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Immediacy, Ensemble Setup, And Classroom Space: A Quasi-experimental Study Among Secondary Instrumental Teachers and Students

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Abstract

The purpose of this study was to examine the effect of closed and opened setup conditions on students' and teachers' reported immediacy, affect, motivation, and group cohesion in band and orchestra classrooms. A secondary purpose was to explore relationships among students' and teachers' reported immediacy, affect, motivation, and group cohesion. Six teachers and 379 of their students participated in the study. In this within-subjects experiment, teachers were asked to teach with their classrooms arranged in closed and opened setup conditions. In the closed condition, teachers used a traditional setup of arcs and were not asked to change their use of space when teaching. In the opened condition, an aisle was added to the ensemble setup and teachers were provided with strategies to encourage movement toward and among students when teaching. At the end of each condition, teachers and students completed measures of constructs related to immediacy, affect, motivation, and group cohesion. Results indicate the effect of the intervention increased negative affect among students, teacher proximity was associated with negative affect among students, and students' perceptions of their teacher's immediacy was found to have positive relationships with student affect, motivation, and group cohesion.

Keywords

immediacy, ensemble setup, nonverbal behaviors, space, band, orchestra

General education researchers have explored relationships between teachers' nonverbal behaviors, classroom organization, and use of space revealing important affective, motivational, and cognitive implications for both students and teachers (e.g., Andersen et al., 1981; Axelrod et al., 1979; Baringer & McCroskey, 2000; Burgess & Kaya, 2007; Christophel, 1990;

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Frymier, 1993; Marx et al., 1999; Parker et al., 2011; Schwebel & Cherlin, 1972; Wheldall et al., 1981). However, relationships between nonverbal behaviors, classroom organization, and use of space have received little attention among music education researchers. Furthermore, some research may indicate that music teachers may be relatively unaware or unconcerned with these issues.

For example, Brewer and Rickels (2014) conducted a content analysis of the Band Directors Group on Facebook and found that 122 entries (0.8%) of the total 14,854 entries included in the analysis discussed "organizing physical space." Additionally, Teachout (1997) and Davis (2006) both found that among 40 important teaching skills, "move toward and among students" were identified as a relatively less important teaching skill. Furthermore, in a previous study, I found that many instrumental ensemble teachers reported remaining on or near the podium when teaching and maintained the same ensemble setup for most of the school year (Roseth, 2020). Taken together, these findings may suggest that many teachers are relatively unaware of the implications of certain nonverbal behaviors, their ensemble setup, and their use of space when teaching. This study aimed to explore immediacy, ensemble setup, and teacher use of space among secondary band and orchestra teachers.

The extant literature related to immediacy, ensemble setup, and use of space is limited; literature that addresses the relationships between these topics is virtually non-existent. It is also important to note that most known research is several decades old. Given the ever-changing landscape of US education and the COVID-19 pandemic, some cited literature may be dated. This review will highlight research about immediacy, ensemble setup, and use of space separately, then discuss a study that brings these three constructs together.

Immediacy is a psychological construct that "refers to nonverbal teacher behaviors [including eye contact, touch, proximity, vocal variety or inflection, hand and arm gestures, and body position] which increase nonverbal interaction with students and which communicate closeness" and "operate to reduce distance between people by either decreasing actual physical distance between people or psychological distance" (Andersen et al., 1981, p. 377). The relationship between teacher immediacy behaviors and various student outcomes (e.g., affective, behavioral, cognitive, motivational) has been explored extensively in general education research (e.g., Andersen, 1978; Andersen et al., 1981; Baringer & McCroskey, 2000; Christophel, 1990; Comstock et al., 1995; Frymier, 1993; Goodboy et al., 2009; Gorham et al., 1997, 1999; Kelley & Gorham, 1988; Patterson, 1973; Pogue & Ahyun, 2006; Richmond et al., 1987; Titsworth, 2001; Witt & Wheeless, 2001). Broadly, researchers have concluded that when students perceive their teacher as being more immediate, students tend to perceive their teacher more favorably and report higher levels of motivation.

