum covered the following key concepts:

- The relationship between time and money (i.e., how pay reflects the value people place on their time and effort) and how they think about money (i.e., their money beliefs).
- Budgeting: what it consists of, how to use it, and how it can help change spending choices.
- Understanding paychecks and bill cycles.
- Fine-tuning techniques for keeping track of expenses, including creating and organizing expense categories.
- Building a budget by using the information that has been tracked and transferring it to a budget sheet.
- Assessing the pros and cons of credit and debit cards and associated concepts such as loans, interest, and penalties.
- Using and understanding bank statements and credit reports.

METHOD

Participants

Study participants were students enrolled in educational and vocational training at a Job Corps center in the Pacific Northwest. Job Corps was chosen for the pilot study because this life-skills program is one of the major sources that teach skills to at-risk youth. Many of their enrollees have also been involved with other social service agencies and institutions. The center had a total of 216 trainees. Participation in the study was voluntary. Participants received \$10 for completing the pre-test and another \$10 for completing the post-test. Participants were also randomly chosen as winners of daily door prizes valued at \$5.

Procedure

One hundred trainees at the Job Corps center were randomly selected to participate in the study, meeting as a group, where a staff person described the study to them. All in attendance expressed interest in participating and were given a consent form. A staff person read the consent form aloud and answered questions about the study. Participants were then asked to sign the consent form.

To control for extraneous sources of variability, as well as threats to internal validity,

participants were randomly assigned to either a treatment condition or a control condition. Participants in the treatment condition participated in a group viewing of the *Money Medical* module on CD in a classroom setting. Participants attended four classes, each 1 hour and 45 minutes in length, given over 4 consecutive days. Classes were conducted by an instructor who facilitated the overall activity, which included brief reviews and follow-up discussions of key points. Participants in the standard-of-care control group attended their regularly scheduled classes and activities, which were also facilitated by instructors. These participants were offered the *Money Medical* curriculum after the post-test portion of the study was completed.

The final sample included 88 participants, ranging in ages from 16-24 years, with an average range of just under 19 years ($M = 18.98$; $SD = 2.22$). Forty-three participants were in the treatment group with an average age of 19 years ($M = 19.26$; $SD = 2.31$), and 45 participants were in the control group with an average age of 18 years. ($M = 18.71$; $SD = 2.13$). As reported in Table 1, of the 88 students who completed the study, 26% were female. Racially, 67% were White, 8% Black, nearly 6% American Indian or Alaska Native, and 1% each Hawaiian/Other Pacific Islander and Other. Eight percent reported being more than one race; and another 9% either reported their racial background as unknown or omitted the item. There were no Asians among the study participants. Ethnically, about 10% reported being Hispanic or Latino, 54.5% Not Hispanic or Latino, and 2% both Hispanic and Not Hispanic. Thirty-three percent of the sample either reported their ethnic background as unknown or skipped this item. With reference to education, 54.5% indicated that they had completed high school or a GED; another 11.4% were currently working toward a GED; about 18% reported having completed 11th grade; and the remaining 16% reported completing either 9th or 10th grade.

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Table 1
Sample Demographics

Item	Control Group (n = 45)		Intervention Group (n = 43)		Total Sample (N = 88)	
	%	n	%	n	%	N
<i>Gender</i>						
Male	77.8	35	69.8	30	73.9	65
Female	22.2	10	30.2	13	26.1	23
<i>Ethnicity</i>						
Hispanic or Latino	11.1	5	9.3	4	10.2	9
Not Hispanic or Latino	53.3	24	55.8	24	54.5	48
Hispanic and Not Hispanic	4.4	2	0.0	0	2.3	2
Unknown or not reported	31.1	14	34.9	15	33.0	29
<i>Race</i>						
White	66.7	30	67.4	29	67.0	59
Black or African American	8.9	4	7.0	3	8.0	7
American Indian/Alaska Native	6.7	3	4.7	2	5.7	5
Hawaiian/Other Pacific Islander	0.0	0	2.3	1	1.1	1
Asian	0.0	0	0.0	0	0.0	0
Other	0.0	0	2.3	1	1.1	1
More than one race	6.7	3	9.3	4	8.0	7
Unknown or not reported	11.1	5	7.0	3	9.1	8
<i>Level of School Completed</i>						
9 th Grade	2.2	1	14.0	6	8.0	7
10 th Grade	6.7	3	9.3	4	8.0	7
11 th Grade	20.0	9	16.3	7	18.2	16
Taking GED	13.3	6	9.3	4	11.4	10
Finished High School or GED	57.8	26	51.2	22	54.5	48

Note: Group and total percentages are based on the valid number of cases for each variable. No significant difference was found between the two groups on any of these variables.

