Journal of the Scholarship of Teaching and Learning, Vol. 11, No. 4, December 2011, pp. 56 – 68.

Applying the job characteristics model to the college education experience

Steven J. Kass[1], Stephen J. Vodanovich, and Jasmine Y. Khosravi

Abstract: Boredom is one of the most common complaints among university students, with studies suggesting its link to poor grades, drop out, and behavioral problems. Principles borrowed from industrial-organizational psychology may help prevent boredom and enrich the classroom experience. In the current study, we applied the core dimensions of the job characteristics model to the university classroom. In a survey of 293 students, significant relationships emerged between the five core dimensions (i.e., skill variety, task identity, task significance, autonomy, and feedback) and various affective (e.g., satisfaction) and behavioral (e.g., absenteeism) outcomes. Boredom proneness was found to be significantly and negatively related to course grade and measures of satisfaction. We conclude with suggestions for enriching the classroom experience.

Keywords: boredom, satisfaction, enrichment

I. Introduction.

A common report among students is the experience of boredom at school (e.g., Aldridge & DeLucia, 1989; Czikszentmihalyi & Larson, 1984; Larson & Richards, 1991; Mann & Robinson 2009; Shaw, Caldwell, & Kleiber, 1996; Tidwell, 1988). For instance, Aldridge and Delucia (1989) sampled 252 first year college students. They found that over 41% of students reported feeling bored "often," while 70% stated being occasionally bored. Shaw et al. (1996) concluded that approximately 32% of high school students indicated they were bored in school. Based on the results of an open-ended survey, Vandewiele (1980) reported that almost 25% of secondary students expressed being bored at school. In a recent study by Mann and Robinson (2009), almost 60% of university students reported lectures to be boring at least half of the time.

Boredom has repeatedly been associated with negative educational outcomes; perhaps the more frequently reported relationships being between boredom and drop-out rate and absenteeism. Early work by Loken (1973) surveyed a sample of 260 dropouts in Canada. He concluded that 2/3 of school dropouts (aged 14-20) left school because of boredom and the desire for new activities. Robinson (1975) found that bored students were significantly more likely to miss class and to drop out. She also found bored students perceived school as less interesting and generally less satisfying. The association between boredom and school dropout has also been reported by Wasson (1981) and Tidwell (1988). Indeed, the number one negative aspect of school identified by high school dropouts was the perception of teachers as boring and uncaring (Tidwell, 1988). Some research suggests that boredom may be related to academic performance in college. For example, Maroldo (1986) found a small, but significant, negative correlation between college grade point average (GPA) and self-reports of academic boredom (r = -0.15). Ruthig, Perry, Hladkyj, Hall, Pekrun, and Chipperfield (2008) found that for first year

[1] School of Psychological and Behavioral Sciences, University of West Florida, 11000 University Parkway, Pensacola, FL 32514, skass@uwf.edu

college students categorized as high in perceived control, course boredom was predictive of course grade, GPA, and attrition (i.e., dropped courses).

In examining the reasons for boredom in school, the focus has been on the classroom environment. Such an approach is understandable given that students often mention such factors as contributing to their boredom. For instance, Aldridge and DeLucia found that 80% of first-year college students wanted classes that were more interesting. Early work by Morton-Williams and Finch (1968) concluded that 40% of secondary students blamed their boredom on such factors as monotony and lack of variety. Boring classroom activities was also identified as a substantial reason for school boredom in a study by Larson and Richards (1991). Belton and Priyadharshini (2007) suggested that students tend to attribute the experience of boredom at school to external sources such as a teacher's pedagogical style, which supports Robinson's (1975) claim that a change in the way pedagogy is structured may prevent boredom from occurring. Robinson concluded that boredom may be prevented if students are shown the usefulness of course material or if faculty adjust the structure of how they teach the material. In Czikszentmihalyi's (2000) conception of "flow," he noted that boredom arises when one lacks the opportunity to utilize one's skills. Therefore, if students' course assignments do not challenge them to match the level of their skills, then boredom ensues.

Individual differences may also be a contributing factor to the experience of boredom in school, with some students being more predisposed to boredom than others. Larson and Richards (1991) found some evidence for a dispositional reason for school boredom. The authors found that boredom levels at school were significantly related to self-reported boredom outside of school ($r = 0.68$). Shaw et al., (1996) also reported that students who were bored in school were significantly more likely to be bored away from school. Finally, scores on the Boredom Proneness Scale (Farmer & Sundberg, 1986) were found to be the most significant moderator of boredom in school.