For example, in a study among 198 students and 13 instructors enrolled in a university interpersonal communications course, Andersen and colleagues (1981) examined the relationship between student perceptions of their teachers' immediacy behaviors and teaching effectiveness. Effectiveness was operationally defined as students' cognitive learning through test scores, attitudes toward the teacher and the course, willingness to engage with the course, and intent to enroll in future courses with the instructor. Andersen et al. concluded that teachers who exhibited greater immediacy behaviors were viewed more favorably in communication, course content, instruction, engagement, the course overall, and the likelihood of enrollment in future courses.

In music and music education research, nonverbal behaviors are often investigated in the context of conducting and ensemble rehearsals (e.g., Byo & Austin, 1994; Price & Winter, 1991; VanWeelden, 2002; Yarbrough, 1975; Yarbrough & Price, 1981) as well as in one-on-one lessons (e.g., Kurkul, 2007; Levasseur, 1994; Wang, 2001; Zhukov, 2012). Immediacy-related

behaviors common among these studies include eye contact, vocal expression, gestures, facial expressions, touch, and proximity. These studies provided mixed evidence suggesting that certain behaviors, like eye contact or gesture, improved student performance.

Like the extant immediacy research, research related to the physical organization of classrooms has been studied extensively in general education contexts (e.g., Axelrod et al., 1979; Benedict & Hoag, 2004; Burgess & Kaya, 2007; Hesler, 1972; Kalinowski & Taper, 2007; Martin, 2002; Marx et al., 1999; Montello, 1988; Parker et al., 2011; Perkins & Wieman, 2005; Wheldall et al., 1981). These studies suggest important implications for student behavior and engagement that teachers will likely intuitively understand. For example, students seated in certain "action zones" like the "T-zone" of a traditional row-and-column classroom setup—with the top of the T representing the front row and the stem representing the middle section of the room—tend to have higher participation rates (e.g., Marx et al., 1999; Parker et al., 2011). Martin (2002) found that horseshoe-shaped classrooms (similar in shape to traditional large ensemble setups) tended to be teacher-centered as opposed to student-centered classrooms that tended to be organized into clusters, tables, and for multiple activities. Despite possible important implications for music teaching, explorations surrounding the physical organization of music classrooms are lacking, and relationships between ensemble setup and student behavior have not been explored.

Research dealing specifically with teachers' use of space is more limited. General education research most influential to this study was the work of Hesler (1972) and Martin (2002). Hesler (1972) studied relationships among "instructor's spatial behavior, the interpersonal relationship of teacher to pupil, personality characteristics, sex of instructor, and seating arrangements" (p. vii) of 24 instructors (12 females and 12 males) of a speech-communication course and their 452 students. She found that females tended to occupy multiple classroom areas less frequently than males, who were more likely to use all classroom areas. Furthermore, females preferred the area in front of the teacher's desk (i.e., closer to students), while males preferred the area behind the teacher's desk. Additionally, Hesler found positive correlations between "student affection" and occupying classroom space "among the students," and between "[sense of] inclusion" and the area "in front of the teacher desk." In contrast, negative correlations between the "on, beside, or behind the teacher desk" area and both "teacher affection" and "inclusion" were found.

Specific to issues of physical space, Martin (2002) sought to understand (a) how teachers moved through their classrooms during their lessons, (b) to what extent teachers were in control of the classroom physical environment, and (c) if it was possible to improve the design and use of classroom spaces. Martin observed 61 lessons in 12 schools with 39 different teachers. Martin's study was extensive and covered 12 teaching and classroom space constructs. Most pertinent to this study, Martin explored mobility (total area covered by the teacher in square meters throughout a lesson) and interactions (with the whole group of students; a small group; individual students; other individuals, like visitors; or no interaction). Martin (2002) found that teachers who remained relatively stationary tended to interact primarily with the whole class. In contrast, teachers with greater mobility were more likely to interact with individuals and small groups.

