Brief Measure of Student-Instructor Rapport Predicts Student Success in Online Courses

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At all educational levels, researchers show a positive link between student-teacher rapport and student outcomes. However, few scales have been developed to measure rapport at the university level and no study has examined the link between student-instructor rapport and objective measures of student learning in online courses. We developed a brief, 9-item rapport scale, the Student-Instructor Rapport Scale-9 (SIRS-9), and administered it, along with an existing "connectedness" scale, to university students taking online courses. Student outcome measures included three course evaluation questions and student's final course grade. Results support the internal consistency, concurrent validity, and predictive validity of SIRS-9 scores. The research and practical usefulness of the SIRS-9 are discussed.

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At all educational levels, researchers show a positive link between student-teacher rapport and student outcomes. However, few scales have been developed to measure rapport at the university level and no study has examined the link between student-instructor rapport and objective measures of student learning in online courses. We developed a brief, 9-item rapport scale, the Student-Instructor Rapport Scale-9 (SIRS-9), and administered it, along with an existing "connectedness" scale, to university students taking online courses. Student outcome measures included three course evaluation questions and student's final course grade. Results support the internal consistency, concurrent validity, and predictive validity of SIRS-9 scores. The research and practical usefulness of the SIRS-9 are discussed.

Introduction

Student learning in the classroom is the result of many factors that interact in complex ways. One of those many factors involves the degree of personal connection that a student feels toward the teacher. In fact, much of the research, particularly at K-12 levels of education, suggests that student-teacher rapport is one of the most important factors in student success (Hattie, 2009; Juvonen, 2006; Wentzel, 2009; Wigfield, Cambria, & Eccles, 2012). Although fewer researchers have examined the learning factor at the university level, evidence suggests that student-instructor rapport is also one of the most important factors in this setting (Benson, Cohen, & Buskist, 2005; Buskist & Saville, 2001; Buskist, Sikorski, Buckley, & Saville, 2002; Lowman, 1994; Wilson & Ryan, 2013). An ongoing trend at universities is the increased prevalence of distance education via online courses. In the United States alone, over six million university students take at least one online course, representing almost one-third of all university students (Allen & Seaman, 2011). The purpose of the present study is to evaluate a new brief measure of student-instructor rapport and its relationship with academic success in online courses.

The concept of student-instructor rapport encompasses a variety of attitudes and behaviors. In one study (Benson, Cohen, & Buskist, 2005), students described characteristics of instructors with good rapport as encouraging, open-minded, creative, interesting,

accessible, happy, having a good personality, creating class discussion, approachable, concerned, and fair. Studies suggest that rapport is aided when the instructor engages in immediacy behaviors (Creasey, Jarvis, & Gadke, 2009; Wilson, Ryan, & Pugh, 2010). These behaviors include both verbal and nonverbal acts that communicate interest, concern, caring, and encouragement. Murphy and Rodriguez-Manzanares (2012) organized instructor characteristics that build rapport into more general categories of "Disclosure, honest, and respect", "Recognizing the person/individual", "Interacting socially", "Caring and bonding", "Supporting and monitoring", "Sharing, mirroring, mimicking, matching", "Availability, accessibility, and responsiveness", and "Communicating effectively" (pp. 172-173).

Studies of student-instructor rapport in traditional university courses have generally found a positive correlation between rapport and positive student outcomes. These positive outcomes include greater orientation toward achievement (Creasey, Jarvis, & Gadke, 2009), lowered test anxiety (Creasey, Jarvis, & Knapcik, 2009), better class attendance (Benson et al., 2005; Buskist & Saville, 2001; Wilson & Ryan, 2013), improved attention in class, more studying, higher levels of enjoyment in class, more contact with the instructor, greater likelihood of taking the instructor for future courses (Benson et al., 2005; Buskist & Saville, 2001), better cognition, more learning, higher productivity (Wilson et al., 2011), higher perceived course grade, higher actual course grade, higher motivation, better attitude toward the course, and better instructor evaluations (Wilson, 2006; Wilson & Ryan, 2013). One study asked instructors to list the outcomes of positive student-instructor rapport (Granitz, Koernig, & Harich, 2009). Outcomes included task success, higher motivation, more comfort, perceptions of quality, student satisfaction, and higher evaluations. It is important to note that these studies show a predictive relationship between rapport and positive student outcomes but that none manipulated rapport to establish a causal relationship.