The impact of boredom has been reported more frequently in the organizational psychology literature. For example, researchers found job boredom to be associated with job dissatisfaction and absenteeism (e.g., Kass, Vodanovich, & Callender, 2001; Lee, 1986) and with supervisor ratings of job performance (Watt & Hargis, 2010). One common approach to reducing the negative impact of boredom on work outcomes has been to employ job enrichment strategies (e.g., Fried & Ferris, 1987). However, boredom prone workers may not respond well to methods aimed at increasing individuals' intrinsic work motivation (Vodanovich, Weddle, & Piotrowski, 1997).

A. Job Characteristics Model Applied to School.

Hackman and Oldham's (1975) seminal research on job characteristics model (JCM) for job enrichment may help lead the way to enriching the educational setting. Hackman and Oldham proposed that workers who obtained the critical psychological states of experienced meaningfulness of work, experienced responsibility for outcomes of the work, and knowledge of the actual results of work activities would be more internally motivated, perform higher quality work, be more satisfied, and miss work less often than those who do not experience these psychological states. They further suggested that the three psychological states can be achieved by ensuring that the work environment is designed with the following five core characteristics or dimensions in mind: (a) skill variety – the extent to which the job provides workers with opportunities to use different skills or talents; (b) task identity – the extent to which workers feel

as though they complete a whole, identifiable product; (c) task significance – the extent to which work performed impacts other people in a substantial way; (d) autonomy – the extent to which the job offers workers the freedom to determine work schedules or procedures; and (e) feedback – the extent to which workers are informed about their level of work effectiveness. The dimensions of skill variety, task identity, and task significance combine to elicit the critical psychological state of experienced meaningfulness of the work. Autonomy elicits the state of experienced responsibility or control, and feedback leads to experiencing knowledge of the results of one's work efforts. Ultimately, designing work with the core dimensions in mind lead to workers experiencing the critical psychological states which, in turn, leads to the positive work outcomes described above.

JCM has been shown to be quite effective when tested in various work environments. For example, in a meta-analysis of over 200 studies, Fried and Ferris (1987) validated its use in predicting job satisfaction, motivation, absenteeism and turnover. However, Fried and Ferris found positive work outcomes to be more related to perceived increases in core dimensions rather than critical psychological states. Renn and Vandenberg (1995) also questioned the applicability of using the critical psychological states as a mediating variable. These findings suggest that changes in the psychological states are less consequential than the workers' perceptions regarding the core dimensions. In sum, though JCM may be a valid predictor of work outcomes, a simpler form of the model that links core dimensions directly to work outcomes may prove more useful.

Whereas JCM has been well tested and validated in the work environment, other researchers (e.g., Catanzaro, 1997; Jackson, Jackson, & Gaulden, 2006) have proposed its use for designing college curriculum. In one of the few studies to test the JCM in a college setting, Bloom, Yorges, and Ruhl (2000) found four of the five dimensions to be predictive of one or more of six outcomes. The current study extends these findings by examining if core dimensions are related to affective, behavioral, and performance outcomes in a university setting. That is, whereas past research demonstrated that providing employees with skill variety, task identity, task significance, autonomy and feedback is associated with greater job satisfaction and performance, and lower turnover and absences in the organizational setting, this study examines whether or not these same dimensions would similarly be associated with analogous positive outcomes in the classroom.

Hypothesis 1: Each of the core dimensions is significantly associated with affective outcomes of satisfaction (positively) and state boredom (negatively).

Hypothesis 2: The five core dimensions are negatively associated with behavioral outcomes of absenteeism and tardiness rates.

Hypothesis 3: Core dimensions are significantly and positively related to the performance outcome of course grade.

Hypothesis 4: All core dimensions are significantly and positively associated with affective outcomes of school satisfaction, ratings of the school experience, and lack of regret for choice of university.

Hypothesis 5: Each of the core dimensions is significantly and positively related to overall school performance (i.e., GPA).

Hypothesis 6: Trait boredom (BPS scores) is significantly related to all course and school outcome measures (i.e., negatively correlated with positive outcomes and positively correlated with negative outcomes).

