

Validation of the MUSIC Model of Academic Motivation Inventory: A Measure of Students' Motivation in College Courses

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Abstract

Aim: to develop a self-report inventory that measures college students' beliefs related to the five key components of the MUSIC Model of Academic Motivation (Jones, 2009): eMpowerment, Usefulness, Success, Interest, and Caring.

- Purposes of Study 1: to develop the wording of the initial items and assess the content validity through student and expert evaluation.
- Purpose of Study 2: to pilot test the items by administering them to 155 undergraduate students.
- Purpose of Study 3: to conduct a field test with 338 undergraduates who completed an online questionnaire.
- Purpose of Study 4: to compare the scores obtained from the MUSIC inventory to those from related instruments and to constructs that the MUSIC components have been shown to predict with 338 undergraduates.

Analyses included exploratory and confirmatory factor analysis, classical item analysis, and the calculation of Rasch measurement scales. The final version of the inventory consisted of 26 items. Results support the validity of scores produced by the MUSIC Model of Academic Motivation Inventory for use with college students.

5 Key Principles of the MUSIC Model of Academic Motivation (Jones, 2009)

Students are more motivated when they perceive that:

1. they are eMpowered,
2. the content is Useful,
3. they can be Successful,
4. they are Interested, and
5. they feel Cared for by others in the learning environment

The MUSIC Components, Definitions, and Related Constructs

MUSIC component	Definitions	Related constructs
	The degree to which a student perceives that:	
eMpowerment	he or she has control of his or her learning environment in the course	<u>Autonomy</u> (Deci & Ryan, 1991)
Usefulness	the coursework is useful to his or her future	<u>Utility value</u> (Wigfield & Eccles, 2000), instrumentality
Success	he or she can succeed at the coursework	<u>Competence</u> (Elliot & Dweck, 2005), self-efficacy, expectancy for success
Interest	the instructional methods and coursework are interesting or enjoyable	<u>Situational interest</u> (Hidi & Renninger, 2006), intrinsic motivation, intrinsic interest value, flow
Caring	the instructor cares about whether the student succeeds in the coursework and cares about the student's well-being	<u>Caring</u> (Noddings, 1992), belongingness, relatedness, attachment

The MUSIC Model of Academic Motivation Inventory (MMAMI)

1 Strongly disagree	2 Disagree	3 Somewhat disagree	4 Somewhat agree	5 Agree	6 Strongly agree
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Empowerment (5 items; $\alpha = .91$)	<ul style="list-style-type: none"> I had control over how I learned the course content. I had the opportunity to decide for myself how to meet the course goals. I had the freedom to complete the coursework my own way. I had options in how to achieve the goals of the course. I had flexibility in what I was allowed to do in this course.
Usefulness (5 items; $\alpha = .96$)	<ul style="list-style-type: none"> In general, the coursework was useful to me. The coursework was beneficial to me. I found the coursework to be relevant to my future. I will be able to use the knowledge I gained in this course. The knowledge I gained in this course is important for my future.
Success (4 items; $\alpha = .93$)	<ul style="list-style-type: none"> I was confident that I could succeed in the coursework. I felt that I could be successful in meeting the academic challenges in this course. I was capable of getting a high grade in this course. Throughout the course, I felt that I could be successful on the coursework.
Interest (6 items; $\alpha = .95$)	<ul style="list-style-type: none"> The coursework was interesting to me. The coursework held my attention. The instructional methods used in this course held my attention. I enjoyed the instructional methods used in this course. The instructional methods engaged me in the course. I enjoyed completing the coursework.
Caring (6 items; $\alpha = .93$)	<ul style="list-style-type: none"> The instructor was available to answer my questions about the coursework. The instructor was willing to assist me if I needed help in the course. The instructor cared about how well I did in this course. The instructor was respectful of me. The instructor was friendly. I believe that the instructor cared about my feelings.