Because university courses taught online offer far fewer opportunities for face-to-face interaction between students and instructors, they pose a particular challenge in the establishment of student-instructor rapport. In fact, this is often the primarily criticism leveled against online courses (Allen, Seaman, Lederman, & Jaschik, 2012; Sher, 2009). Those who offer suggestions for building rapport in online courses emphasize that the effort must be more deliberate (Murphy & Rodriguez-Manzanares, 2012) and focus on tools of technology including an introductory video, online discussions (Helms et al., 2011), welcoming e-mail, prompt response to e-mails, and sending e-mails throughout the course (Sull, 2006).

Relatively few studies have assessed the relationship between student-instructor rapport in online courses and student success. These studies can be organized into two types: those with data collected from students and those with data collected from teachers. In the first category, Sher (2009) asked students to rate the degree to which the instructor interacted with them and provided personal feedback. Results showed that higher scores on this five-item scale correlated positively with student's perceived learning and satisfaction in the course. Another study showed a positive correlation between instructional design, instructional organization, and instructor feedback and student's perceived success in the course (Kupczynski, Ice, Wiesenmayer, & McCluskey, 2010).

Other studies collected data from teachers to assess the link between student-instructor rapport and student success. Murphy and Rodriguez-Manzanares (2012) interviewed Canadian high school teachers who taught online courses. Results showed that teachers believed that building rapport was important, that technology was necessary but also posed

limitations, and that building rapport could be accomplished in many ways. Based on teacher responses, the authors generated six categories of rapport characteristics that included "Recognizing the person/individual", "Supporting and monitoring", "Availability, accessibility, and responsiveness", "Non text-based interactions", "Tone of interactions", and "Non-academic conversation/interaction" (p. 177). Granitz et al. (2009) examined the perceptions of business faculty regarding critical antecedents to rapport and perceived outcomes of rapport. They found that rapport was based on approachability, trust, mutual openness, accessibility, respect, caring, being positive, empathy, status similarity, and values similarity. Perceived outcomes included task success, higher motivation, comfort, perceptions of quality, student satisfaction, and better instructor evaluations.

Research clearly shows that student-instructor rapport is an important factor in the classroom at all levels of education. In higher education, the prevalence of online courses continues to grow, along with challenges for adapting pedagogy to the online learning environment (see Moore & Kearsley, 2012 for a comprehensive discussion). One of those challenges centers around the issue of student-instructor interaction. Recent studies on student-instructor rapport note the need for more research to examine the role of rapport in online courses (Murphy et al., 2012; Wilson, Wilson, & Legg, 2012; Wilson & Ryan, 2013). Among the few studies that have been done, only one has examined the relationship between student-instructor rapport and an objective measure of student learning (Wilson & Ryan, 2013) and none has examined this relation in online courses.

Only a few scales have been developed to measure student-instructor rapport. These include the 36-item Student-Instructor Relationship Scale (SIRS) (Creasey, Jarvis, & Knapcik, 2009) with an 11-item Connectedness subscale and the 34-item Professor-Student Rapport Scale (Wilson et al., 2010). The present study examines the psychometric properties of scores for a new 9-item scale, the Student-Instructor Rapport Scale-9 (SIRS-9; Lammers, 2012) within the context of online classes. Internal consistency, factorial (construct) validity, and concurrent validity of the Student-Instructor Rapport Scale-9 will be reported. In addition, the unique variance due to SIRS-9 scores, relative to scores from the Connectedness subscale of the SIRS-36, to the prediction of student grades and student course evaluations will be investigated. We hypothesize that both scales will show predictive validity regarding student perceptions of the course and an objective measure of learning. Specifically, student's perception of student-instructor rapport in an online course will predict student perceptions of course quality and student learning in that course as measured by final course grade.

Method

Participants
Undergraduate and graduate students at a medium-sized state university in the mid-South volunteered to participate (N = 138; 14 men, 124 women, median age = 22). Researchers contacted participants via their online course instructors. Students in undergraduate (N = 76; 9 men, 67 women) and graduate courses (N = 62; 5 men, 57 women) taught by 11 different instructors participated in an online survey and consented to have their final course grade provided to the researchers. To encourage participation, some instructors offered extra credit and all participants were entered into a drawing for a $50 gift certificate.