II. Method.

A. Participants.

We recruited volunteers from a variety of courses in a mid-sized public university in the Southeast United States. The sample of 197 women and 93 men (3 missing data) ranged in age from 18 to 51 years (mean = 23.1, *SD* = 5.5). The sample consisted of 30% underclassmen (36 freshmen, 49 sophomores), 64.5% upper classmen (101 juniors, 88 seniors) and 5.8% masters students (17; 2 missing data) from over 30 different majors, with psychology constituting a majority (55.6%).

B. Procedure.

Students that agreed to participate received an email with a link to the online survey. Upon completion (or withdrawal), we thanked students by directing them to a specific site on the web. This page (containing no data) could be printed out and signed to be provided to their professors in order to receive extra course credit. We administered the surveys one week prior to final exams so that students had a good idea of how well they were performing in their classes. Respondents received extra credit for their participation.

C. Materials.

The survey consisted of modified versions of the Job Diagnostic Survey (JDS; Hackman & Oldham, 1975), the Job Descriptive Index (JDI), Work Itself facet (Smith, Kendall, & Hulin, 1969), and the Job Boredom Scale (JBS; Lee, 1986). Also included were the Boredom Proneness Scale (BPS; Farmer & Sundberg, 1986), a demographics questionnaire, and two questions designed to assess students' satisfaction with their school experience.

Job Diagnostic Survey. The original Job Diagnostic Survey assesses the five core job dimensions with three questions each. Hackman and Oldham (1975) administered the scale to 658 employees in a variety of professions and reported the following internal consistencies for the subscales: Skill Variety (alpha = 0.71), Task Identity (alpha = 0.59), Task Significance (alpha = 0.66), Autonomy (alpha = 0.66), and Feedback from the Job Itself (alpha = 0.71). For the purposes of the current study, respondents completed two modified versions of the survey; one to reflect school activities, and one to reflect activities for a specific class. Each survey had 15 items arranged in a 7-point Likert format (1 = Strongly Disagree to 7 = Strongly Agree). Examples of modified items pertaining to class activities include the following: Skill Variety (e.g., "My class provides me with the opportunity to experience many new and interesting educational practices" -- alpha = 0.78); Task Identity (e.g., "My classroom experience provides me with an understanding of how the course material relates to the real world" -- alpha = 0.70); Task Significance (e.g., "My performance in this class affects people other than myself" -- alpha = 0.42; Autonomy (e.g., "This class allows me to do my own work on my own time" -- alpha = 0.59); and Feedback (e.g., "Throughout the semester the teacher of this class provides me with feedback as to how well I am performing -- alpha = 0.64). Students completed the questions for the class in which they were receiving extra credit.

Students also completed the other modified version of the survey which pertained to their overall educational experience at the university. Internal consistencies for each of the subscales administered in this manner were as follows: Skill Variety (alpha = 0.77); Task Identity (alpha = 0.72); Task Significance (alpha = 0.67); Autonomy (alpha = 0.69); and Feedback (alpha = 0.77). The values for the school version of the JDS were comparable to those of the original values found by Hackman and Oldham (1975). Scores from the JDS can be used to compute a *Motivating Potential Score* (MPS) which reflects the relationship between the core dimensions and the critical psychological states. MPS was computed with the following formula:

$$\frac{Skill\ Variety + Task\ Identity + Task\ Significance}{3}\ x\ Autonomy\ x\ Feedback$$

Job Descriptive Index. The JDI is a well-established measure of job satisfaction that contains 5 subscales or facets (Work Itself, Opportunities for Promotion, Co-workers, Pay, and Supervision). For the purposes of this study, only the Work Itself subscale was used. It consists of 18 adjectives in which the participant is asked to describe their individual's work environment (e.g., routine, good, respected, challenging). The response options are Yes, No, and I don't know. The original version of the JDI has proven to be quite reliable with an average internal consistency of .88 (Smith et al., 1969). For the current study, the scale items were the same as the original, but we administered it twice with two different sets of instructions. One set of instructions asked the participant to "Please indicate whether or not the following items describe this *course* by selecting the appropriate category" and the other asked the participant to "Please indicate whether or not the following items describe your *experience at this school*." The internal consistency computations for the two modified versions of the scale were comparable to the original. That is, the coefficient alpha for the *course* instructions version was 0.89, and 0.86 for the *experience at this school* version. To the authors' knowledge, this is the first study to apply the JDI to the assessment of classroom or school satisfaction.