Comparison Scales

- **eMpowerment:** Learning Climate Questionnaire (Williams & Deci, 1996)
- **Usefulness:** Utility Value Scale (Hulleman, Durik, Schweigert, & Harackiewicz, 2008)
- **Success:** Perceived Competence Scale (Williams & Deci, 1996)
- **Interest:** Interest (similar to Eccles & Wigfield, 1995)
- **Caring:** Classroom Life Instrument (Johnson, Johnson, & Anderson, 1983)

Other scales

- **Effort:** Effort/Importance scale (Plant & Ryan, 1985)
- **Instructor rating:** 1 item (Jones, 2010)
- **Course rating:** 1 item (Jones, 2010)

Confirmatory Factor Analysis of the five factor model using MPlus showed that the five-factor model fit the data very well:

- CFI = 0.920, TLI = 0.910, RMSEA = 0.085, and SRMR = 0.055

Pearson's Correlation Coefficients for the MMAMI Subscales and the Comparison Scales

MMAMI subscales (Comparison scales)	1	2	3	4
1. Empowerment (Learning Climate Questionnaire)				
2. Usefulness (Utility Value Scale)	.53 (.52)			
3. Success (Perceived Competence Scale)	.53 (.58)	.57 (.48)		
4. Interest (Interest Scale)	.67 (.60)	.77 (.76)	.65 (.65)	
5. Caring (Classroom Life Instrument)	.46 (.82)	.54 (.45)	.62 (.49)	.60 (.57)

$p \leq .001$ for all coefficients

The scales were correlated moderately, as expected.

Pearson's Correlation Coefficients for the Study Constructs

	M	U	S	I	C
1. Learning Climate Questionnaire	.57	.53	.57	.63	.78
2. Utility Value Scale	.47	.88	.46	.69	.45
3. Perceived Competence Scale	.46	.56	.84	.63	.56
4. Interest Scale	.54	.77	.65	.82	.61
5. Classroom Life Instrument	.43	.48	.52	.55	.82

The MMAMI scales are more highly correlated with the comparison scales that measured similar constructs (as shown by the values on the diagonal) than the comparison scales that measured different constructs.

These strong correlations provide evidence for the convergent validity of the MMAMI scales. The fact that the MMAMI scales were not as highly correlated with the scales that measured different constructs provides evidence for the discriminant validity of the MMAMI scales.

Conclusions and Advantages of the MMAMI

- The MUSIC Model of Academic Motivation (MMAMI) produced reliable and valid scores with a sample of 338 college students from 221 different face-to-face, online, and hybrid courses.
- All scales are on 6-point Likert-type scales with consistent labels at response options
 - Less confusing, more reliable, and can be administered in random order more effectively
- Between 4 to 6 items per scale
 - Enough for reliability, yet does not take long to administer
- Empowerment scale a measure of “autonomy” not “autonomy support”
- Easy to implement and “one-stop-shopping” for instructors who want to measure multiple facets of motivation

References

- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dientsbier (Ed.), *Nebraska symposium on motivation* (Vol. 38). Lincoln: University of Nebraska Press.
- Eccles, J. S., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' achievement task values and expectancy-related beliefs. *Personality and Social Psychology Bulletin*, 21(3), 215-225.
- Elliot, A. J., & Dweck, C. S. (2005). Competence and motivation: Competence as the core of achievement motivation. In A. J. Elliot, & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 3-12). New York: Guilford.
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111-127.
- Hulleman, C. S., Durik, A. M., Schweigert, S. A., & Harackiewicz, J. M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology*, 100(2), 398-416.
- Johnson, D. W., Johnson, R. & Anderson, A. (1983). Social interdependence and classroom climate. *Journal of Psychology*, 114(1), 135-142.
- Jones, B. D. (2009). Motivating students to engage in learning: The MUSIC Model of Academic Motivation. *International Journal of Teaching and Learning in Higher Education*, 21(2), 272-285.
- Jones, B. D. (2010). An examination of motivation model components in face-to-face and online instruction. *Electronic Journal of Research in Educational Psychology*, 8(3), 915-944.
- Noddings, N. (1992). *The challenge to care in schools : An alternative approach to education*. New York: Teachers College Press.
- Plant, R. W., & Ryan, R. M. (1985). Intrinsic motivation and the effects of self-consciousness, self-awareness, and ego-involvement: An investigation of internally-controlling styles. *Journal of Personality*, 53(3), 435-449.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25, 68-81.
- Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology*, 70(4), 767-779.