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Secure Attachment Messaging (SAM) as a Learning Mechanism in a College Course

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Abstract: *The goal of the present study was to examine whether college students' learning would be impacted by an innovative teaching strategy—the presentation of Secure Attachment Messaging (SAM) during lecture. Students (N = 205) were presented with SAM every other week as part of the regular PowerPoint slides. At the end of each class, they completed a multiple-choice quiz. Their quiz responses were recorded using a student response system. We predicted that the SAM would enhance students' feelings of security, irrespective of their pre-existing attachment schemas, and thereby augment learning. Our hypothesis was statistically supported in that quiz scores were higher for days SAM were used versus not used in lecture. Students' overall percentage scores from the course were compared with three other sections of the same course in which SAM were not used. The percentages from the SAM course were significantly higher than the three other sections.*

Keywords: learning, priming; attachment theory, student response system

Grounded in attachment theory (Bowlby, 1988; Cassidy & Shaver, 2018), this paper investigates whether Secure Attachment Messaging (SAM) facilitates learning in a college course. SAM involves presenting people with words (e.g., love, bonding) and images (e.g., people embracing) designed to prompt feelings of security. The method has demonstrated promising results with college students in terms of reducing biases (Mikulincer & Shaver, 2007) but has yet to be examined as a means for enhancing learning. We extend prior work by testing SAM's effectiveness as an innovative teaching strategy that may enhance learning in higher education.

Literature Review

According to attachment theory, people develop relational schemas based on their early interactions with primary caregivers and these schemas guide interactions and outcomes throughout life (Bowlby, 1988; Cassidy & Shaver, 2018). There are four primary attachment styles: Secure, anxious/ambivalent, avoidant and fearful-avoidant. A secure style results from responsive, consistent care whereas insecure styles (anxious/ambivalent and avoidants) develop when parents are inconsistent or neglectful.

Attachment styles impact outcomes such as learning and academic achievement. When a child's attachment system is activated, they seek proximity to their caregiver and reduce their

exploration and learning (Bowlby, 1988; Fraley et al., 2013). Conversely, when no immediate threat is present, but the secure base is assured, an individual is likely to explore and learn from their environment. Individuals with insecure attachment styles lack a solid foundation with an attachment figure and therefore feel less open to exploration, which makes the acquisition of new information more difficult (Mikulincer, Shaver, & Rom, 2011). Mikulincer and colleagues (2011) found that when college students were prompted to think of someone supportive, their creative problem solving skills were enhanced, suggesting that mental representations of secure attachment figures may provide the support necessary to readily procure new information.

Mikulincer and Shaver (2007) further investigated whether secure priming might elicit positive outcomes for insecurely attached individuals. They proposed that a secure figure does not need to be physically present for individuals to experience benefits. To test their prediction, Mikulincer and Shaver (2007) exposed people of various attachment styles to images that reflected a secure style and found that college students on a racially charged campus responded more positively to out-group members when they had been primed with Secure Attachment Messaging (SAM). Their study demonstrated that secure priming can be used to reduce anxiety and bias, irrespective of pre-existing attachment style. We build on these findings and test the prediction that exposure to SAM in a college course will augment learning, irrespective of pre-existing attachment style.

Method

Participants

Data were collected during the spring term from one section of an upper division Race and Racism course at a Southern California university. Of the 280 students enrolled in the course, 50 were missing multiple data points and removed from the dataset, and 25 opted not to participate, resulting in a final sample of 205 individuals. Because the researcher was also the course instructor and participant anonymity was important, the Institutional Review Board (IRB) requested that student demographic information not be collected. However, the course roster indicated that students represented majors from each college and approximated the university population in terms of gender (60% women) and ethno-racial background (65% Hispanic/Latin, 15% European/White, 5% African American/Black, 5% Asian, 5% mixed race, and 5% Native American, Hawaiian/Pacific Islander, or other).

Procedure

The course instructor distributed the informed consent as part of the course syllabus and explained that study participation was voluntary and would involve responding to multiple-choice quiz questions at the end of each class, and that responses would be recorded anonymously. The study purpose was not disclosed to students until the end of the term. The IRB approved the deceptive study design provided students did not feel coerced to participate, were not required to report on their demographics, and were informed of the study purpose and results by the end of the term.

Data were not collected during the first or last week of class, yielding eight weeks of assessment. The instructor used PowerPoint slides for all lectures, and in alternating weeks, Secure Attachment Messaging (SAM) was shown between content slides. The SAM slides were displayed for five seconds and during each class session, a total of 7-10 SAM slides were shown. Multiple-choice quizzes were used to assess learning at the end of each class. Students used personal devices to input their responses using a response system called Top Hat Monocle. Students who did not have a personal device were offered a pay-as-you-go cell phone to text their responses.