Job Boredom Scale. The JBS consists of 17 items developed to assess one's perceived repetitiveness of work tasks (Lee, 1986). The scale is arranged on a 5-point Likert format (1=Strongly Disagree to 5=Strongly Agree). The JBS has been shown to possess high reliability with coefficient alphas found by Lee to range from 0.93 to 0.95. We modified the scale items in the current study to address boredom with one's coursework for a specific class (e.g., "My coursework is monotonous," "Class goes by too slowly," "This class is pretty much the same day after day"). The internal consistency of the modified version was comparable to that of the original (alpha = 0.94). This study may be the first to adapt the JBS for examining boredom in an educational setting.

Boredom Proneness Scale. The BPS contains 28 true-false items developed to assess one's propensity for experiencing boredom in a variety of settings (Farmer & Sundberg, 1986). For the current research, a 7-point Likert format was employed (consistent with many previous studies). Past research has found the BPS to possess acceptable levels of internal consistency reliability, ranging from 0.79 to 0.85 (e.g., Harris, 2000; Kass, Wallace, & Vodanovich, 2003; Farmer & Sundberg, 1986; Kass & Vodanovich, 1990; McLeod & Vodanovich, 1991; Vodanovich & Kass, 1990; Watt & Blanchard, 1994). In the present study, the BPS was shown to possess adequate internal consistency (alpha = 0.80).

Demographic survey. In addition to information such as age and sex, and year in school (e.g., freshman, sophomore), students self-reported their academic performance (i.e., overall GPA and course grade) using the college standard 4-point scale, and estimated the number of times they were absent or late for class. Because some classes met 2 times per week and others 3 times per week, we calculated the percentage of absences and tardiness (i.e., number of absences or late arrivals/total number of classes in the semester). The survey included two additional items. The first assessed students' satisfaction with their educational experience. That is, we asked students "How would you evaluate your entire educational experience at this institution?" on a scale from 1 (Poor) to 4 (Excellent). The other question was analogous to asking about a worker's intent to turnover or student retention (e.g., "If you could start over again, would you go to the same institution you are now attending?") with response options ranging from 1 (Definitely No) to 4 (Definitely Yes).

III. Results.

We computed Pearson product-moment correlations between core dimensions and their relevant outcomes (e.g., course or school). Core dimensions were then simultaneously entered into regression analyses to assess how much each dimension contributed to the prediction of the various outcomes. See tables 1 and 2 for the means, standard deviations, correlations, standardized regression coefficients (beta), and adjusted R^2 values for the regression equations.

A. Core Dimensions and Course Outcomes.

Students' ratings of each of the core dimensions of their courses were significantly related to course satisfaction and boredom in the expected directions (see Table 1), thus providing support for hypothesis 1. Satisfaction was most highly related to course ratings of skill variety (r = 0.65) and task identity (r = 0.70). Both of these core dimensions added significantly to the regression equation for predicting course satisfaction (R^2 = 0.51). All core dimensions were significantly and negatively related to ratings of class boredom with correlations being highest with skill variety (r = -0.45) and task identity (r = -0.46). Again, these two dimensions contributed significantly to the prediction of class boredom (R^2 = 0.24).

Ratings of core dimensions were also related to behavioral outcomes, providing some support for hypothesis 2. Absenteeism rates were significantly, negatively related to ratings on all core dimensions except autonomy, with coefficients ranging from -0.20 to -0.26. However, when entered into the regression, none of the core dimensions contributed significantly to the prediction of absenteeism (R^2 = 0.07). Tardiness rates were significantly related to task identity (r = -0.18), autonomy (r = -0.18), and feedback (r = -0.15). However, only skill variety and task identity were significant predictors, although the amount of variance accounted for was rather small (R^2 = 0.05). Course grade was not related to any core dimension, thus failing to support hypothesis 3.

B. Core Dimensions and School Outcomes.

Ratings of core dimensions pertaining to school experience were significantly related to the affective measures of school satisfaction, ratings of overall educational experience, and intent to stay (retention), thus providing support for hypothesis 4 (see table 2). For school satisfaction,

correlations with the core dimensions ranged from $r = 0.23$ (autonomy) to $r = 0.59$ (skill variety). However, only skill variety and feedback contributed significantly to the prediction of satisfaction ($R^2 = 0.34$). Correlations between core dimensions and educational experience ranged from 0.27 (autonomy) to 0.49 (skill variety), with only skill variety and feedback making significant contributions to the regression equation ($R^2 = 0.25$). We found a similar pattern for the retention measure with the lowest correlation being with autonomy (0.19) and highest with skill variety ($r = 0.43$). Skill variety was the only significant predictor in the regression ($R^2 = 0.18$). None of the school core dimension ratings were significantly related to performance outcome (i.e., GPA), thus failing to support hypothesis 5.