In contrast to general education research where teacher use of space was central to the investigations, issues of proximity and use of space have been explored more indirectly in music education research (e.g., Byo & Austin, 1994; Kurkul, 2007; Levasseur, 1994; Yarbrough, 1975). For example, Yarbrough (1975) explored the effect of conductor magnitude on 207 students' performance, attentiveness, and attitude in mixed choruses. Operational definitions for low and high magnitude were created for each of the six behaviors, including eye contact,

closeness, volume and modulation of voice, gestures, facial expressions, and rehearsal pace. Pertinent to this study, a conductor with high-magnitude closeness was defined as one who "frequently walks or leans toward [the] chorus or particular section," whereas a conductor with low-magnitude closeness was one who "stands behind [the] music stand at all times. Music stand is always a minimum of four feet from chorus" (Yarbrough, 1975, p. 138). Ultimately, Yarbrough (1975) found no significant differences between low- and high-magnitude conductors on student performance, attentiveness, and attitude. Although Yarbrough (1975) noted that the conductors "spent most of their time behind the music stand rather than moving toward the chorus or walking among the students during rehearsal" (p. 144), and the high magnitude conductors "had significantly more approach movement" (p. 145).

Taking immediacy, ensemble setup, and teacher use of space together, I previously surveyed 436 secondary band and orchestra teachers from the United States in Colorado and Indiana to explore these issues (Roseth, 2020). Females self-reported higher overall immediacy scores than males. Females reported higher ratings than males when assessing the importance of "moving toward and among students" when teaching. Females also reported significantly more use of touch, sit or stand close, move toward, and lean toward behaviors than males. Additionally, teachers reported engaging in proximity-related behaviors the least among all the immediacy behaviors surveyed (i.e., eye contact, posture, facial expression, gesturing, proximity, vocal expression).

Additionally, 68% of teachers reported that their most frequent ensemble setup was the traditional setup consisting of concentric arcs, while an additional 15% indicated using arcs with an aisle. Most teachers (86%) reported rarely using any other setups. Teachers of beginning ensembles were significantly more likely to use setups that included an aisle than teachers of high school ensembles. Additionally, teachers who used setups with an aisle were significantly more likely to view "move toward and among the group" as an important teaching skill and reported higher levels of "moving toward" students when compared to teachers who did not use an aisle. While teachers reported spending most of their time on or near the podium, females reported significantly less "on podium" time than males. Teachers of beginning ensembles reported significantly less "on podium" time and significantly more "toward/among [students]" time than high school teachers.

These results indicate that immediacy and use of space behaviors may differ by sex, age of the ensemble, and type of ensemble setup used by the teacher. It also suggests that many teachers remain relatively stationary and maintain the same setups for most of the school year. Given the important relationships between immediacy, classroom setup, and teacher use of space as demonstrated in the general education literature, further exploration in music education contexts is warranted.

Purpose and research questions

The primary purpose of this study was to examine the effect of *closed* and *opened* setup conditions on students' and teachers' reported immediacy, affect, motivation, and group cohesion in band and orchestra classrooms. A secondary purpose was to explore relationships among students' and teachers' reported immediacy, affect, motivation, and group cohesion. The questions guiding this research were as follows:

1.   What is the effect of ensemble setup and teachers' use of space on students' affect, motivation, group cohesion, and perceptions of their teacher's immediacy?
2.   What are the relationships between teachers' and students' perceptions of immediacy, affect, motivation, and group cohesion?

Method

Below is a description of this study's participants, instruments, and design. It is important to note that data collection occurred before the COVID-19 pandemic. Accordingly, masks (which would likely interfere with perceptions of immediacy) or social distancing (which would likely interfere with immediacy, setup, and use of space) were not an issue.

Participants

Participants were primarily recruited from a previous survey study (Roseth, 2020). The survey study aimed to explore instrumental teachers' self-reported immediacy behaviors, ensemble setups, and use of space when teaching. At the end of the questionnaire, teachers were provided the option to share their contact information for this study. Teachers who indicated in the questionnaire that (a) they meet with their classes every day, (b) every student was equipped with iPads, Chromebooks, or other similar technologies, and that (c) they had more than "a moderate amount" of flexibility when setting up their ensembles were selected for inclusion in this study. These criteria were chosen so that (a) contact time between teachers and students across all schools were similar, (b) electronic questionnaires in this study could be distributed both conveniently and consistently across all participants, and (c) teachers would likely have the ability to change the setup of their classrooms as required in this study.

A total of 104 teachers met the inclusion criteria and were contacted for participation. One additional teacher, who expressed interest in the study but did not participate in the survey study, was recruited directly. Nine teachers agreed to participate in the study. Ultimately, six teachers, five from the list of 104 and the recruited teacher completed the entire study. All teachers were from the United States, including three from Indiana, two from Colorado, and one from Pennsylvania. The teachers had 2–34 years of teaching experience; four taught band and two taught orchestra; five were the head (or the only) director, and one was an assistant director. The six teachers completed the study with their band or orchestra students in their classrooms.