Measures

Secure Attachment Messaging (SAM). The SAM shown in class consisted of PowerPoint slides with images of love/bonding (e.g., people embracing) and text (e.g., love, comfort). The content was based on attachment prompts described by Mikulincer and Shaver (2011) and designed to reflect a variety of security-enhancing contexts. Images were located on the Internet using keywords such as happy couple, friends embracing, and parent and child.

In-class learning. The instructor used data from previous sections of the course to identify multiple-choice questions that would represent comparable difficulty across the weeks. The instructor sorted quiz responses into two groups to represent days that SAM were shown versus not shown. Quiz responses were dummy coded with 1's to represent correct responses and 0's to represent incorrect responses. Average correct responses for each group were tabulated and compared.

Final percentages. The final percentages of students in the course, irrespective of whether they responded to the SAM prompts (N = 265) were computed and compared with final percentages from three different sections (N = 233; 265; 268) of the same Race and Racism course that did not incorporate SAM. The assessment methods were identical across all four sections of the course as were other conditions including the course instructor, the demographics of students, the lecture room, and the day and time the courses were offered.

Study Design

We used an experimental design with SAM prompts as the independent variable and student quiz scores as the dependent variable. The dependent variable was coded with "1" to represent correct quiz responses or "0" for incorrect responses.

Results

A paired samples t-test was used to compare mean scores for the multiple-choice quizzes for days that SAM were shown versus not shown in class (Cohen, 1988). The significance level for this test was set at .05. Students scores on their multiple choice quizzes for days that SAM were shown (M = .74, SD = .11) were statistically significantly higher than for days they were not shown (M = .62, SD = .12); $t(204) = 13.04$, $p \leq .001$; $d = 1.04$. The effect size (d = 1.04) exceeded Cohen's (1988) standard for a large effect (d =.80), indicating that the means differed by more than one standard deviation.

Students' final percentages in the course were compared with final percentages from three other sections of the same course that did not incorporate SAM. A one-way ANOVA identified statistically significant differences between the four groups, *Welch's* $F(3, 558.29) = 15.69$, $p < .001$, $\eta^2 = .048$. Games Howell post hoc comparisons were used (Sauder & DeMars, 2019) because the assumption of homogeneity of variances was not met as evidenced by *Levene's Test*: $F(3, 1027) = 6.74$, $p < .001$. An alpha level of .05 was used for all post hoc analyses. The comparisons demonstrated statistically significant differences between the SAM group and the other three groups: SAM (M = 86.70, SD = 9.84) vs. Comparison Group 1 (M = 79.81, SD = 13.37) mean difference = 6.88, $p <$ .001; Comparison Group 2 (M = 83.76, SD = 9.53) mean difference = 2.94, $p < .01$; and Comparison Group 3 (M = 82.62, SD = 10.28) mean difference = 4.08, $p < .001$.

Table 1. Games Howell post hoc comparisons for students' final percentages across four course sections.

				Games-Howell Mean Differences		
Group	*N*	Mean	*SD*	Comparison 1	Comparison 2	Comparison 3
SAM	265	86.70	9.84	6.88**	2.94**	4.08**
Comparison 1	233	79.81	13.37	---	-3.94*	-2.81*
Comparison 2	265	83.76	9.53	---	---	1.13
Comparison 3	268	82.62	10.28	---	---	---

Note. *$p < 0.01$, **$p < 0.01$.

Discussion

The purpose of this study was to examine whether secure attachment priming in a college classroom would facilitate learning of the course material. Overall, students scored significantly higher on multiple-choice quizzes during weeks that SAM were displayed compared to weeks that SAM were not displayed. We additionally compared the final percentages for four sections of the Race and Racism course and found significant differences with the SAM group scoring higher than every other group. Our results provide initial support for the positive influence of SAM on short-term learning in a college classroom setting and indicate that student performance may be enhanced in supportive, positive learning environments. Although we only examined in-person classes, it would be fruitful to investigate this topic in online contexts as well.

With respect to study limitations, we have thus far only implemented SAM in one type of course. It would be fruitful to examine its influence with a broader range of courses because outcomes may differ. Students may be less anxious or fearful in an Art class than they are in a Race and Racism or Statistics course (Dykeman, 2011), which could impact the perception and outcomes of SAM. We did not assess the participants' attachment styles because our goal was to examine the impact of SAM irrespective of pre-existing attachment styles; however in the future, researchers may wish to examine whether the effects of SAM differ based on the participants' pre-existing schemas. We hope future work might help fill the remaining knowledge gaps.

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