Table 1. Correlations and standardized regression coefficients (Beta) for core dimensions and course outcome measures.

		Skill Variety	*Task Identity*	*Task Significance*	*Autonomy*	*Feedback*	
	M =	*4.54*	*5.10*	*4.12*	*4.65*	*4.42*	*Adjusted*
	(SD) =	*(1.45)*	*(1.31)*	*(1.20)*	*(1.22)*	*(1.26)*	*R^2*
Course Satisfaction	38.02	0.65**	0.70**	0.39**	0.28**	0.50**	
(Beta)	(13.58)	(0.28)**	(0.48)**	(0.02)	(-0.04)	(0.03)	0.51**
Class Boredom	48.09	-0.45**	-0.46**	-0.19**	-0.14*	-0.33**	
(Beta)	(14.21)	(-0.25)**	(-0.33)**	(0.11)	(0.10)	(-0.05)	0.24**
Absenteeism	0.06	-0.23**	-0.26**	-0.20**	-0.07	-0.25**	
(Beta)	(0.07)	(-0.02)	(-0.17)	(-0.05)	(0.09)	(-0.14)	0.07**
Tardiness	0.04	-0.05	-0.18**	-0.07	-0.18**	-0.15*	
(Beta)	(.08)	(0.25)*	(-0.26)*	(0.04)	(-0.13)	(-0.12)	0.05**
Course Grade	3.03	0.02	0.05	0.05	0.04	0.06	
(Beta)	(0.73)	(-0.07)	(-0.06)	(0.03)	(0.01)	(0.04)	0.00

Note: Due to incomplete data for the various scales the usable sample size ranged from $n = 221$ to $n = 285$); Regression coefficients are in parentheses; *$p < 0.05$, **$p < 0.01$

C. Boredom Proneness and Course and School Outcome Measures.

Only a subset of 210 participants completed the BPS. To test hypothesis 6, we computed correlations for course and school outcomes with BPS scores (see table 3). BPS scores were significantly related to all affective outcome measures, with the weakest correlation being with class satisfaction ($r = -0.17$) and the strongest school satisfaction ($r = -0.50$). BPS scores did not significantly relate to behavioral outcomes (i.e., absenteeism and tardiness rates) or GPA, but did relate to course grade ($r = -0.16$). In addition, BPS scores negatively and significantly related to MPS scores for both the course ($r = -0.20$) and the school ($r = -0.25$).

Table 2. Correlations and standardized regression coefficients (Beta) for core dimensions and school outcome measures.

		Skill Variety	*Task Identity*	*Task Significance*	*Autonomy*	*Feedback*	
	M =	*5.30*	*5.54*	*4.46*	*4.80*	*5.44*	*Adjusted*
	(SD) =	*(1.19)*	*(1.03)*	*1.27*	*1.21*	*1.15*	R^2
School Satisfaction	42.60	0.56**	0.53**	0.28**	0.23**	0.47**	
(Beta)	(10.66)	(0.38)**	(0.17)	(0.02)	(-0.13)	(0.15)*	0.34**
Educational Experience	3.17	0.49**	0.41**	0.32**	0.27**	0.41**	
(Beta)	(0.68)	(0.34)**	(-0.06)	(0.12)	(-0.03)	(0.17)*	0.25**
Retention	3.05	0.43**	0.33**	0.24**	0.19**	0.32**	
(Beta)	(0.82)	(0.43)**	(-0.12)	(0.06)	(-0.06)	(0.14)	0.18**
GPA	3.27	0.06	0.05	0.01	0.04	0.02	
(Beta)	(0.48)	(0.07)	(0.04)	(-0.03)	(0.03)	(-0.06)	0.00

Note: Due to incomplete data for the various scales the usable sample size ranged from $n = 281$ to $n = 287$); Regression coefficients are in parentheses; *$p < 0.05$, **$p < 0.01$

Table 3. Correlations between BP Scale scores and course and school outcomes.