The teachers' band and orchestra students were also asked to participate in the study. In total, 14 band and orchestra classes and 492 students were invited to participate, including three high school band classes ($n = 160$ students) among two teachers, nine middle school orchestra classes ($n = 299$ students) among two teachers, and two middle school band classes ($n = 33$ students) among two teachers. Using an Institutional Review Board-approved opt-out procedure, several teachers reported parents opting out their students from participation. Among the 492 possible students invited to participate, 379 (77%) provided useable data.

Instruments

Four instruments were used in this study. For each instrument, reliability coefficients were calculated and are described below. Reliability coefficients were calculated for each measure in both the *closed* and *opened* conditions. The minimum Cronbach's alpha found in either condition is reported below for brevity purposes. Reliability coefficients for all measures in each condition are presented in Table 2.

The first measure used in the study was the Nonverbal Immediacy Scale (NIS) (Richmond et al., 2003). The NIS is a tool that measures perceptions of immediacy and includes two versions, a self-report form and an observer form. Richmond et al.'s NIS contains 13 pairs of immediacy behaviors, with each behavior positively and negatively worded for a total of 26 items.

Participants rate how often they use (or observe, if using the observer form) each immediacy behavior on a scale from "never" (1) to "very often" (5). The researchers reported alpha reliability estimates for both the self-report and the observer versions of the tool to be greater than .90. This study was unable to establish satisfactory reliability for the NIS measure ($\alpha = .67$) using the overall scoring instructions as established by Richmond et al. (2003). However, sufficient reliability was found when grouping the items into positively ($\alpha > .75$) and negatively ($\alpha > .78$) worded subscales. Accordingly, the present analysis uses the overall immediacy score (though interpretation with caution is recommended) as well as "positively" and "negatively" worded subscales for the NIS. An increase in the NIS positivity subscale score would indicate higher levels of behaviors like smiling, vocal expression, relaxed body posture, closer proximity, and so on; in contrast, an increase in the NIS negativity subscale score would indicate higher levels of frowning, monotonous voice, tense body posture, further proximity, and so on.

An additional "proximity" subscale was also created from the NIS measure. The selected NIS items were subjected to a principal axis factor analysis using a direct oblimin rotation procedure. Each of the four positively worded proximity-related items—touch, sit or stand close, move close, and lean toward—loaded onto a single factor (Eigenvalue = 2.54, 10.17% of variance). Furthermore, internal reliability was found to be satisfactory for these four items across both conditions ($\alpha > .73$).

The second instrument used was the Positive and Negative Affect Scale (PANAS; Watson et al., 1988). Positive affect was defined as "the extent to which a person feels enthusiastic, active, and alert" (p. 1063). In contrast, negative affect was defined as "distress and unpleasurable engagement that subsumes a variety of aversive mood states" (p. 1063). The PANAS measures 20 feelings or emotions, with 10 related to positive affect and 10 related to negative affect. Participants rate the extent to which they are experiencing each emotion on scale from "very slight or not at all" (1) to "extremely" (5). Watson and colleagues found the negative ($\alpha > .84$) and positive ($\alpha > .86$) subscales to be reliable. In this study, the negative ($\alpha > .83$) and positive ($\alpha > .88$) subscales were also found to be reliable.

The third measure, the Perceived Motivational Climate in Music Questionnaire (PMCMQ), was designed to measure motivation along two broad scales, task-involving and ego-involving climates (Matthews & Kitsantas, 2007). Task-involving is concerned with issues such as cooperative learning, effort, and improvement, whereas ego-involving is concerned with issues such as intra-team member rivalry, unequal recognition, and punishment for mistakes. The researchers found the ego- and task-involving climate subscales reliable ($\alpha = .89$ and $\alpha = .87$, respectively). In this study, the ego- ($\alpha > .90$) and task-involving ($\alpha = .93$) subscales were also found to be reliable.

