

Winter 12-31-2019

Testing the MUSIC Model of Motivation Theory: Relationships Between Students' Perceptions, Engagement, and Overall Ratings

Brett D. Jones

Virginia Tech, brettdjones@gmail.com

Follow this and additional works at: <https://www.cjsotl-rcacea.ca>
<https://doi.org/10.5206/cjsotl-rcacea.2019.3.9471>

Recommended Citation

Jones, B. D. (2019). Testing the MUSIC Model of Motivation Theory: Relationships between students' perceptions, engagement, and overall ratings. *The Canadian Journal for the Scholarship of Teaching and Learning*, 10(3).
<https://doi.org/10.5206/cjsotl-rcacea.2019.3.9471>

Testing the MUSIC Model of Motivation Theory: Relationships Between Students' Perceptions, Engagement, and Overall Ratings

Abstract

The purposes of this study were to investigate the extent to which students' course perceptions of the components of the MUSIC Model of Motivation (Jones, 2009, 2018) were related to their engagement in college courses and their instructor and course ratings. Participants included 285 college students who completed questionnaires once or twice during a course. The self-report scales demonstrated high internal reliability. The findings indicate that students' MUSIC perceptions (i.e., perceptions of empowerment, usefulness, success, interest, and caring) were significantly related to their effort in the course, both when the variables were assessed at the same time point and when their effort was assessed at a later time point. These findings provide empirical evidence for relationships proposed in the MUSIC Model of Motivation theory. Students' MUSIC perceptions were also related to their instructor and course ratings, both when the variables were assessed at the same time point and when their instructor and course ratings were assessed at a later time point. These findings are important for instructors because students' MUSIC perceptions can be linked directly to categories of motivational strategies that can be used by instructors as they design instruction.

Les objectifs de cette étude étaient d'examiner le degré dans lequel les perceptions des étudiants sur les composantes des cours portant sur le modèle de motivation MUSIC (Jones, 2009, 2018) étaient liées à leur implication dans les cours collégiaux et à leurs évaluations des instructeurs et des cours. Parmi les participants figuraient 285 étudiants collégiaux qui ont répondu aux questionnaires une ou deux fois pendant la durée du cours. Les barèmes d'auto-évaluation ont indiqué un fort degré de cohérence interne. Les résultats indiquent que les perceptions MUSIC des étudiants (c.-à-d. les perceptions d'autonomisation, d'utilité, de réussite, d'intérêt et de bienveillance) étaient liées de façon significative à leurs efforts dans le cours, à la fois quand les variables étaient évaluées au même moment et quand leurs efforts étaient évalués plus tard. Ces résultats fournissent des preuves empiriques pour les relations proposées dans le modèle MUSIC de la théorie de motivation. Les perceptions MUSIC des étudiants étaient également liées à leurs évaluations des instructeurs et des cours, à la fois quand les variables étaient évaluées au même moment et quand les évaluations de leur instructeur et de leur cours étaient menées plus tard. Ces résultats sont importants pour les instructeurs parce que les perceptions MUSIC des étudiants peuvent être directement liées à des catégories de stratégies de motivation qui peuvent être utilisées par les instructeurs quand ils préparent leurs cours.

Keywords

motivation, engagement, MUSIC Model of Motivation, attitudes, course rating; motivation, implication des étudiants, modèle MUSIC de motivation, attitudes, évaluation des cours

The MUSIC[®] Model of Motivation (MUSIC model; Jones, 2009, 2018) was created to help instructors identify strategies to motivate and engage their students. The model does so by providing five research-based categories of strategies that have been shown to affect students' motivation and engagement: eMpowerment, Usefulness, Success, Interest, and Caring (MUSIC is an acronym based on the initial sounds of these five categories). Although researchers have studied the relationships between the individual MUSIC model components and students' motivation and engagement (see Schunk, Meece, & Pintrich, 2014; Wentzel & Wigfield, 2009), few studies have investigated the effects of all five of the MUSIC components on students' motivation and engagement in the same course. The primary purpose of this study was to investigate the extent to which students' perceptions of the MUSIC components were related to their engagement in undergraduate courses, both at one time point and over time. The results can be used to confirm or reject some of the basic tenets of the MUSIC model theory. A secondary purpose of this study was to investigate the degree to which the MUSIC model components were related to instructor and course ratings.

Literature Review

The MUSIC Model Strategies

The MUSIC model specifies five categories of teaching strategies that instructors should consider when designing instruction (Jones, 2009, 2018). The first category, empowerment strategies, includes strategies that allow students to feel as if they have some control over their learning environment, often by providing choices. This category of strategies is consistent with self-determination theory, which states that individuals have a need for autonomy and "have a voice or input in determining their own behavior" (Deci & Ryan, 1991, p. 243). Control theories (see Skinner, 1996) and interest theories (Hidi & Renninger, 2006) also describe the importance of control and choice in individuals' motivations.

Strategies in the usefulness category of the MUSIC model help students understand how the learning activities are related to their short- or long-term goals. These strategies are consistent with goal-setting theories (Locke & Latham, 2002), the utility value construct in expectancy-value theory (Eccles et al., 1983), and future time perspective theories (see Kauffman & Husman, 2004). These theories describe how individuals' goals are important to their motivation when they believe that specific activities are useful to reaching their goals.

Strategies in the success category help students believe that they can succeed if they put forth the appropriate effort. Many motivation theories include the idea that individuals are motivated when they believe they are competent at something and expect to do well at activities related to it. Self-concept theories (Marsh, 1990) and self-worth theory (Covington, 1992) focus on how individuals' perceptions of their competence are primary motivators for their behaviors. Other theories, such as self-efficacy theory (Bandura, 1986) and expectancy-related theories (Atkinson, 1964; Eccles et al., 1983) state that individuals are more motivated to engage in activities when they believe that they can succeed at those activities.