	BPS
M =	*92.25*
SD =	*(17.84)*
Affective Outcomes	
Class Satisfaction	-0.17*
School Satisfaction	-0.50**
Educational Experience	-0.41**
Retention	-0.33**
Course Boredom	0.32**
Behavioral Outcomes	
Absenteeism	0.12
Tardiness	0.03
Performance Outcomes	
Course Grade	-0.16*
GPA	-0.11
Motivating Potential	
Course MPS	-0.20**
School MPS	-0.25**

Note: (max $n = 210$), *$p < 0.05$, **$p < 0.01$

IV. Discussion.

Our findings indicate that job enrichment strategies, as exemplified by the JCM, may be beneficial in educational settings. Taken together, it appears that efforts to enhance the classroom environment by increasing the basic dimensions of the JCM can yield positive affective and behavioral outcomes. That is, consistent with hypothesis # 1, ratings of an enriched classroom environment (e.g., high variety, identity, autonomy) were significantly related to greater course satisfaction and lower perceived boredom in class. These results support researchers who have suggested that increasing autonomy, control, and skill variety can reduce the occurrence of boredom in school and other environments (e.g., Belton & Priyadharshini, 2007; Csikszentmihalyi, 2000; Patrick, Skinner, & Connell, 1993). It also buttresses the contention of Robinson (1975) that creating meaningfulness within school assignments can offset boredom. As anticipated (hypothesis # 2), high scores on the model's core dimensions were also associated with behavioral outcomes such as lower absenteeism and turnover. However, contrary to hypothesis # 3, we found no significant relationship between core dimension scores and course grades.

We found a similar pattern of results regarding school-based outcomes. School-level core dimension scores were significantly related to affective feelings about school, which provides support for hypothesis # 4. Specifically, high ratings on school core dimensions were significantly associated with greater satisfaction with school, a better educational experience, and a stronger intent to remain at the university. Congruent with class-based ratings, school-based core dimension scores were not significantly related to grades (overall GPA). Consequently, hypothesis # 5 was not supported.

General support was found for hypothesis # 6 pertaining to the impact of boredom proneness scores (BPS) on various measures. This was particularly true for affective outcomes. For example, high BPS scores were significantly associated with low satisfaction levels (both class and school), a poorer educational experience, less intent to stay, and greater perceived boredom in the classroom. Boredom scores were not correlated with either absenteeism or tardiness; however, high BPS scores were significantly related to lower course grades. Furthermore, greater BPS scores were significantly associated with perceptions of low class and school enrichment.

The above results offer support for earlier research that found boredom to be associated with school dissatisfaction, lower grades, and dropout rate (e.g., Mann & Robinson, 2009; Maroldo, 1982; Robinson, 1975; Ruthig et al., 2008; Tidwell, 1988; Wasson, 1981). The importance of such findings is heightened given the relatively high prevalence of boredom in school settings (e.g., Aldridge & DeLucia, 1989; Larson & Richards, 1991; Mann & Robinson 2009; Shaw et al., 1996). Indeed, the tendency to be bored may be an important individual difference factor regarding how students view their educational experience. As noted by Mann and Robinson (2009), it may be beneficial to identify students with high BPS scores and alter classroom activities to best meet their needs (e.g., greater variety and change).

A. Conclusions.

The current study supports the applicability of the JCM to enriching the university setting. Identifying which classroom core dimensions of the JCM are most in need of enrichment may aid teachers in curriculum design and pedagogy. For example, students need and desire the opportunity to use the variety of skills learned in class. Putting these skills into practice allows

students to see the connection between what they learned and the context within which it is applied, thus increasing satisfaction and internal motivation which they may demonstrate through greater class attendance and engagement. Students may also benefit by allowing them to make their own decisions and develop individualized approaches (i.e., autonomy) to completing coursework. Consistent with many different theories on training and learning, students must be provided with informative feedback to help direct efforts toward accomplishing their goals (e.g., Locke & Latham, 1990).