The final measure was the Group Environment Questionnaire (GEQ), and it was designed to measure "group cohesion" which Matthews and Kitsantas (2007) described as "an active process in which a group is unified in the pursuit of its purposes and goals" (p. 7). It contains four subscales, including Group Integration-Social (GI-S), the Individual Attractions to the Group-Social (ATG-S), the Group Integration-Task (GI-T), and the Individual Attractions to the Group-Task (ATG-T). "Group Integration" refers to participants' perception of the group as a whole, whereas "Individual Attractions" refers to participants' personal attractions to the group. Furthermore, the measure describes both "social" and "task" orientations within both categories resulting in the four subscales. Taken together, the participant can indicate "the extent to which they agree that each of the constructs plays a role in the development and maintenance of group cohesion" (Carron et al., 1985, p. 248). Matthews and Kitsantas found the measure to be reliable: ATG-T, $\alpha = .69$; ATG-S, $\alpha = .83$; GI-T, $\alpha = .79$; and GI-S, $\alpha = .69$. In this study, sufficient reliability for each of the GEQ four subscales could not be established. However, when

Table 1. Instruments, Shorthand, and Alpha Coefficients for 11 Variables under Investigation.

Instrument and subscales	Shorthand (abbreviation)	α[a]
Nonverbal immediacy scale (NIS)	"Immediacy" measure	
Overall measure	"Immediacy-Overall" (Io)	>.67
Positive subscale	"Immediacy-Positive" (Ip)	>.75
Negative subscale	"Immediacy-Negative" (In)	>.78
Proximity composite	"Immediacy-Proximity" (Ix)	>.73
Move close item	"Immediacy-Move Close" (Im)	n/a
Positive and negative affect scale (PANAS)	"Affect" Measure	
Positive affect	"Affect-Positive" (Ap)	>.88
Negative affect	"Affect-Negative" (An)	>.83
Perceived motivational climate in music questionnaire (PMCMQ)	"Motivation" Measure	
Task subscale	"Motivation-Task" (Mt)	>.93
Ego subscale	"Motivation-Ego" (Me)	>.90
Group environment questionnaire (GEQ)	"Cohesion" Measure	
Social subscale	"Cohesion-Social" (Cs)	>.74
Task subscale	"Cohesion-Task" (Ct)	>.72

[a]These values are the minimum Cronbach's alpha found in either condition. Reliability coefficients for all measures in each condition are presented in Table A of the Online Supplemental Material.

both social and both task subscales were combined—resulting in one social subscale ($\alpha > .74$) and one task subscale ($\alpha > .72$)—satisfactory reliability was found. Accordingly, these two subscales were used in subsequent analyses.

Summary of instruments and subscales. The 11 variables under investigation in the present study are listed in Table 1.

    The *immediacy-overall* variable represents the overall composite immediacy score on the NIS measure. A higher immediacy-overall score indicates greater levels of immediacy behaviors. *Immediacy-positive* and *immediacy-negative* variables represent the positively worded (e.g., smiling) and negatively worded (e.g., frowning) items on the NIS. For example, higher levels of immediacy-negative indicate higher levels of negative immediacy behaviors (e.g., frowning, further proximity, monotone voice, etc.). Also from the NIS, the level of physical proximity reported by teachers and students is represented by the *immediacy-proximity* variable, while the *immediacy-move close* item represents the level of "move close" behaviors reported. An increase in either variable represents higher levels of perceived physical proximity or closeness. The *affect-positive* and *affect-negative* variables represent the degree of positive and negative emotions reported by teachers and students on the PANAS measure. A higher affect-positive score indicates higher levels of positive emotions. Two variables from the PMCMQ measure, *motivation-task* and *motivation-ego*, represent levels of motivation derived from task and ego orientations. For example, higher levels of motivation-task indicate students reporting greater motivation when rehearsals are task-oriented. Finally, *cohesion-social* and *cohesion-task* from the GEQ measure indicate levels of perceived group cohesion based on a social or task orientation. Higher levels of cohesion-social indicate that students perceive more group cohesion when rehearsals are oriented toward supporting a positive social dynamic among the ensemble.

It should be noted that teachers in the study completed the NIS and PANAS measures as self-reports. Students completed self-reports for the PANAS, PMCMQ, GEQ measures, and the observer NIS form (measuring the perceived immediacy behaviors of their teachers). For clarity and brevity, measures will be referred to by the shorthand presented in Table 1 for the remainder of this report.