The interest strategies in the MUSIC model are used to engage students in the immediate activity or to foster students' longer-term interest in the topic. This group of strategies is based on interest theories (Hidi & Renninger, 2006; Krapp, 2005; Schraw & Lehman, 2001), but it is also based on other theories that focus on how the immediate environment affects individuals' motivation. For example, arousal theory (Duffy, 1957) identifies the importance of arousal (degree

of excitement), flow theory (Csikszentmihalyi, 1990) identifies many conditions of an activity that lead to individuals' enjoyment in the activity, and intrinsic motivation theory (Deci, 1975) describes how rewards within activities can foster motivation.

Finally, strategies in the caring category of the MUSIC model help students to believe that the instructor and others in the learning environment care about their academic success and overall well-being. Caring theories (Noddings, 1984; Wentzel, 1999) describe the importance of a caring relation between two individuals and belonging theories (Baumeister & Leary, 1995) note the importance of humans' needs to belong and maintain quality interpersonal relationships.

In sum, the MUSIC model was developed to provide a summary or synthesis of the strategies that emanate from many motivation theories (Jones, 2009). Although the MUSIC model was created based on existing motivation theories, it is distinct from other theories because it was developed specifically for instructors to use in designing instruction.

The MUSIC Model Theory

The MUSIC[®] Model of Motivation theory (Jones, 2009, 2018) was developed to explain the antecedents and consequences of implementing the MUSIC model strategies in instructional settings. The MUSIC model theory is based on a social-cognitive framework in which external variables (e.g., professors, family, peers, culture) interact with internal variables (e.g., cognition, affect, needs, desires, identity beliefs, personality characteristics) to affect students' perceptions of the five MUSIC model components (see Figure 1). For example, professors are factors external to students and they can design learning environments in ways that affect students' perceptions of the MUSIC model components. The five MUSIC model components then affect students' motivation, which is defined as "the extent to which one intends to engage in an activity" (Jones, 2018, p. 5). When students are motivated, they engage in an activity by actively participating in some aspect of it. Students can engage behaviorally (e.g., putting forth effort), cognitively (e.g., using learning strategies), and/or affectively (e.g., feeling excited) in an activity (Fredricks, Blumenfeld, & Paris, 2004). Students' engagement then leads to outcomes, such as learning and performance. These outcomes, and students' interpretations of these outcomes (e.g., "I am good at biology"), can then affect external and internal factors, as shown in Figure 1 by the arrow leading from students' learning to external and internal factors.

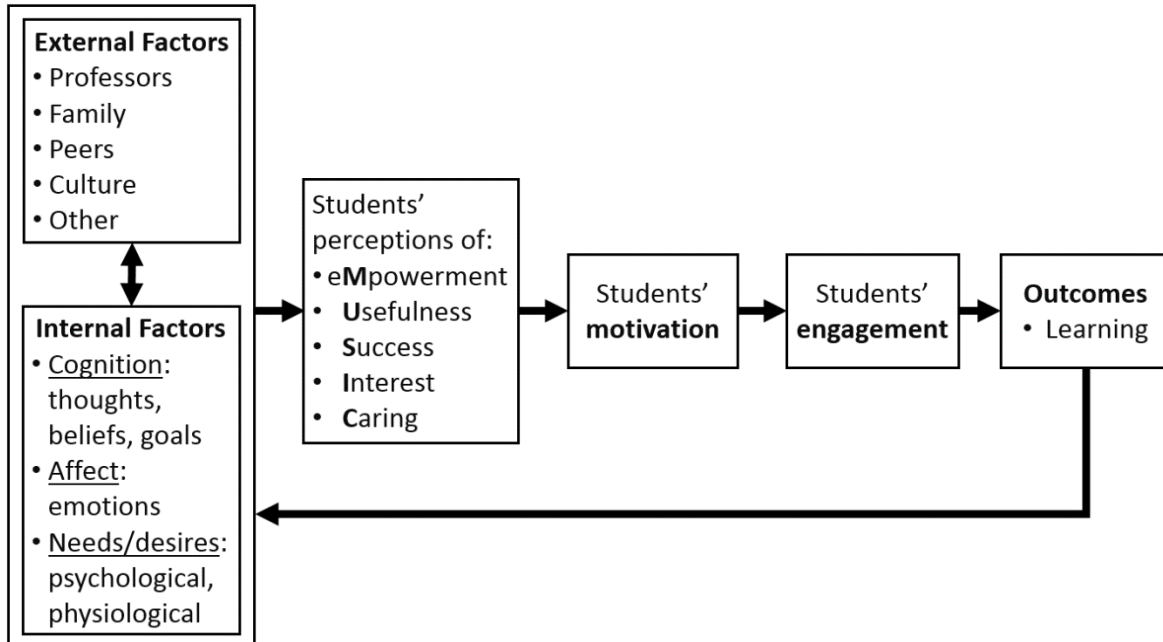


Figure 1. This figure shows a simplified version of how external and internal factors affect students' perceptions of the MUSIC® Model of Motivation components, which then affect their motivation, engagement, and learning, which then cycles back and affects the external and internal factors. Adapted from “Motivating Students by Design: Practical Strategies for Professors” by B. D. Jones, 2018, p. 13. Copyright 2018 by Brett D. Jones. Reprinted with permission.