Several action principles have been identified by researchers to impact the five core dimensions of the JCM directly, which include combining tasks, forming natural work units, developing client relationships, vertical loading of jobs, and creating open feedback channels (e.g., Hackman, Oldam, Janson, & Purdy, 1975). Perhaps these principles can be modified for use in the classroom. For instance, creating work teams should increase both task identity and task significance. The establishment of client relationships is believed to heighten the core dimensions of skill variety, autonomy, and feedback. Therefore, one relatively straightforward approach to enhance all five core dimensions may be to require students to work in teams (work units) on projects with outside organizations (client relationships). Ruthig et al. (2008) recommended that boredom in class may be minimized if instructors expressed their own enthusiasm, involved students in discussions, and related course material to the lives of students. These techniques fit within the JCM in that they may increase the psychological state of experienced meaningfulness. Catanzaro (1997) made several other recommendations on ways to augment core dimensions. These suggestions included having students debate a topic (skill variety), offering self-paced courses (autonomy), and incorporating an integrative capstone class (task identity) into the curriculum.

B. Limitations and Future Directions.

The relationships we found between the core dimensions and performance measures (in terms of class grade and GPA) were not statistically significant in the current study. In some respects, these results are consistent with much of the social psychology literature reflecting the tenuous connection between attitudes and actual behavior, especially considering the many factors (e.g., contextual, perceptual) that can mitigate this relationship (e.g., Valdesolo & DeSteno, 2008). That is, the model may be effective for predicting one's motivation to perform well, but due to other differences such as skill level, may not predict actual performance. However, this study found significant correlations between the core dimensions and the affective and behavioral outcomes (e.g., satisfaction, class attendance, and intent to stay in school) that may be important to consider for a host of reasons. For example, increasing students' motivation to attend class and stay in school is a challenge facing most universities, particularly among first year students where almost one-third typically drop-out (e.g., Feldman, 2005). Perhaps enriching the classroom experience, in accordance with the core dimensions of the JCM, may reduce attrition and absenteeism, thereby retaining students in a learning environment.

Some caution should be taken when interpreting the results of the current study. Specifically, only those students currently enrolled in classes participated in this study. Therefore, the range in performance was restricted to the higher end. That is, most poor performing students likely dropped the course by the time we collected the data (last week of class). The overall GPA for the sample of student respondents was relatively high (3.27), perhaps because of self-selection (i.e., those still enrolled and motivated to seek extra credit). Therefore,

more research is needed to include a more representative sample of students spanning the entire spectrum of performance and motivation levels. Alternatively, it is possible that the GPAs and course grades may have been artificially inflated by the biases associated with using self-report measures in research. That is, students may either report higher grades intentionally or may not be aware of their actual grades and tend to estimate high.

Another potential limitation of the current study is that in an attempt to get a representative cross-section of courses from the university, the courses sampled likely vary on a number of characteristics, including enrollment size, teaching format (e.g., lecture vs. seminar), and whether it is required for the major or is an elective. Because this information regarding course format was not collected, we cannot know if the core dimension apply equally well to courses with different formats. For example, would autonomy provide the same results in a large class that it would in a smaller class? Additionally, further research in this area may prove beneficial for enriching the K-12 and on-line environments.

Acknowledgements

We would like to thank Adam R. Smith and Christopher A. Gregory for their assistance in developing the online surveys. We would also like to thank Dr. Jane Halonen for her editorial review and suggestions.

References

Aldridge, M., & DeLucia, R. C. (1989). Boredom: The academic plague of first year students. *Journal of the Freshman Year Experience*, *1*, 43-56.

Belton, T., & Priyadharshini, E. (2007). Boredom and schooling: A cross-disciplinary exploration. *Cambridge Journal of Education*, *37*, 579-595.

Bloom, A. J., Yorges, S. L., & Ruhl, A. J. (2000). Enhancing student motivation: Extensions from job enrichment theory and practice. *Teaching of Psychology*, *27*, 135-137.

Catanzaro, D. (1997). Course enrichment and the Job Characteristics Model. *Teaching of Psychology, 24,* 85-87.

Czikszentmihalyi, M. (2000). *Beyond boredom and anxiety*. San Francisco: Jossey Bass.

Czikszentmihalyi, M., & Larson, R. (1984). *Being adolescent: Conflict and growth in the teenage years*. New York: Basic Books.

Farmer, R., & Sundberg, N. D. (1986). Boredom proneness: The development and correlates of a new scale. *Journal of Personality Assessment*, *50*, 4-17.

Feldman, R. S. (2005). *Improving the first year of college: Research and practice*. Mahwah, NJ: Lawrence Erlbaum.

Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta-analysis. *Personnel Psychology*, *40*, 287-322.

Harris, M. B. (2000). Correlates and characteristics of boredom proneness and boredom. *Journal of Applied Social Psychology*, *30*, 576-598.