Data Collection

All participants completed the pre-test assessment battery at the initial meeting. Participants met again after the final class and completed the post-test assessment battery. The pre-test battery included the following questionnaires: *Background Information*,

Knowledge of Money Management, Attitudes and Beliefs about Money, and Money Skills Confidence. The post-test battery did not include *Background Information*, but included the other measures as well as a *User Satisfaction* questionnaire.

Measures

All study measures were paper-and-pencil, self-report measures. Each measure is described below:

Background Information. A 5-item background information questionnaire developed by project staff was used to obtain information regarding participants' gender, age, ethnic and racial background, and highest level of school completed.

Knowledge of Money Management (KMM). The content for the KMM was based on the *Ansell-Casey Life Skills Assessment (ACLSA, 2005)*. The ACLSA is a self-report measure covering nine domains of independent living skills, one of which is Housing and Money Management. The ACLSA was designed to be as free as possible from gender, ethnic, and cultural biases. It is appropriate for all youth regardless of living circumstances, whether with one parent, in foster care, in group homes, or in other places. The most recent ACLSA (4.0) includes separate versions for different age ranges. Youth Level IV, which is generally considered appropriate for ages 16 years and older, was used in the study. The ACLSA is organized into two sections: Knowledge/Behavior Items and Performance Items.

Of the 29 items on Housing and Money Management, nine items from the Knowledge/Behavior Items and two items from the Performance Items were germane to the content of our curriculum. These 11 items were converted to a multiple-choice or true-false format. A pool of 50 additional items related to content in the curriculum that were not covered in the ACLSA was then developed. All items were reviewed by the research team for their relevance, accuracy, and clarity and reduced to a total of 31 items. To check the difficulty level of the items, five youth from a life skills program for post-graduate special education were asked to complete the questionnaire. They included four males and one female ages 18 and 19 years. All five were White; three identified their ethnic background as Not Hispanic or Latino, one as both Hispanic and Not Hispanic, and one as unknown. All had finished high school or a GED, and one was in college. Based on the results, 6 items were dropped because they were deemed too easy. Thus, the final version of the KMM had a total of 25 items (see Appendix A.) For the study, scores reflected the total number of correct answers.

Attitudes and Beliefs about Money (ABAM). The ABAM was developed for the present study and consisted of 20 statements about attitudes, relating to budgeting and money management (see Appendix B). Youth were asked to agree or disagree with statements, using a 5-point Likert-type scale (where 1 = *totally disagree* and 5 = *totally agree*). Statements were framed as either positive (i.e., thoughtful, constructive, facilitative) or negative (i.e., impulsive, counter-productive) attitudes. Items included both general attitudes about money and specific items tied to the curriculum content on budgeting.

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Scores were the mean rating of all items. Higher scores reflected more positive attitudes and beliefs about money.

Money Skills Confidence (MSC). This measure was also developed for the present study and consisted of 11 statements, relating to youth's confidence in using money management skills (see Appendix C). Youth were asked to agree or disagree with statements using a 5-point Likert-type scale (where 1 = *totally like me* and 5 = *totally not like me*). Scores were the mean rating of all items. To make it easier to interpret for analysis, scores based on the original ratings were reversed, so that higher scores reflected greater confidence.

User Satisfaction. A 7-item measurement was developed by project staff to elicit feedback from study participants about their satisfaction of the course. Participants rated various aspects of the program's content and format on a 10-point scale, from 1 = *did not like it at all* to 10 = *liked it a lot*. One item asked participants to give the program an overall rating, from 1 = *worst* to 10 = *best*.