The MUSIC model theory is based on research conducted by many different researchers over several decades who have studied the effects of one or more of the MUSIC model components on students' motivation and engagement. For example, some researchers have documented that students' perceptions of success affect motivation-related variables such as choice, effort, and persistence (see Schunk & Pajares, 2005). Because the MUSIC model was developed based on many theories (as noted previously; see Jones, 2018, for a more complete list), the strategies are not limited to any one theoretical approach. And importantly, the model is easily understandable and usable by teachers who are unfamiliar with the variety of motivation theories available and are unsure which ones to use in their teaching.

Evidence for the MUSIC Model

It is important to provide evidence that the five MUSIC perceptions are distinct in educational settings; otherwise, it is possible that some of the MUSIC perceptions may be very similar to one another and measure the same constructs. Results from several studies have confirmed that students' MUSIC perceptions are distinct in a variety of educational settings, including courses in professional schools (Jones, Byrnes, & Jones, 2019; Pace, Ham, Poole, & Wahaib, 2016), undergraduate courses (Chittum, Jones, & Carter, 2019; Jones & Wilkins, 2013), middle and high school classes (Chittum & Jones, 2017; Parkes, Jones, & Wilkins, 2017), elementary school classes (Jones & Sigmon, 2016), and clinical training settings (Hansen et al., 2019). Furthermore, these studies have been conducted in a variety of cultures and countries, including Canada, Denmark, and Japan (Hansen et al., 2019); China and Columbia (Jones, Li, & Cruz, 2017); Egypt (Mohamed, Soliman, & Jones, 2013); and Iceland (Schram & Jones, 2016). In

sum, a body of evidence has accumulated to demonstrate that the five MUSIC model components represent five different perceptions that students can have in educational settings.

Given that students' MUSIC perceptions can be distinct in an educational setting, some researchers have investigated the relationships between students' MUSIC perceptions and important outcomes, such as effort, instructor ratings, and course ratings. Evidence from studies with undergraduate students suggests that students' MUSIC perceptions are positively related to their effort, instructor ratings, and course ratings (Chittum et al., 2019; Jones, 2010; Jones & Skaggs, 2016; Jones et al., 2017). However, more studies are needed to examine whether these relationships also exist in other types and sizes of courses. In addition, a limitation of prior studies is that they include data that were collected at one time point. For example, Jones (2010) surveyed students near the end of the course; and therefore, students' MUSIC perceptions near the end of the course were shown to correlate with their self-reported effort at that same time. It is not known whether students' MUSIC perceptions earlier in the course were related to their effort later in the course; a finding that would be interesting to document to help explain how students' MUSIC perceptions and effort are related over time.

Study Rationale and Research Questions

The goal of the present study was to examine the relationships between students' perceptions of the MUSIC model components and their effort (as an indicator of behavioral engagement) in a variety of courses. Thus, the first research question was: To what extent do students' MUSIC perceptions correlate with their effort in courses? Consistent with the MUSIC model theory and prior studies (Chittum et al., 2019; Jones, 2010; Jones & Skaggs, 2016; Jones et al., 2017), I hypothesized that students' perceptions of all five MUSIC model components would correlate significantly with their effort in their courses. This research question is important because the answer will provide evidence to support or refute some of the relationships proposed in the MUSIC model theory in a variety of courses. I focused on effort because it is a common measure of behavioral engagement and it is likely an important outcome for most instructors (i.e., they want their students to put forth effort).

Another purpose of this study was to examine the degree to which the MUSIC model components were related to students' overall instructor and course ratings. The MUSIC model theory does not include specific predictions about how students' MUSIC perceptions are related to their instructor or course ratings. However, based on prior studies (Chittum et al., 2019; Griffin, 2016; Jones, 2010), it is reasonable to expect that students' MUSIC perceptions will be correlated positively with their instructor and course ratings. Therefore, the second research question was: To what extent do students' MUSIC perceptions correlate with their instructor and course ratings?

The third research question was: To what extent do students' MUSIC perceptions correlate with their effort, instructor ratings, and course ratings over time? While the first and second research question are intended to provide evidence for the MUSIC model theory in a wider variety of courses than previously studied, the third research question examines these relationships over time. This question is important because if the correlations between these variables is positive and high, it suggests that students' perceptions during the course could affect their effort and ratings near the end of the course.

Methodology

Procedure

I conducted Study 1 to answer the first and second research questions, and Study 2 to answer the third research question. For Study 1, students in four college courses completed a questionnaire during the last third of a 16-week semester. For Study 2, students in four college courses (different from the courses in Study 1) completed a questionnaire about half-way through their 16-week course and again near the end of their course. The questionnaire in both studies included items related to students' perceptions of the five MUSIC model components, their perceived effort, their overall perceptions of the instructor and course, and their demographic information (i.e., gender, race/ethnicity, and class standing). I obtained Institutional Review Board (IRB) approval from my institution to conduct the studies.

Participants

Participants included 285 students (167 in Study 1 and 118 in Study 2) from two universities in a Mid-Atlantic state in the U.S. Participants were enrolled in one of eight college courses that lasted 16 weeks each. Courses varied by topic, size, credit hours, delivery method (i.e., online or face-to-face), and the class standing of the students enrolled. Tables 1 and 2 provide information about the participants and course topics, which included community systems thinking, educational psychology, mathematics, neuroscience, biological systems engineering, environmental science, geography, and human development.