Hackman, J. R., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, *60*, 159-170.

Hackman, J. R., Oldham, G. R., Janson, R., & Purdy, K. (1975). A new strategy for job enrichment. *California Management Review*, *17*, 55-71.

Jackson, W. T., Jackson, M. J., & Gaulden, C. F. (2006). Curricula assessment using the course diagnostic survey: A proposal. *Academy of Educational Leadership Journal*, *10* (3), 37-48.

Kass, S. J., Vodanovich, S. J., & Callender, A. (2001). State-trait boredom: The relationship to absenteeism, tenure and job satisfaction. *Journal of Business and Psychology*, *16*, 317-327.

Kass, S. J., & Vodanovich, S. J. (1990). Boredom proneness: Its relationship to Type A behavior pattern and sensation seeking. *Psychology: A Journal of Human Behavior*, *27*, 7-16.

Kass, S. J., Wallace, J. C., & Vodanovich, S. J. (2003). Boredom proneness and sleep disorders as predictors of adult attention deficit scores. *Journal of Attention Disorders*, *7*, 83-91.

Larson, R. W., & Richards, M. H. (1991). Boredom in the middle school years: Blaming schools versus blaming students. *American Journal of Education*, *99*, 418-443.

Lee, T. W. (1986). Toward the development and validation of a measure of job boredom. *Manhattan College Journal of Business*, *15*, 22-28.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice Hall.

Loken, J. (1973). Patterns of drug misuse and the school drop-out. *Canadian Counselor*, *7*, 279-282.

Mann, S., & Robinson, A. (2009). Boredom in the lecture theatre: An investigation into the contributors, moderators and outcomes of boredom amongst university students. *British Educational Research Journal*, *35*, 243-258.

Maroldo, G. K. (1986). Shyness, boredom, and grade point average among college students. *Psychological Reports*, *59*, 395-398.

McLeod, C. R., & Vodanovich, S. J. (1991). The relationship between self-actualization and boredom proneness. *Journal of Social Behavior and Personality*, *6*, 137-146.

Morton-Williams, R., & Finch, S. (1968). *Young school leavers*. London: Her Majesty's Stationery Office.

Patrick, B., Skinner, E., & Connell, J. (1993). What motivates children's behaviour and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology*, *65*, 781–791.

Renn, R. W., & Vandenberg, R. J. (1995). The critical psychological states: An underrepresented component in job characteristics model research. *Journal of Management*, *21*, 279-203.

Robinson, W. P. (1975). Boredom at school. *British Journal of Educational Psychology*, *45*, 141-152.

Ruthig, J. C., Perry, R. P., Hladkyj, S., Hall, N. C., Pekrun, R., & Chipperfield, J. G. (2008). Perceived control and emotions: Interactive effects on performance in achievement settings. *Social Psychology of Education*, *11*, 161-180.

Shaw, S. M., Caldwell, L. L., & Kleiber, D. A. (1996). Boredom, stress, and social control in the daily activities of adolescents. *Journal of Leisure Research*, *28*, 274-292.

Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement*. Chicago: Rand McNally.

Tidwell, R. (1988). Dropouts speak out: Qualitative data on early school departures. *Adolescence*, *23*, 939-954.

Valdesolo, P., & DeSteno, D. (2008). The duality of virtue: Deconstructing the moral hypocrite. *Journal of Experimental Social Psychology*, *44*, 1334-1338.

Vandewiele, M. (1980). On boredom of secondary school students in Senegal. *Journal of Genetic Psychology*, *137*, 267-274.

Vodanovich, S. J., & Kass, S. J. (1990). A factor analytic study of the Boredom Proneness Scale. *Journal of Personality Assessment*, *55*, 115-123.

Vodanovich, S. J., Weddle, C., & Piotrowski, C. (1997). The relationship between boredom proneness and internal and external work values. *Social Behavior and Personality: An International Journal*, *25*, 259-264.

Wasson, A. S. (1981). Susceptibility to boredom and deviant behavior at school. *Psychological Reports*, *48*, 901-902.

Watt, J. D., & Blanchard, M. J. (1994). Boredom proneness and the need for cognition. *Journal of Research in Personality*, *28*, 44-51.

Watt, J. D., & Hargis, M. B. (2009). Boredom proneness: Its relationship with subjective underemployment, perceived organizational support, and job performance. *Journal of Business and Psychology*, *25*, 163-174.