RESULTS

Reliability and Stability of Measures

We examined the test-retest and internal consistency of the MSC, ABAM, and KMM. Internal consistency was measured on pre-test scores using Cronbach's alpha, which measures the amount of inter-correlation of the items included in the scale. Cronbach's alpha showed high internal consistency for MSC ($\alpha = .88$) and ABAM ($\alpha = .85$), but lower internal consistency for the KMM scale ($\alpha = .51$). This indicates that the KMM items were not all measuring one underlying construct of "knowledge," but were rather summarizing a variety of items that might represent different aspects of knowledge. To explore the responses to the KMM questions, a Principal Components Factor Analysis (PCA) was performed to see how the items might "load" on one or more underlying factors. Sixteen items loaded highly on the first factor. As a result, the remaining nine items that did not load on the first factor were removed and the KMM score was recalculated, using only the 16 items that loaded on the scale. The new KMM measurement showed stronger reliability with Cronbach's alpha of 0.66. While still not quite to the common $\alpha = .70$ cut-off for acceptability, the new scale was deemed adequate for the purposes of this study in assessing whether knowledge scores increased more in the treatment group than in the control group.

Test-retest consistency was measured by performing a correlation between each measure at pre-test with the same measure at post-test for only the control group. Results indicated that ABAM ($r = .74$) was found to be highly correlated while MSC ($r = .58$) and KMM ($r = .58$) were found to be moderately correlated. These moderate correlations indicate some variability in responses by the participants over time, but can be used in a meaningful way in this study.

Preliminary Analyses

Means and standard deviations for all measures can be found in Table 2. Table 3 contains correlations between measures. Independent samples *t* tests and/or chi-square analyses on all demographic information from the Background Information questionnaire were conducted to detect any differences between the intervention and control groups. No significant differences were found between the two groups. It was also expected that satisfaction ratings of at least 7 for all items would be noted.

Table 2
Mean Performance on All Measures, by Group and Pre/Post Status

Group	MSC ^a			ABAM ^b			KMM ^c		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
<i>Intervention</i>									
Pre	3.70	0.87	42	3.91	0.57	43	0.62	0.17	43
Post	4.25	0.89	43	4.09	0.67	43	0.76	0.15	43
<i>Comparison</i>									
Pre	3.77	0.77	44	3.92	0.58	45	0.65	0.17	45
Post	3.82	0.91	44	3.90	0.71	45	0.59	0.18	45
Trt x Time ^d	<i>p</i> = .008			<i>p</i> = .099			<i>P</i> < .001		

* Differences between pre-test and post-test are significant at *p* < .05.

^a Scores on the MSC scale are reported as the average rating of five items on a scale from 1 (*totally like me*) to 5 (*totally not like me*), where the scores were reverse coded so that higher scores indicate higher levels of confidence.

^b Scores on the ABAM scale are reported as the average rating of five items on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*) with higher scores indicating more positive attitudes and beliefs about money.

^c Scores on the KMM scale are reported as the average rating of the 16 items included in analysis. Youth were given a 1 if the item was answered correctly and 0 if the item was answered incorrectly. A total mean score ranging from 0 to 1 was given to each participant, with higher scores indicating greater knowledge.

^d *P*-values are from the interaction between treatment group and time in a Repeated Measures ANOVA.

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Table 3
Correlations Between all Measures, at Pre- and Post-test

	<i>KMM2</i>	<i>ABAM1</i>	<i>ABAM2</i>	<i>MSC1</i>	<i>MSC2</i>
KMM1	.400** (88)	.450** (88)	.351** (88)	.184 (86)	.129 (87)
KMM2		.412** (88)	.468** (88)	.087 (86)	.245* (87)
ABAM1			.606** (88)	.205* (86)	.234* (87)
ABAM2				.194 (86)	.191 (87)
MSC1					.449** (85)

Note: Sample sizes are reported in parentheses.