Table 1

Information About the Participants and Courses

| Study | Course | n | Response rate | % | Class standing | | | | | Univ. | Credits | Online |
|-------|--------------------------|----|---------------|-------|----------------|----|----|----|----|-------|---------|--------|
| | | | | | Men | 1 | 2 | 3 | 4 | | | |
| 1 | Comm. syst. | 16 | 94.1% | 25.0% | 14 | 2 | 0 | 0 | 0 | A | 3 | No |
| 1 | Educ. psych. | 32 | 97.0% | 28.1% | 0 | 0 | 2 | 17 | 13 | A | 3 | Yes |
| 1 | Mathematics | 27 | 96.4% | 88.0% | 0 | 13 | 11 | 1 | 0 | B | 3 | No |
| 1 | Neuroscience | 92 | 93.9% | 36.7% | 1 | 56 | 26 | 8 | 0 | A | 1 | No |
| 2 | Bio. systems engineering | 15 | 88.2% | 46.7% | 1 | 1 | 3 | 6 | 4 | A | 3 | No |
| 2 | Env. science | 45 | 50.6% | 46.7% | 25 | 12 | 3 | 5 | 0 | A | 3 | No |
| 2 | Geography | 22 | 81.5% | 36.4% | 5 | 9 | 7 | 1 | 0 | A | 3 | No |
| 2 | Human dev. | 36 | 81.8% | 5.6% | 2 | 10 | 12 | 12 | 0 | A | 3 | No |

Note. For class standing: 1 = first year, 2 = sophomore, 3 = junior, 4 = senior, and 5 = master's student. "Univ." is an abbreviation for "University." The universities are labeled *University A* and *University B* to maintain anonymity.

Table 2
Race/Ethnicity of the Participants

| | Asian or Pacific Islander | Black or African American | Hispanic | Native American | White or Caucasian | More than one race in the list | Race not in the list |
|-----------------------------|---------------------------------|---------------------------------|----------|--------------------|-----------------------|--------------------------------------|-------------------------|
| Comm. syst. | 2 | 0 | 1 | 0 | 13 | 0 | 0 |
| Educ. psych. | 2 | 1 | 0 | 0 | 28 | 1 | 0 |
| Mathematics | 1 | 1 | 0 | 0 | 22 | 1 | 0 |
| Neuroscience | 11 | 7 | 4 | 0 | 58 | 8 | 0 |
| Bio. systems engineering | 3 | 1 | 1 | 0 | 7 | 1 | 2 |
| Env. science | 6 | 1 | 3 | 0 | 32 | 3 | 0 |
| Geography | 1 | 0 | 1 | 0 | 18 | 2 | 0 |
| Human dev. | 0 | 0 | 0 | 0 | 34 | 2 | 0 |

Note. Students were provided with the seven race/ethnicity options shown in the first row.

Instruments

MUSIC perceptions. I measured students' perceptions of the five MUSIC model components (i.e., empowerment, usefulness, success, interest, and caring) using the MUSIC[®] Model of Academic Motivation Inventory (MUSIC Inventory; Jones, 2017b). The five MUSIC Inventory scales measure the extent to which students perceive that: (a) they have control over their learning environment in the course (empowerment scale, 5 items), (b) the coursework is useful to their future (usefulness scale, 5 items), (c) they can succeed at the coursework (success scale, 4 items), (d) the instructional methods and coursework are interesting (interest scale, 6 items), and (e) the instructor cares about whether they succeed in the coursework and cares about their well-being (caring scale, 6 items). All items were rated on a 6-point Likert-format scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Somewhat disagree*, 4 = *Somewhat agree*, 5 = *Agree*, 6 = *Strongly agree*). An example item from each scale is provided here (the complete inventory and directions are provided in Jones, 2017b): "I had flexibility in what I was allowed to do in this course" (empowerment), "In general, the coursework was useful to me" (usefulness), "I was confident that I could succeed in the coursework" (success), "The coursework was interesting to me" (interest), and "The instructor cared about how well I did in this course" (caring). Jones and Skaggs (2016) reported excellent Cronbach's alpha values for each scale when used with undergraduate students: .91 for empowerment, .96 for usefulness, .93 for success, .95 for interest, and .93 for caring.

Behavioral engagement. Behavioral engagement was measured with scales that assessed students' perceptions of effort because effort is considered an indicator of behavioral engagement (Fredricks et al., 2004). Three different scales were used to assess effort in Study 1, but only one of those scales was used for Study 2. A strength of using three different scales for Study 1 is that the findings are not restricted to the use of a scale that might be systematically flawed in some manner. A weakness of using different scales in Study 1 is that it makes it impossible to directly compare the *values* obtained; however, it is possible to compare the *patterns* obtained because all of the different scales measured an "effort" construct. To account for this weakness, the same scale was used in all of the courses in Study 2, which permits the direct comparison of values across courses. For all of the scales, students rated the items on a six-point Likert-format scale: 1 =

Strongly Disagree, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

For one of the courses in Study 1 (community systems thinking) and for all four of the courses in Study 2 (biological systems engineering, environmental science, geography, and human development), I used the four-item Course Effort scale (Jones, 2017a, $\alpha = 0.93$) because it assesses the amount of effort that students believe they are putting into a course. An example item is, “In this course, I put forth my maximum effort.”

Effort in the educational psychology course (Study 1) was assessed with a four-item measure of effort (Jones, 2010; $\alpha = .84, .84, .86, .84$) that was based on the five-item Effort/Importance scale that is part of the Intrinsic Motivation Inventory (Plant & Ryan, 1985). This scale assesses the amount of perceived effort that students put forth in a course. An example item is: “I put a lot of effort into this course.”