Materials
Student-Instructor Rapport Scale-9 (SIRS-9; Lammers, 2012)
The first author developed the 9-item rapport scale based on review of rapport scales in a variety of settings (teacher-child, instructor-student, therapist-client, married couple, employer-employee). The instructions and items were as follows:

> Reflect upon your personal interaction and observations in this class thus far. Evaluate these questions on a scale from one to five, one being "not at all" and 5 being "very much so":

1. Your instructor understands you.
2. Your instructor encourages you.
3. Your instructor cares about you.
4. Your instructor treats you fairly.
5. Your instructor communicates effectively with you.
6. Your instructor respects you.
7. Your instructor has earned your respect.
8. Your instructor is approachable when you have questions or comments.
9. In general, you are satisfied with your relationship with the instructor.

Student-Instructor Relationship Scale (SIRS; Creasey, Jarvis, & Knapcik, 2009)
The 11-item Connectedness Subscale of the SIRS (SIRS-Connectedness) was also used to assess the rapport between student and instructor. The SIRS contains 36-items with two subscales, Connectedness and Anxiety. For this study, only data from the 11-item Connectedness subscale were used. Previous reports using the SIRS show test-retest reliability of the Connectedness subscale at r = .69 and internal consistency of the entire scale at α = .89 to .92 (Creasey, Jarvis, Knapcik, 2009; Creasey, Jarvis, & Gadke, 2009). The estimate of internal consistency for the Connectedness subscale in the current sample was α = .89.

Course Evaluation
Overall course rating was assessed by computing the mean of three items concerning student perceptions of the course and instructor. These items included, "how much did you learn?" (*1 = very little, 5 = a great deal*); "instructor teaching ability?" (*1 = poor, 5 = exceptional*), and "rating of course in general?" (*1 = poor, 5 = exceptional*). The estimate of internal consistency (Coefficient alpha) for this composite score was .86.

Procedure
During the last three weeks of two different semesters, researchers contacted instructors for all undergraduate and graduate, semester-based, online courses at the University. We asked instructors to assist with the study by sending an e-mail to all of their students that included a link to an online survey. The online survey provided consent, assessed the variables described in the Materials section, and provided debriefing. Researchers sent a file with participant identification numbers to respective instructors and they returned the file with final course grades (out of 100%) included.

Results

To evaluate the factor structure of the SIRS-9, confirmatory factor analysis (CFA) was conducted using AMOS 17.0.2 (Arbuckle, 2008). Specifically, we tested the fit of the proposed, one-factor model. Selection and use of fit indices were based on recommendations by Jackson, Gillaspy, and Purc-Stephenson (2009). The one-factor model yielded excellent model fit ($\chi2/df$ = 4.00, *CFI* = .94, *GFI* = .84, S*RMR* = .04) supporting the construct validity of the SIRS-9 with this sample. Table 1 shows the Factor pattern coefficients for the SIRS-9. Coefficient alpha for the 9-item scale was .95, indicating excellent internal consistency.

Table 1
Factor Pattern Parameter Estimates for One-Factor Model of the Student-Instructor Rapport Scale-9

Item	Estimate
1. Your instructor understands you.	.71
2. Your instructor encourages you.	.82
3. Your instructor cares about you.	.92
4. Your instructor treats you fairly.	.80
5. Your instructor communicates effectively with you.	.90
6. Your instructor respects you.	.84
7. Your instructor has earned your respect.	.93
8. Your instructor is approachable when you have questions or comments.	.87
9. In general, you are satisfied with your relationship with the instructor.	.93

To examine the concurrent validity of SIRS-9 scores, bivariate correlations were computed with the SIRS-Connectedness subscale, final course grade, and course evaluation. Table 2 presents the means and standard deviations for and correlations among these variables.