* $p < .05$

** $p < .01$

Repeated Measures ANOVA

The present study used a pre-test/post-test design with a control group. Because random assignment to groups was used, this experimental design was able to adequately control for all main threats to internal validity (Shadish, Cook, & Campbell, 2002) and allowed for more powerful statistical analysis by accounting for baseline values in both groups. Given the power of the experimental design, the hypotheses were tested using a Repeated Measures Analysis of Variance (ANOVA) for each of the three dependent variables.

In this design, group served as one independent variable with two levels: intervention and control. Time served as the second independent variable with two levels: pre and post. The interaction between group and time was included to test whether the treatment group’s scores on the MSC, ABAM, and KMM (the dependent variables) increased significantly more than the control group’s from pre to post.

Assumptions of the ANOVA models include normally distributed data and homogeneity of variance between the groups. Visual analysis of histograms and interpretation of the Kolmogorov-Smirnov (K-S) test were used to test the assumption of normality. Most of the variables appeared approximately normal. The MSC scores at post-test for the treatment group and the ABAM scores at pre-test for the control group were both significantly non-normal (Skewness = 2.1, Kurtosis = 5.1, $p < .001$; Skewness = -1.1, Kurtosis = 1.7, $p = .003$). Also, the KMM scores for the control group at both time points were not normal (Skewness = -1.2, Kurtosis = 1.8, $p = .001$; Skewness = -1.2, Kurtosis = 1.50, $p = .005$), and the KMM scores for the treatment group at pre-test were not normal (Skewness = -.3, Kurtosis = -.6, $p = .019$). Because ANOVAs are robust to modest violations of normality with large sample sizes (> 30 per group), the analyses were performed as-is.

Assumptions of homogeneity of variance were satisfied by observing that the standard deviations were similar across groups and time points for each variable. Effect sizes from pre-treatment to post-test to post-test were computed as Cohen's D (Cohen, 1998) using the pooled standard deviation (Rosnow & Rosenthal, 1996).