To measure effort in the mathematics and neuroscience courses (Study 1), I used a scale that included three of the five items from the Behavioral Engagement scale from the Skinner, Kindermann, and Furrer’s (2009) Engagement vs. Disaffection with Learning measure. Reeve and Lee (2014) used these same three items in their study and reported Cronbach’s alpha values of .82 and .80. An example item is: “I try hard to do well in this course.”

Overall perceptions of instructor and course. Similar to Jones (2010), I asked one item to assess students’ overall perceptions of their instructor and one item to assess their overall perceptions of their course. The items were “My overall rating of the instructor for this course” and “My overall rating of the course,” and both items were rated using the following Likert-format scale: 1 = *terrible*, 2 = *poor*, 3 = *satisfactory*, 4 = *good*, 5 = *very good*, 6 = *excellent*. These items are similar to the items on the mandatory student evaluation of teaching forms at one of the participating universities.

Results

Study 1

All of the Cronbach’s alpha values for the scales in Study 1 (see Table 3) were excellent (i.e., greater than 0.9; Kline, 2005) or good (i.e., between 0.7 and 0.9); thus, providing evidence for strong internal consistency reliability for each scale.

Table 3
Cronbach’s Alpha Values for Each Scale in Study 1

| Scale | Comm. syst. ^a | Educ. psych. ^b | Math ^c | Neuroscience ^c |
|-------------|--------------------------|---------------------------|-------------------|---------------------------|
| Empowerment | .86 | .87 | .87 | .82 |
| Usefulness | .89 | .93 | .93 | .90 |
| Success | .70 | .95 | .93 | .87 |
| Interest | .89 | .94 | .94 | .84 |
| Caring | .82 | .86 | .92 | .93 |
| Effort | .93 | .94 ^a | .94 ^b | .78 ^b |

^aCourse effort scale. ^bEffort/Importance scale. ^cBehavioral Engagement scale.

The Pearson product-moment correlation coefficients for the variables in Study 1 are presented in Table 4. I used the following criteria, based on Cohen (1988), to present the values in Table 4: bold numbers with the “+” indicate a large effect size (.50 or greater), bold numbers

without the “+” indicate a medium effect size (.30 to .49), numbers not bolded indicate a small effect size (.10 to .29), and insignificant values (< .10) are not shown. Correlations between students’ MUSIC perceptions and effort ranged from insignificant to .72, correlations between students’ MUSIC perceptions and instructor ratings ranged from .19 to .87, and correlations between students’ MUSIC perceptions and course ratings ranged from .22 to .86.

Table 4
Correlations Between the MUSIC Model Components and Effort, Instructor Rating, and Course Rating (measured at the same time)

| Course no. | Effort | | | | Instructor rating | | | | Course rating | | | |
|-------------|----------------|----------------|----------------|----------------|-------------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|
| | 1 ^a | 2 ^b | 3 ^c | 4 ^c | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Empowerment | — | .17 | .43 | — | .38 | .29 | .68+ | .53+ | .41 | .39 | .86+ | .31 |
| Usefulness | — | .44 | .43 | .15 | .19 | .58+ | .39 | .31 | .55+ | .76+ | .64+ | .45 |
| Success | .14 | — | .27 | — | .37 | .46 | .65+ | .26 | .61+ | .52+ | .73+ | .22 |
| Interest | .43 | .52+ | .35 | .28 | .64+ | .74+ | .76+ | .65+ | .81+ | .81+ | .85+ | .53+ |
| Caring | .43 | .14 | .15 | — | .59+ | .72+ | .84+ | .87+ | .52+ | .64+ | .73+ | .29 |

Notes. The course numbers represent the following courses: 1 = Community Systems Thinking, 2 = Educational Psychology, 3 = Mathematics, and 4 = Neuroscience. Cohen’s (1988) criteria is indicated as follows: bold numbers with the “+” indicate a large effect size (.50 or greater), bold numbers without the “+” indicate a medium effect size (.30 to .49), and numbers not in bold indicate a small effect size (.10 to .29). Statistically insignificant values are not included in the table.

^aCourse Effort scale. ^bEffort/Importance scale. ^cBehavioral Engagement scale.

Study 2

The Cronbach’s alpha values for the scales in Study 2 (see Table 5) were generally excellent (i.e., greater than 0.9; Kline, 2005) or good (i.e., between 0.7 and 0.9), and all 24 values were acceptable (i.e., greater than 0.6; except the value of 0.57 for the Interest scale in the Geography course). These alpha values provide evidence for strong internal consistency reliability across the scales in Study 2.

Table 5
Cronbach’s Alpha Values for Each Scale in Study 2

| Scale | Study 2 | | | |
|-------------|-----------------|--------------|-------|----------------|
| | Bio. syst. eng. | Env. science | Geog. | Human develop. |
| Empowerment | .90 | .84 | .62 | .82 |
| Usefulness | .95 | .90 | .94 | .79 |
| Success | .89 | .92 | .57 | .71 |
| Interest | .86 | .92 | .89 | .85 |
| Caring | .88 | .90 | .67 | .80 |
| Effort | .87 | .94 | .83 | .79 |

Note. The course effort scale was used in all courses.

The Pearson product-moment correlation coefficients for the variables in Study 2 are presented in Table 6. Correlations between students’ MUSIC perceptions and effort ranged from insignificant to .67, correlations between students’ MUSIC perceptions and instructor ratings ranged from insignificant to .77, and correlations between students’ MUSIC perceptions and course ratings ranged from insignificant to .79.