Table 2
Means and Standard Deviations for and Correlations between Measures of Student-Instructor Rapport, Course Grade, and Teaching Evaluation

Variable	*M*	*SD*	α	1.	2.	3.
1. SIRS-9	4.23	.81	.95			
2. SIRS-Connectedness	5.21	1.07	.89	.77**		
3. Course Evaluation	3.84	.825	.86	.70**	.66**	
4. Course Grade	86.25	11.37		.26**	.23**	.33**

Note: *N* = 137. SIRS-9 = Student-Instructor Rapport Scale-9; SIRS-Connectedness = Student Instructor Relationship Scale-Connectedness subscale.
**p < .01

The moderate to strong correlation between SIRS-9 and SIRS-Connectedness (59% shared variance) provides evidence of construct validity. Correlations between each rapport scale and outcome measures (course evaluations and course grades) provide evidence of predictive validity. Specifically, SIRS-9 and SIRS-Connectedness related to course evaluations (r = .70 and .66, respectively) and course grade (r = .26 and .23, respectively). The lower correlations with course grade could be due to restriction of range of graduate student grades (range = 41.31) compared to undergraduate grades (range = 64.91). Correlations with undergraduates only (n = 76) provided r = .40 (SIRS-9) and r = .37 (SIRS-Connectedness).

To determine the amount of variance in student grades and course evaluations unique to the SIRS-9 and SIRS-Connectedness, we conducted two parallel hierarchical multiple regression analyses. In each series, we computed separate equations for each of the criterion variables (course grade and course evaluation). The SIRS-9 and SIRS-Connectedness scores served as predictor variables. The first series of multiple regressions (Series 1) evaluated the unique variance attributable to SIRS-9 scores. In this series SIRS-Connectedness scores were entered in Step 1 and SIRS-9 scores in Step 2. The entry of SIRS-Connectedness and SIRS-9 was then reversed in Series 2, which assessed the unique contribution of SIRS-Connectedness. Results of the two series of multiple regressions are presented in Table 3. As seen in Table 3, SIRS-9 scores significantly predicted course evaluation ratings after controlling for SIRS-Connectedness scores (Step 2 of Series 1, ΔR^2 = .08, p < .001). SIRS-Connectedness scores also contributed unique variance after controlling for SIRS-9 scores (Step 2 of Series 2, ΔR^2 = .04, p < .01). In terms of predicting grades, entry of SIRS-9 or SIRS-Connectedness scores in the second step significantly improved the equation (4% for SIRS-9 and 1% for SIRS-Connectedness). Taken together, results of these two series of regression analyses suggest that SIRS-9 scores are as associated or slightly more related to grades and course evaluations than SIRS-Connectedness scores. These findings add further support to the concurrent validity of SIRS-9 scores and the ability of this brief rapport scale to predict student outcomes.

Table 3

Summary of Hierarchical Regression Analyses Predicting Grades and Course Evaluations using SIRS-9 and SIRS-Connectedness Subscale

	Grades (n = 76)												
	Series 1: Unique Effects of SIR-9							**Series 2: Unique Effects of SIRS-Connectedness**					
Step/Variable	R	R^2	ΔR^2	F Change	β	t	Step/Variable	R	R^2	ΔR^2	F Change	β	t
1. SIRS-Connectedness	.37	.14	.14	11.58	.37	3.40*	1. SIRS-9	.40	.16	.16	13.83	.40	3.72**
2. SIRS-9	.41	.17	.04	3.21	.27	1.80	2. SIRS-Connectedness	.41	.17	.01	1.26	.17	1.12
	Course Evaluation												
1. SIRS-Connectedness	.66	.44	.44	105.22	.66	10.26**	1. SIRS-9	.70	.48	.48	125.75	.70	11.22**
2. SIRS-9	.72	.52	.08	23.85	.45	4.88**	2. SIRS-Connectedness	.72	.52	.04	11.37	.31	3.38*

Note: N = 137 unless indicated. SIRS-9 = Student-Instructor Rapport Scale-9; SIRS-Connectedness = Student Instructor Relationship Scale-Connectedness.
 *p_< .01; **p_< .001.

Discussion

Results showed the consistency, concurrent validity, and predictive validity of SIRS-9, a brief 9-item student-instructor rapport scale and its usefulness in predicting student outcomes in online courses. These findings support all hypotheses. Previous studies show the positive links between student-teacher rapport and positive student outcomes, but this is the first to focus on an objective measure of student learning (course grade) in online courses.

Relatively few scales have been developed to specifically measure student-instructor rapport and the initial data for the SIRS-9 developed for this study are encouraging. This brief 9-item scale showed excellent internal consistency ($\alpha = .95$), strong concurrent validity with the SIRS-Connectedness subscale developed by Creasey, Jarvis, & Knapcik (2009), and strong predictive validity regarding student course evaluation (course quality, instructor quality, perceived learning) and student course grade.