Results

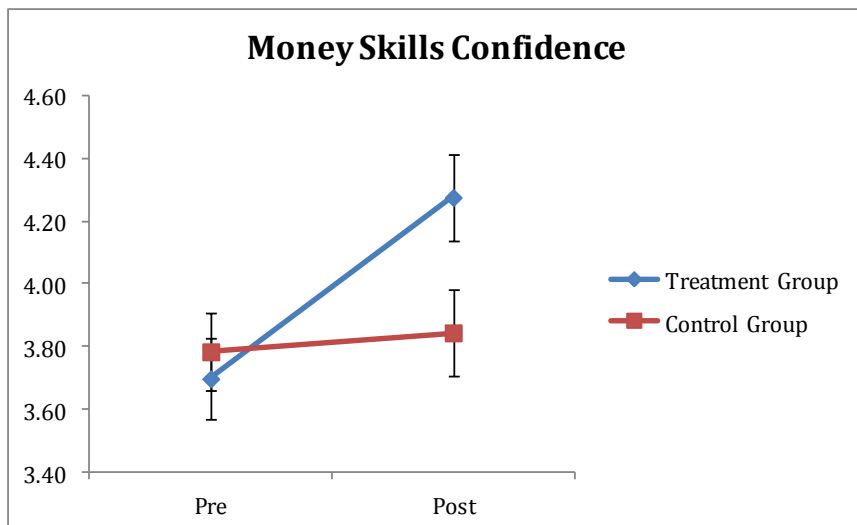
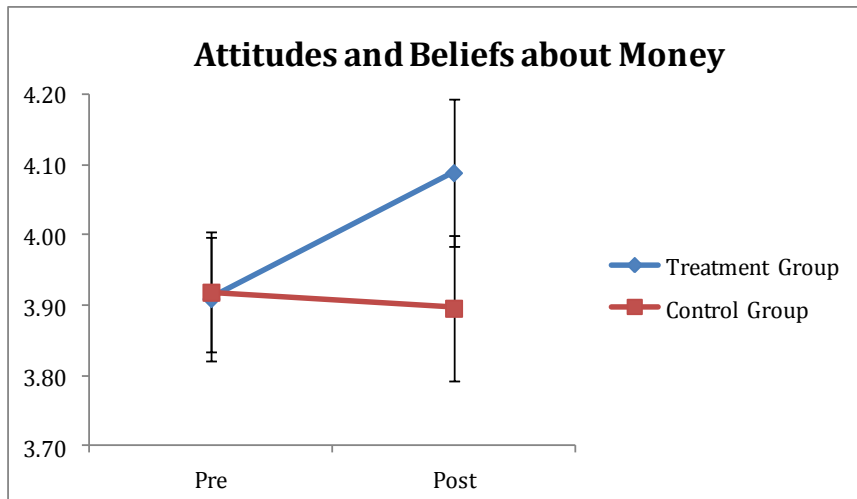
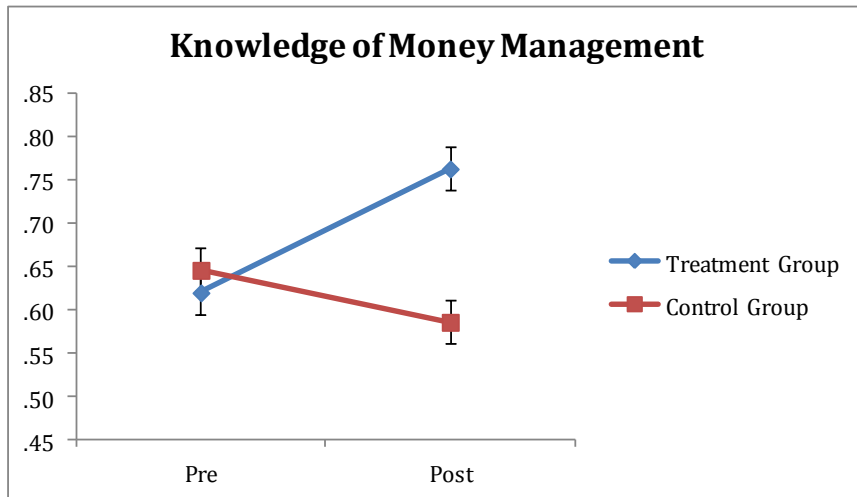
Results of the Repeated Measures ANOVA for the dependent variable, KMM, indicate that the treatment group increased in knowledge from pre-test to post-test significantly more than the control group (time*group $F(1,86) = 32.6, p < .001$) (see Figure 1). While the control group went from a mean score of .65 on the pre-test to .59 on the post-test, the treatment group increased from a mean score of .62 on the pre-test to .76 on the post-test (see Table 2 for descriptive statistics). The effect size (Cohen's D) associated with pre-to-post change for the treatment group was 0.88, while the effect size for the control group was -0.34.

Similarly, results of the Repeated Measures ANOVA on MSC indicate that the treatment group improved more from pre- to post- than the control group $F(1,83) = 7.31, p = .008$ (see Figure 1). The control group improved very slightly from an average of 3.78 to 3.84, but the treatment group improved more from 3.70 to 4.28. The effect size associated with the pre-to-post change for the treatment group was 0.63, and the effect size for the control group was 0.06.

Results on the ABAM scale were less conclusive. The interaction between treatment and time on ABAM was only marginally significant with a p -value of $p = .099$ ($F[1,86] = 2.79$) (see Figure 1). The average ABAM scores were unchanged for the control group from 3.92 to 3.90, but increased in the treatment group from 3.91 to 4.09. The effect size associated with the pre- to post- change for the treatment group was 0.29, while the effect size for the control group was 0.03.

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Figure 1
Group interaction effects at pre- and post-test for each measure



User Satisfaction

As part of the post-test assessment, participants in the study's treatment group completed a 7-item user satisfaction questionnaire. On the first 5 questions, respondents were asked to circle the number from 1 (*not at all*) to 10 (*a lot*) that best described their view of the course. Questions were worded in a positive direction, so higher scores indicated greater satisfaction with the course. As shown in Table 4, of these 5 items, the one that received the highest mean rating (9.55) was, "Would this course be useful to other youth?" Receiving the next highest ratings were the questions, "Was this course easy to understand?" and "Did the interactives help you understand the material?" Treatment group participants gave their lowest mean rating (7.48) to the question, "Were you interested in the characters' stories?"