Table 6
Correlations Between the MUSIC Model Components and the Following Variables Measured at a Later Time: Effort, Instructor Rating, and Course Rating

| Course no. | Effort | | | | Instructor rating | | | | Course rating | | | |
|-------------|------------|-------------|------------|------------|-------------------|-------------|-------------|------------|---------------|-------------|-------------|------------|
| | 5 | 6 | 7 | 8 | 5 | 6 | 7 | 8 | 5 | 6 | 7 | 8 |
| Empowerment | .16 | .37 | .11 | .15 | .26 | .52+ | .22 | .15 | .64+ | .52+ | .22 | .19 |
| Usefulness | .23 | .42 | .34 | .24 | .29 | .60+ | .65+ | — | .57+ | .57+ | .48 | .23 |
| Success | .29 | .47 | .32 | — | .13 | .63+ | .17 | — | .19 | .47 | — | .19 |
| Interest | .36 | .67+ | .24 | .32 | .46 | .77+ | .59+ | .15 | .79+ | .67+ | .60+ | .45 |
| Caring | — | .55+ | .41 | — | .48 | .64+ | .57+ | .31 | .32 | .49 | .60+ | .45 |

Notes. The course numbers (“Course no.”) represent the following courses: 5 = Biological Systems Engineering, 6 = Environmental Science, 7 = Geography, and 8 = Human Development. Cohen’s (1988) criteria is indicated as follows: bold numbers with the “+” indicate a large effect size (.50 or greater), bold numbers without the “+” indicate a medium effect size (.30 to .49), and numbers not in bold indicate a small effect size (.10 to .29). Statistically insignificant values are not included in the table.

Discussion

The primary purpose of this study was to investigate the relationships between students’ perceptions of the MUSIC model components and their behavioral engagement in a variety of college courses. A secondary purpose was to examine the relationships between students’ perceptions of the MUSIC model components and their overall instructor and course ratings. These relationships were examined at the same time in Study 1 and over time in Study 2.

College students’ perceptions of the MUSIC model components (i.e., empowerment, usefulness, success, interest, and caring) were significantly related to their effort in their courses. Of the 20 correlations (for the five MUSIC components in four classes) between the MUSIC model components and effort tested at the same time (Study 1), six correlations were insignificant, seven had a small effect size, six had a medium effect size, and one had a large effect size using Cohen’s (1988) criteria (see Table 4). A similar trend was noted when students’ MUSIC perceptions near the middle of the course were correlated with their effort perceptions near the end of the course (Study 2). For these 20 correlations (see Table 6), three correlations were insignificant, seven had a small effect size, eight had a medium effect size, and two had a large effect size. In examining the results for effort across the five MUSIC model components for all eight courses (Study 1 and Study 2), usefulness and interest appear to be more highly correlated with effort than the other MUSIC components; but, a clear pattern does not emerge (see Tables 3 and 4), indicating that all five MUSIC components are correlated with effort to some extent. These findings provide evidence that students’ perceptions of empowerment, usefulness, success, interest, and caring are correlated with their effort in courses, thus providing empirical evidence for part of the MUSIC model theory.

In Study 1 and Study 2, all five MUSIC model perceptions were significantly correlated with instructor rating in all eight courses (see Tables 4 and 5). The exception was in Course 4 (Human Development), shown in Table 5, for which the correlations between usefulness and instructor rating, and between success and instructor rating, were insignificant. But the overall patterns of correlations between the MUSIC perceptions and instructor ratings indicate that (for the eight courses) 28 of the 40 correlations (70%) were of a medium or large effect size.

For Study 1 and Study 2, All five MUSIC model perceptions were also significantly correlated with course rating in all eight courses (see Tables 4 and 5), with only one exception (success was not significantly correlated with course rating in the Geography course). The overall pattern of correlations between the MUSIC perceptions and course ratings indicate that (for the eight courses) 32 of the 40 correlations (80%) were of a medium or large effect size.

I examined the results in Tables 3 and 4 to assess whether some of the MUSIC model components were better predictors of instructor or course ratings, but no clear patterns emerged. However, the highest correlations (greater than .80) were found between caring and instructor rating (for Courses 3 and 4 in Table 3), between empowerment and course rating (Course 3 in Table 3), and interest and course rating (for Courses 1, 2, and 3 in Table 3). Although it may be tempting to conclude that caring, empowerment, and/or interest are more important than the other MUSIC model components in predicting instructor and course ratings, such a conclusion is likely incorrect. The MUSIC model components are correlated with one another to some extent (see Jones & Skaggs, 2016); therefore, some of the other MUSIC model components (usefulness, and success) may play important roles in students' perceptions of caring, empowerment, and/or interest by affecting them in some way. For example, if an instructor were to explain the usefulness of the content to students, it may increase students' interest in the course. As another example, if an instructor were to help students to believe that they could be successful, it may increase their perception that the instructor is caring. Further research is needed to investigate the complex interactions among the MUSIC model components within different types of courses.

In many cases, but not all, the correlations between the MUSIC components and the other variables were higher when they were measured at the same time (Table 3) than when the other variables were measured at a later time (Table 4). Yet, the correlations remained high, even over time, between the MUSIC components and the other variables when the other variables were measured later in the semester. This finding indicates that these relationships persist and that students' MUSIC perceptions throughout the course are related to their effort and instructor and course ratings later in the course.

Implications

This study makes an important contribution to the MUSIC[®] Model of Motivation theory by providing evidence that students' perceptions of the MUSIC model components are significantly related to their engagement in college courses. It provides evidence that when students in college courses believe that they are empowered, find the content useful, believe that they can succeed, are interested in the coursework, and feel cared for by the instructor, they are more likely to engage in the course. From a practical perspective, these findings are important because students' MUSIC model perceptions can be linked directly to categories of motivational strategies. Consequently, instructors who want to increase students' effort can consider strategies related to the MUSIC model (see Jones, 2009, 2018, for examples of strategies). The MUSIC model strategies may also be useful to instructors interested in improving their instructor and course ratings given that the MUSIC model components are correlated with these ratings.