Our findings replicate, in an online course, the positive correlation found in traditional courses between rapport and perceived learning (Granitz et al., 2009; Wilson et al., 2011; Wilson & Ryan, 2013) and between rapport and instructor evaluation (Granitz et al., 2009; Wilson, 2006; Wilson & Ryan, 2013). In informal discussions with faculty colleagues, diminished rapport is often a criticism of online education. Present findings support the notion that it is an important factor and that instructors should seek ways to enhance rapport with students. In general, these may include such strategies as learn names quickly, provide students with some level of control, show students that you care about them and their learning, treat students with respect, never put down a student with a negative comment, be approachable and available, treat all students equally, and have realistic expectations (for a similar list, see Buskist & Saville, 2001). Many of these are applicable in both traditional and online courses.

Given that rapport is an important component of teaching, it should be part of assessment in courses. The value of the SIRS-9 is that it is a very brief rapport scale. Instructors will more readily implement such an assessment because it is not an onerous task for students and, thus, students are likely to complete the nine questions in a thoughtful manner. Feedback from such an assessment can then be used to consider modifications to teaching strategies that may enhance rapport. Another recent report (Wilson & Ryan, 2013) showed the ability of six items from a 34-item rapport scale to predict several positive student outcomes. These items may provide the foundation for another brief rapport scale.

The goal to enhance rapport to increase student learning assumes a causal link between the two. Most research on student-instructor rapport and positive student outcomes involves correlational research designs. To support a causal link, future research should employ experimental designs with manipulations of variables directly related to rapport and subsequent measures of student learning. In such studies, the SIRS-9 can be used as a brief measure of rapport to verify manipulation of the independent variable. In addition to effective manipulation of rapport, the present study emphasizes the need for multiple measures of both subjective and objective measures of student learning. Our data regarding course grades as an objective measure of student learning also highlight the need to attend to restriction of range issues in scores. We found a relatively small range of course grades in graduate courses and this appeared to reduce the overall correlation between rapport and grades.

Most research on teaching and learning emphasizes the pedagogical techniques and strategies that are effective in student learning. Not to diminish the importance of such research, the present study once again emphasizes the need to understand how the social, relational dynamics of the student-instructor alliance may also play a significant role in student learning.

Conclusions/Recommendations

The SIRS-9 provides an effective tool to measure the rapport between students and instructors in online courses. It predicts the most common objective measure of student learning – final course grade. This finding supports other studies that establish a correlation between student-instructor rapport and several other positive student outcome measures. As such, consideration of the potential impact of this variable on teaching practices is warranted.

First and foremost, the primary recommendation is for further SoTL research. The SIRS-9, and other scales to measure rapport, should continue to be evaluated for reliability and validity. For example, rapport measured on one day should be very similar to rapport measured the next class period. Student-instructor rapport should be correlated with objective measures of student learning other than final course grades, including exam grades, writing assignments, and other assessments of learning that occur during a course.

After confidence is established with the rapport scale, it is critical that researchers investigate the potential causal connection between rapport and student outcome measures by manipulated rapport variables using experimental research designs. Researchers should consider the specific teacher behaviors that establish rapport and systematically manipulate them to determine their *effects* on student motivation, student learning, etc. For example, does learning student names quickly at the beginning of the semester and using those names result in higher student motivation and learning? This is an empirical question that can be answered and should be answered.

If and when specific teacher behaviors that increase rapport become causally linked to positive student outcomes, then the next set of recommendations becomes obvious. Engage in those behaviors to become a more effective teacher. Several strong candidates for these behaviors were mentioned earlier and many are relevant to those who teach online courses. They include:

- Shortly before the course begins, send a personal welcoming e-mail to each student in which you briefly introduce yourself, the course, and ask if they have any questions.
- Always communicate with individual students by using their names.
- Provide multiple means by which students can contact you.
- Make your availability to your students clear and more than reasonable.
- Provide some reasonable options in the course requirements and allow students to help shape those requirements.
- Make the course requirements reasonable and achievable for online students.
- Describe for students your rationale for each course requirement and how each is tied to a learning objective.
- Regularly communicate to your students that you care about them.
- Regularly communicate to your students that their learning is your top objective.

- Always treat students with respect and expect the same from them.
- Avoid negative comments. Consider ways to provide constructive criticism that emphasizes the positive potential.
- Treat all students equally and fairly. Don't play favorites.

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