A sixth item on the user satisfaction questionnaire asked, "Overall, how would you rate the program?" Respondents indicated their answer on a 10-point scale, where 1 (*uncool*) was the lowest score and 10 (*cool*) was the highest score. The mean rating for this item was 8.55.

A satisfaction scale was also constructed, composed of the first 6 items on the satisfaction questionnaire. Scores on this scale ranged from a low of 5.50 to a high of 10.00, with a mean score of 8.68. Finally, the satisfaction questionnaire contained an open-ended item, giving treatment group participants an opportunity to write comments about the program. Of the 42 treatment group participants who completed the user satisfaction questionnaire, 26 elected to respond to this item. Most of the comments were positive, with only three being critical of the program.

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Table 4
Means and Standard Deviations for Course Satisfaction Items and Scale – Treatment Group

	<i>M</i>	<i>SD</i>	<i>n</i>
<i>Course Satisfaction Items</i>			
1 = "Not at all" and 10 = "A lot."			
Was this course easy to understand?	8.98	1.80	42
Did you learn something new?	8.60	2.06	42
Would this course be useful to other youth?	9.55	0.97	42
Were you interested in the characters' stories?	7.48	2.39	42
Did the interactives help you understand the material?	8.95	1.34	42
<i>Overall, how would you rate the program?</i> 1 = "Un-cool" and 10 = "Cool"	8.55	1.73	42
<i>Satisfaction Scale (mean of 6 items above)</i>	8.68	1.12	42

DISCUSSION

This study evaluated the effectiveness of *Money Medical: Healthy Money Management*, an interactive multimedia training component on managing money for at-risk youth who are preparing to transition to independent living. Given the evidence that traditional financial education programs aimed at youth have tenuous results with regard to their effectiveness, this course blended financial information with psychological concepts aimed at increasing momentum towards change (Miller & Rollnick, 2002; Prochaska, Norcross, & DiClemente, 1994) and helping youth identify and challenge limiting money beliefs (Klontz et al., 2011; Klontz & Klontz, 2009) in an engaging, interactive, computer-assisted learning environment. Participants assessed their preparedness on budgeting, learned about their attitudes and beliefs regarding money and money management, and built a set of core skills on how to budget. These skills included: (a) how to track expenses; (b) differentiating needs and wants; (c) identifying and challenging limiting beliefs about money; (d) understanding and using income and billing cycles and categories; (e) transferring, assessing, and customizing information to meet individual needs and wants; and (f) understanding the basics of paychecks, borrowing, credit cards, bank statements, credit reports, and loans.

The approach used a sophisticated blend of story animation, text and graphic overlays, interactive exercises, and supplemental printouts to deliver the instruction.

Results showed that the interactive multimedia presentation produced significant gains in youth's knowledge and confidence in money management skills. While youth may easily feel a misplaced sense of self-confidence in managing their money, the increase in confidence observed was anchored by corresponding gains in knowledge, which indicated a credible and pragmatic shift in the acquisition of a life skill. This was especially encouraging given the brief and self-regulating nature of the intervention. However, these significant changes outpaced changes in attitudes about managing money, showing only slight increases among treatment group participants, comparable to the change among control group participants. The general attitudes tapped by our measure were more resistant to change and will likely require youth to apply their new knowledge and skills over a period of time before significant changes occur. This is consistent with the findings of a recent study with adults in which researchers observed some short-term changes in psychological symptoms and certain aspects of financial health after a week-long financial therapy program. However, delayed treatment effects were observed with regard to money attitudes, with no changes from pre-to-post treatment and significant changes from post-treatment to 3-month follow-up (Klontz, et al., 2008).

The stability of the measures was less than ideal; however, the tests were run on just the control group, as the intervention would be expected to interfere with the stability of the measure (i.e., it is reasonable to expect changes at post-test for the intervention group). Thus, the sample size was reduced. This problem should be corrected with a larger sample size and further pilot testing. The published curriculum will be used interactively online by individual students with accounts on Vstreet.com, or by trainers who present it via CD, as in the current study. Thus, the current findings may not be generalizable to online individual use.