In sum, instructors who want to increase students' effort, instructor ratings, and course ratings should consider strategies consistent with the MUSIC model. I provide a brief list of the many possible strategies here; these ideas are based on the strategies provided in Jones (2018). To increase students' perceptions of empowerment, instructors can give students choices within assignments (e.g., allowing students to post a message in an online discussion forum and respond

to three classmates of their choice) or allow students to choose the topic of their assignment (e.g., select a topic for their paper related to the course content). Other empowering strategies include using learner-directed approaches, such as problem-based or project-based learning, inquiry approaches, or case studies that require students to make decisions as they complete the assignments.

To increase students' perceptions of usefulness, instructors can explain how the content relates to students' lives. For example, at the beginning of each assignment, the instructor can explain (verbally or in writing), how the assignment will benefit them or be useful to them in the future. Instructors can also ask students to tell one another why they find particular aspects of the course useful to them (McGinley & Jones, 2014).

There are many ways to increase students' perceptions that they can succeed in a course. Some of these strategies involve instructors helping students to understand how to study in their class (e.g., watch the online video first, read the textbook, and then answer the practice questions) or having students share with each other strategies that have helped them to be successful. Other strategies involve providing prompt and detailed feedback on students' assignments and/or allowing students to re-do assignments when they do poorly. Providing frequent opportunities, through quizzes or assignments, for students to obtain feedback helps students to know whether they are learning the material as expected or not.

Creating interest in class and coursework involves catching and holding students' attention. Doing so may involve piquing their curiosity or getting them emotionally involved. Instructors can accomplish these goals in many ways, such as by providing surprising information about the content, introducing contradictions (e.g., showing them that a light object falls at the same rate as a heavy object), or presenting controversies in the discipline. Making class enjoyable by playing content-related games or participating in other activities can also increase students' interest.

Finally, instructors can promote a sense of caring by being approachable and relatable to students. Ensuring that students feel respected by the instructor and other students in the class can also promote a culture of caring. Instructors can directly tell students they care about their learning and demonstrate their caring by being available for questions and/or helping them with their difficulties.

Limitations

Although this study includes eight different courses from a variety of academic disciplines, not all subject areas were represented, which is a limitation. Furthermore, these courses were taught mostly at one university, which may limit the generalizability of the findings to other types and locations of universities. Future studies could include other types of courses (such as those in the humanities) and other types of higher education institutions from different geographical locations.

Another limitation is that this study examines correlations between variables, and correlation does not imply causation. Therefore, this study does not prove that higher perceptions of the MUSIC model components *caused* an increase in students' effort. One way to test for causation would be to design an experiment in which one or more of the MUSIC model components are manipulated and then measure the effects on effort. In fact, researchers have conducted these types of experiments with some, but not all, of the MUSIC model components in a few studies and achieved success (see Lazowski & Hulleman, 2016).

Conclusion

The findings from this study provide evidence that students' perceptions of the MUSIC model components are related to their behavioral engagement, as predicted by the MUSIC® Model of Motivation theory (Jones, 2018). Furthermore, students' MUSIC perceptions are significantly correlated with their ratings of their instructors and courses. Moreover, these relationships existed when the variables were measured at the same time and when the MUSIC perceptions were measured prior to measuring effort and instructor and course ratings.

References

- Atkinson, J. (1964). *An introduction to motivation*. Princeton, NJ: Van Nostrand.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497-529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Chittum, J., & Jones, B. D. (2017). Identifying pre-high school students' science class motivation profiles to increase their science identification and persistence. *Journal of Educational Psychology*. Advance online publication. <https://doi.org/10.1037/edu0000176>
- Chittum, J. R., Jones, B. D., & Carter, D. M. (2019). A person-centered investigation of patterns in college students' perceptions of motivation in a course. *Learning and Individual Differences*, *69*, 94-107. <https://doi.org/10.1016/j.lindif.2018.11.007>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Covington, M. V. (1992). *Making the grade: A self-worth perspective on motivation and school reform*. New York: Cambridge University Press. <https://doi.org/10.1017/CBO9781139173582>
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: HarperPerennial.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press. <https://doi.org/10.1007/978-1-4613-4446-9>
- 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)* (pp. 237-288). Lincoln: University of Nebraska Press.
- Duffy, E. (1957). The psychological significance of the concept of "arousal" or "activation." *The Psychological Review*, *64*(5), 265-275. <https://doi.org/10.1037/h0048837>
- Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Francisco, CA: Freeman.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59-109. <https://doi.org/10.3102/00346543074001059>
- Griffin, B. W. (2016). Perceived autonomy support, intrinsic motivation, and student ratings of instruction. *Studies in Educational Evaluation*, *51*, 116-125. <https://doi.org/10.1016/j.stueduc.2016.10.007>

