



Separate worlds: The influence of seating location on student engagement, classroom experience, and performance in the large university lecture hall



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ABSTRACT

The purpose of this study was to examine the influence of students' seating location in a large, lecture-style university course on student engagement, attention, classroom learning experience, and course performance. Participants ($N = 407$) were students in two cohorts of an undergraduate financial accounting course at a large university in the United States. They participated in the Experience Sampling Method measuring their self-reported seating location, engagement, attention, and other experiential dimensions throughout the one-semester course. Results showed that students reported lower engagement, attention, and quality of classroom experience when sitting in the back of the classroom than when sitting in the middle or front. Those sitting in the back of the classroom most of the time also received lower course grades. Engagement, attention, and other experiential factors mediated the influence of seating location on course grade. Multilevel models revealed both within-student and between-student effects of seating on classroom experience.

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1. Introduction

A considerable portion of university classes are large lecture classes (Armstrong & Chang, 2007). Most instructors would readily admit that it is difficult to connect with all students in these classes. Those who sit in back may be particularly hard to reach. They may appear to be disengaged, doing activities unrelated to class, or socializing. Meanwhile, students in the front of the classroom may respond to questions and make comments more frequently. This raises the question as to if seat location may affect students' engagement, attention, quality of classroom experience, and performance in the course.

The literature is suggestive of an effect of seating location on

engagement, attitudes and participation (Montello, 1988). Possible reasons include the belief that it is easier to see and hear the instructor; that proximity to the instructor can encourage attention, engagement, and greater participatory behavior; and that mutual favorability between the instructor and front-sitting students can develop (Meeks et al., 2013). However, findings of the effect of seating on performance are decisively mixed, with some studies finding an impact of seating proximity (e.g., sitting in the front vs. back of the room) on course grades (e.g., Benedict & Hoag, 2004; Perkins & Wieman, 2005), and others finding little or no relationship (Armstrong & Chang, 2007; Kalinowski & Taper, 2007). To the extent that there are effects of seating, the preponderance of the evidence suggests that front and center seats facilitate positive attitudes, participation and better performance. However, it is difficult to disentangle the causal mechanism(s) from self-selection, or the possibility that higher performing students may prefer and select seats close to the front, while lower performing students or those with lower self-esteem in the class prefer seats close to the back of the classroom.

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1.1. The present experience sampling study

The Experience Sampling Method (ESM) can help to illuminate the black box of students' actual, momentary experience of the class when sitting in the back, middle or front of the classroom. The ESM is a time- and context-dependent method of measuring subjective experiences at the moment of instruction. In ESM studies, participants complete brief surveys about their immediate environment, thoughts, and feelings several times in succession over the period of time studied (Hektner, Schmidt, & Csikszentmihalyi, 2007). Thus, it can allow insight into students own perceptions about their engagement, attention, and other aspects of experience during classroom instruction.

We attempted to illuminate the issue of selection effects by utilizing multilevel models separating within- and between-student effects: within-student effects would not be attributable to seating preference, personality, or other between-student differences. When effects on performance have been found, students' engagement, attention, and other experiential variables are frequently surmised to mediate the relationship between seating and performance. We therefore sought to utilize mediational models explicitly testing engagement and experiential factors as a potential mediator of the influence of seating on performance.

1.2. The influence of seating location on student performance and experience

1.2.1. Seat location and performance

Taking up the issue of seat location and performance as part of a larger investigation of classroom ecology, researchers in the 1960s through the early 1990s found that students sitting in the front and center of a classroom generally outperformed those sitting farther back and to the sides (e.g., Becker, Sommer, Bee, & Oxley, 1973; Brooks & Rebata, 1991; Levine, Oneal, Garwood, & McDonald, 1980). Two mechanisms were proposed to explain the differences: a variety of classroom advantages such as those describe above, and the proposition that those sitting in front were a self-selected group as also described above.