Overall, youth expressed very high satisfaction with the program. They were eager to recommend the program to their peers and felt that it made it easy to understand the material. Money management is not inherently an engaging topic, nor are many of the concepts easy to understand or implement, especially for the youthful novice. It is notable that the program seemed to be embraced by this group of at-risk youth and that it instilled a greater sense of confidence and actual knowledge about financial matters. The results of this study add support for the integration of psychological content and processes into financial literacy programs. Helping youth identify and address psychological barriers to financial health could help make financial education more engaging and relevant for youth, and help address the concern that traditional personal finance courses fail to significantly increase financial literacy in youth.

In summary, a complete unit of interactive multimedia instruction on managing money for at-risk youth was developed and piloted with a group of at-risk youth. The program was replete with instruction, story scenarios, exercises, and printable handouts. Youth receiving the instruction acquired financial knowledge and confidence on money management and found the program content and method of delivery highly satisfying.

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Appendix A

Knowledge of Money Management

<p>1. A temporary, but still a good strategy for paying an old loan is to get a new loan. True. False.</p>
<p>2. The best way to think about the value of money is that it's: a. Based on what you and others agree that it's worth. b. Based mostly on what <u>you</u> think it's worth. c. Based mostly on what <u>others</u> think it's worth. d. Determined in the world of business and finance.</p>
<p>3. In general, people who earn more money have valuable skills. True. False.</p>
<p>4. Someone who has low earning power can buy the same things as someone who has high earning power if: a. They get lucky. b. They work faster. c. They work harder. d. They work longer.</p>
<p>5. Which is true about borrowing money from a credit card to pay a debt: a. You have to pay interest on the cash you borrow. b. You have to pay big penalties if you missed a payment. c. The interest rates on all your cards jump up if you miss a payment. d. All of the above.</p>
<p>6. Using a certified consumer counseling service to solve your financial problems usually adds up to more debt. True. False.</p>
<p>7. A good way of knowing whether you are in denial about money problems is if: a. You're short of cash a lot. b. You ask for people's advice a lot. c. Your friends are willing to lend you money. d. All of the above.</p>
<p>8. Pay stubs from a payroll check generally include information about: a. The money you earned in the previous pay period. b. Sick leave. c. Benefits. d. All of the above.</p>
<p>9. The best way to know how you spend your money on a daily basis is to: a. Remember what you spent at the end of each day. b. Make an educated guess at the end of each day. c. Keep your receipts and write down your expenses on a sheet at the end of each day. d. Take the total of your bank account last month and deduct the total from this month.</p>

<p>10. It's best to create a budget:</p> <ol style="list-style-type: none">After you shop.Before you shop.As you shop.A or C.
<p>11. When making a budget you should first analyze:</p> <ol style="list-style-type: none">What you spent money on the previous month.What you want to buy.What you think you can afford.All of the above.
<p>12. Developing a budget means figuring out:</p> <ol style="list-style-type: none">How much you need to pay bills.How much you can invest.How much you can save.All of the above.
<p>13. When budgeting, how much of your income is it best to set aside for paying rent?</p> <ol style="list-style-type: none">10%25%35%50%
<p>14. Which is <u>NOT</u> a step used to change poor money habits:</p> <ol style="list-style-type: none">Admit you have a problem.Find out who caused your problem.Learn money management skills.Stick to your plan once you make it.
<p>15. We end up buying things we don't really need when:</p> <ol style="list-style-type: none">Our emotions are high.We develop certain habits.We feel pressured.All of the above.
<p>16. The recommended length of time for a budget:</p> <ol style="list-style-type: none">Is one day at a time.Is one week.Is one month.Varies according to individual needs.
<p>17. When creating a budget you should:</p> <ol style="list-style-type: none">Look at the totals for each type of expense.Never assign certain dates for paying bills.Write it in ink to avoid making changes.All of the above.
<p>18. When making a budget, loan interests shouldn't be listed separately from loan payments because they belong together.</p> <p>True.</p> <p>False.</p>