- Hansen, M. C., Jones, B. D., Eack, S. M., Glenthoj, L. B., Ikezawa, S., Iwane, T., ...Medalia, A. (2019). Validation of the MUSIC Model of Motivation Inventory for use with cognitive training for schizophrenia spectrum disorders: A multinational study. *Schizophrenia Research*, 206, 142-148. <https://doi.org/10.1016/j.schres.2018.11.037>
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111-127. https://doi.org/10.1207/s15326985ep4102_4
- 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.
- Jones, B. D. (2017a). *Relationships between students' course perceptions and effort*. Unpublished manuscript, School of Education, Virginia Tech, VA.
- Jones, B. D. (2017b). *User guide for assessing the components of the MUSIC® Model of Academic Motivation*. Retrieved from <http://www.theMUSICmodel.com>
- Jones, B. D. (2018). *Motivating students by design: Practical strategies for professors* (2nd ed.). Charleston, SC: CreateSpace.
- Jones, B. D., Byrnes, M. K., & Jones, M. W. (2019). Validation of the MUSIC Model of Academic Motivation Inventory: Evidence for use with veterinary medicine students. *Frontiers in Veterinary Science*, 6(11), 1-9. <https://doi.org/10.3389/fvets.2019.00011>
- Jones, B. D., Li, M., & Cruz, J. M. (2017). A cross-cultural validation of the MUSIC® Model of Academic Motivation Inventory: Evidence from Chinese- and Spanish-speaking university students. *International Journal of Educational Psychology*, 6(1), 366-385. <https://doi.org/10.17583/ijep.2017.2357>
- Jones, B. D., & Sigmon, M. L. (2016). Validation evidence for the elementary school version of the MUSIC® Model of Academic Motivation Inventory. *Electronic Journal of Research in Educational Psychology*, 14(1), 155-174. Retrieved from <http://dx.doi.org/10.14204/ejrep.38.15081>
- Jones, B. D., & Skaggs, G. E. (2016). Measuring students' motivation: Validity evidence for the MUSIC Model of Academic Motivation Inventory. *International Journal for the Scholarship of Teaching and Learning*, 10(1). Retrieved from <http://digitalcommons.georgiasouthern.edu/ij-sotl/vol10/iss1/7>
- Jones, B. D., & Wilkins, J. L. M. (2013). Testing the MUSIC Model of Academic Motivation through confirmatory factor analysis. *Educational Psychology: An International Journal of Experimental Educational Psychology*, 33(4), 482-503. <https://doi.org/10.1080/01443410.2013.785044>
- Kauffman, D. F., & Husman, J. (2004). Effects of time perspective on student motivation: Introduction to a special issue. *Educational Psychology Review*, 16(1), 1-7. <https://doi.org/10.1023/B:EDPR.0000012342.37854.58>
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York, NYC: Guilford Press.
- Krapp, A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. *Learning and Instruction*, 15, 381-395. <https://doi.org/10.1016/j.learninstruc.2005.07.007>

- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation interventions in education: A meta-analytic review. *Review of Educational Research*, 86(2), 602-640.
<https://doi.org/10.3102/0034654315617832>
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57, 705-717.
<https://doi.org/10.1037/0003-066X.57.9.705>
- Marsh, H. W. (1990). A multidimensional, hierarchical self-concept: Theoretical and empirical justification. *Educational Psychology Review*, 2, 77-172.
<https://doi.org/10.1007/BF01322177>
- McGinley, J., & Jones, B. D. (2014). A brief instructional intervention to increase students' motivation on the first day of class. *Teaching of Psychology*, 41(2), 158-162.
<https://doi.org/10.1177/0098628314530350>
- Mohamed, H. E., Soliman, M. H., & Jones, B. D. (2013). A cross-cultural validation of the MUSIC Model of Academic Motivation and its associated inventory among Egyptian university students. *Journal of Counseling Quarterly Journal*, 36, 2-14.
- Noddings, N. (1984). *Caring: A feminine approach to ethics and moral education*. Berkeley: University of California Press.
- Pace, A. C., Ham, A.-J.L., Poole, T. M., & Wahaib, K. L. (2016). Validation of the MUSIC® Model of Academic Motivation Inventory for use with student pharmacists. *Currents in Pharmacy Teaching & Learning*, 8, 589-597. <https://doi.org/10.1016/j.cptl.2016.06.001>
- Parkes, K., Jones, B. D., & Wilkins, J. (2017). Assessing music students' motivation using the MUSIC Model of Academic Motivation Inventory. *UPDATE: Applications of Research in Music Education*. Advance online publication. <https://doi.org/10.1177/8755123315620835>
- 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.
<https://doi.org/10.1111/j.1467-6494.1985.tb00375.x>
- Reeve, J., & Lee, W. (2014). Students' classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology*, 106(2), 527-540.
<https://doi.org/10.1037/a0034934>
- Schram, A. B., & Jones, B. D. (2016). A cross-cultural adaptation and validation of the Icelandic version of the MUSIC Model of Academic Motivation Inventory. *Icelandic Journal of Education*, 25(2), 159-181.
- Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research. *Educational Psychology Review*, 13(1), 23-52.
<https://doi.org/10.1023/A:1009004801455>
- Schunk, D. H., Meece, J. L., & Pintrich, P. R. (2014). *Motivation in education: Theory, research, and applications*. Columbus, OH: Pearson.
- Schunk, D. H., & Pajares, F. (2005). Competence perceptions and academic functioning. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 141-163). New York, NY: Guilford.
- Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, 71(2), 549-570.
<https://doi.org/10.1037/0022-3514.71.3.549>

- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*, 493-525. <https://doi.org/10.1177/0013164408323233>
- Wentzel, K. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding students' academic success. *Journal of Educational Psychology, 91*, 76-97. <https://doi.org/10.1037/0022-0663.91.1.76>
- Wentzel, K. R., & Wigfield, A. (Eds.). (2009). *Handbook of motivation at school*. New York, NY: Routledge. <https://doi.org/10.4324/9780203879498>