Studies since the 1990s have been mixed in their findings. Perkins and Wieman (2005) found that students randomly assigned to sit in the back of the classroom at the beginning of the year attended fewer classes and had lower test scores than those sitting in the front. Moreover, these differences persisted even when seats were reassigned halfway through the course and the same students were moved to the front. Studying students in large lecture economics courses, Benedict and Hoag (2004) found that sitting in the back of the classroom increased the probability of getting a D or F by 23%. In contrast to the study by Perkins and Wieman (2005), however, they found that forcing students forward during the course overrode the negative effect of an initial preference for a back seat, and increased the probability of getting an A or B by 33.5% and 8.5%, respectively. Vander Schee (2011) found that seat selection had no correlation with GPA, but did predict performance in the course. Overall, these studies suggested that seat location can influence course performance.

Other studies have found little or no effect whatsoever. Armstrong and Chang (2007) found a correlation between seat location and test scores in seven out of 20 large enrollment classes, with 6 out of 7 correlations positively relating proximity to the instructor with test scores. However, the relationship was reported to be weak, accounting for less than 7% of the variation in scores. Meeks et al. (2013) collected data over a 10-year period from 1138 undergraduate senior business students during a capstone course, and found that performance was not altered by seating type. In addition to the mixed findings, it remains unclear as to whether

effects found are due to classroom factors such as attention or engagement to learn class materials associated with seating proximity; the motivation, interest, self-esteem, or positive personality traits of students as they make seating selections; or some combination thereof (Kalinowski & Taper, 2007).

1.2.2. Influence of seating on motivation, engagement, and attention

Millard and Stimpson (Millard & Stimpson, 1980) randomly assigned introductory psychology students ($n = 43$) and found no effects of seating location on multiple choice tests results and grades after two weeks, but did find that increasing distance was related to decreases in self-reported enjoyment, interests, motivation, and feelings of inclusiveness. Kinarthy (1975) found that students sitting in front were rated by both other students and the teacher as being more attentive and liked by the teacher. Burda and Brooks (1996) showed that students near the front indicate higher levels of motivation on self-description scales, concluding that pre-existing personality traits drive motivated students to select seats near the front of the classroom, while students selecting back seats may be more passive, feeling more comfortable sitting a far distance from the instructor to guarantee less interaction. Indeed, students in the back of the class have been observed to disengage from the class and not attend to the lecture while going relatively undetected (Kalinowski & Taper, 2007). Studies using random or alphabetical seating assignment have found higher participation among students sitting toward the front or in the center than those sitting in the back or toward the sides (e.g., Levine et al., 1980). More recently, Parker, Hoopes and Eggett (2011) randomly assigned half of the class a permanent seat, and randomly assigned the other half (alternating every other seat) a different seat each class. Students near the front of the class in the stay group made significantly more comments per class, while there was no significant difference in participation between front and back sitters in the move group. Overall, most researchers have concluded that seat location can have an effect on engagement, motivation, attention, and involvement (Montello, 1988).

1.3. Flow, engagement, interest, and attention, and as mediators of learning and performance

To the extent that there are classroom effects of seat location on student engagement, they may be partially explained by flow theory (Csikszentmihalyi, 1990). According to the theory, exerting effort and exercising one's skills in pursuit of a challenge can result in a state of emerging motivation known as flow. Flow is experienced as a heightened state of concentration, interest, and enjoyment, and has been related to positive academic outcomes including talent development and school performance (Shernoff, Abdi, Anderson, & Csikszentmihalyi, 2014). Increased involvement and immersion in educational experiences can promote learning, understanding, and retention (Weaver & Qi, 2005). A compromised opportunity to participate in instruction and increased exposure to distractions associated with sitting in the back of the classroom would be expected to result in lower subjective involvement and concentrated attention characterizing flow, impeding classroom learning and course performance. Flow experiences have often been referenced in environmental psychology (see Rainisio & Inghilleri, 2012) because they overlap with transcendent and sublime experiences characterized by positive affect and a feeling of union with nature or the universe (Mitchell, 1983; Williams & Harvey, 2001). More relevant to the university lecture hall, Kaplan and Talbot (1983) suggested that the attention is provoked by environmental contexts and cues that capture involuntary attention, and is maintained by triggers to recover from

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