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<p>19. Which is <u>NOT</u> an advantage of having a credit card:</p> <ul style="list-style-type: none">a. You don't need to carry cash.b. You can buy things you don't really need.c. You can borrow money.d. You can repay money over a long time.
<p>20. It's okay to borrow money if:</p> <ul style="list-style-type: none">a. You use it for getting your basic needs.b. You're buying something that may not be for sale for very long.c. You're using it to pay for college.d. All of the above.
<p>21. If an item you want to buy won't last as long as the time it takes to pay for it, you shouldn't borrow money to buy it.</p> <p>True. False.</p>
<p>22. Interest is:</p> <ul style="list-style-type: none">a. What you and someone else agree it's worth.b. A rate of exchange.c. A penalty.d. The price you pay for borrowing money.
<p>23. It's best to choose a bank that:</p> <ul style="list-style-type: none">a. Is close to where you live.b. Offers debit cards with overdrafts.c. Charges no more than \$2 for ATM transactions.d. All of the above.
<p>24. Credit reports are based on:</p> <ul style="list-style-type: none">a. Your family's income.b. How well you pay your bills.c. How much you earn.d. All of the above.
<p>25. Credit reports are usually free and easy to get.</p> <p>True. False.</p>

Answers: 1) False, 2) A, 3) True, 4) D, 5) D, 6) False, 7) A, 8) D, 9) C, 10) B, 11) A, 12) D, 13) C, 14) B, 15) D, 16) C, 17) A, 18) False, 19) B, 20) C, 21) True, 22) D, 23) A, 24) B, 25) True

Appendix B
Attitudes and Beliefs About Money (ABAM)

	Totally Agree				Totally Disagree
1. I'm entitled to buy the things I want even if I can't afford them.	1	2	3	4	5
2. When I have money I like to spend it before it disappears.	1	2	3	4	5
3. Playing the lottery or getting lucky can be a good way of solving your money problems.	1	2	3	4	5
4. Money problems mostly happen because of bad breaks.	1	2	3	4	5
5. I resent it when friends give me advice about how I spend my money.	1	2	3	4	5
6. I think it's important to let people know I have money.	1	2	3	4	5
7. Once you've learned about the risks of credit cards, it's okay to get more of them.	1	2	3	4	5
8. It's best not to talk to someone close to you about your money problems.	1	2	3	4	5
9. I generally think that there's little I can really do to control my financial situation.	1	2	3	4	5
10. If you don't have money it's because "the rich get richer and the poor get poorer."	1	2	3	4	5
11. We're all pretty much locked into our parents' beliefs about money.	1	2	3	4	5
12. It's almost impossible to change your beliefs about money.	1	2	3	4	5
13. It's worth blowing your budget on fun things you really want.	1	2	3	4	5
14. It's not worth taking out student loans because you're stuck with a huge bill.	1	2	3	4	5
15. Managing my bank account is the bank's job, not mine.	1	2	3	4	5
16. If you think you have a bad credit rating, it's better to keep a low profile.	1	2	3	4	5

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17. Making high income usually involves having to take advantage of others.	1	2	3	4	5
18. I'll probably never be able to afford the things I want.	1	2	3	4	5
19. Budgets are not that important.	1	2	3	4	5
20. I don't really want to understand about investing.	1	2	3	4	5

Appendix C
Money Skills Confidence (MSC)

	Totally Like Me			Totally Not Like Me	
1. I could spot the warning signs if I were getting into financial trouble.	1	2	3	4	5
2. I know how to figure out when something is a good value for me.	1	2	3	4	5
3. If I had a money problem, I would face it and know how to deal with it.	1	2	3	4	5
4. I understand the pros and cons of credit cards and know how to use them responsibly.	1	2	3	4	5
5. I know why a paycheck comes to a certain amount.	1	2	3	4	5
6. I know how to keep track of my money.	1	2	3	4	5
7. I know how to live within a budget.	1	2	3	4	5
8. I know different ways I can change or control my spending habits.	1	2	3	4	5
9. I know how to make my money grow.	1	2	3	4	5
10. I know how to responsibly borrow money.	1	2	3	4	5
11. I know how to choose the right bank for my needs.	1	2	3	4	5