Procedures

This study relied on two types of ensemble setups, *closed* and *opened* setups. Labeling ensemble setups as "closed" and "opened" was created for a previous study (Roseth, 2020) to describe two types of setups commonly seen in ensemble classrooms. In this study, closed setups were ensemble setups where chairs and stands were organized in such a way that limited the movement of teachers to the front of the room (typically on or near the conductor's podium or stand) or to the periphery of the ensemble. These setups do not easily allow teachers to move among students; these setups are "closed" off to teachers. *Opened* setups were ensemble setups where chairs and stands were organized to allow teacher movement toward and among students; these setups were "opened" up to teacher movement. For example, adding an aisle down the middle of the ensemble setup to allow teacher movement toward and among students.

The experiment employed a within-subjects design where each participating school's classes experienced closed and opened conditions over 3 weeks. In the closed condition, the ensemble setup resembled a traditional setup (concentric arcs) with no aisle and no specific changes to teachers' immediacy or proximity behaviors. In contrast, in the opened condition, the ensemble setup resembled a traditional setup with an aisle and the teachers were provided with strategies to move away from the podium and toward or among students.

Each school was randomly assigned to one of two orders of presentation: (1) closed condition (1 week), a practice week (1 week), opened condition (1 week), or (2) practice week (1 week), opened setup (1 week), closed condition (1 week), thus providing counterbalance to the 3-week, within-subject study. A practice week was deemed necessary to allow the teacher participants sufficient time to review the intervention video, configure the classroom to reflect the opened setup, and practice the proximity behaviors. No data were collected during the practice week. An intervention video was provided to the teacher participants at the start of each condition. Each video described the timeframe, materials required, ensemble setup, and other important logistical considerations for each condition. In the opened condition, teachers were also shown how to set up their classrooms and were provided with a dozen strategies for increasing the use of space toward and among students. These strategies included moving through classroom space when giving announcements, during routine warm-ups or other activities that do not need to be conducted, during student discussions or when answering teacher questions, when speaking to individuals or sections, explaining concepts or musical ideas, when students are doing written work or writing in their music, during "noodle" or free play time, or when conducting music.

On the Thursday or Friday of each condition, teachers (1) video recorded their lesson (used to confirm whether the closed and opened conditions were properly attempted), (2) completed the self-report immediacy measure, (3) completed the self-report affect measure, and (4) surveyed their students using the immediacy (observer form), affect, motivation, and cohesion measures through their school-issued devices (iPads, Chromebooks, etc.). The decision to complete all the data collection each week on a single day was intended to streamline the teachers' process and closely tie teacher videos with the various measures used. In sum, each teacher produced two teaching videos; two completions of the immediacy self-report; two completions

of the affect measure self-report; and facilitated two completions of the affect, motivation, cohesion, and observer immediacy measures by their students.

Results

Numerous analyses and results were produced to address both research questions. Data were collected from teachers and students and 11 variables were analyzed in two conditions—including descriptive statistics, Spearman correlations, Cronbach's alpha coefficients, and Wilcoxon Signed-Rank tests—producing many results. The 11 variables under investigation are listed in Table 1 and the explanation of the variables follows the table. For brevity purposes, the most salient results are described below. Analyses completed but not included for discussion below are acknowledged and included in the Online Supplemental Material.

Question 1: effect of closed versus opened conditions

To explore differences between each of the 11 variables among both conditions, student data were collapsed into their corresponding classes and subjected to Wilcoxon Signed-Rank tests. Several significant differences between the closed and opened conditions were found among student reports, indicating a significant decrease in immediacy-overall and a significant increase in immediacy-negative during the opened condition. Specifically, Wilcoxon tests for the negatively worded immediacy items revealed that students reported their teachers had significantly higher levels of look away ($Z=-3.04$, $p=.002$), move away ($Z=-3.86$, $p<.001$), frown ($Z=-2.30$, $p=.021$), avoid eye contact ($Z=-3.54$, $p<.001$), tense body ($Z=-2.43$, $p=.015$), bland facial expressions ($Z=-2.57$, $p=.010$), stiff posture ($Z=-3.28$, $p=.001$), avoid gesturing ($Z=-2.28$, $p=.022$), not sit or stand close ($Z=-4.22$, $p<.001$), and lean away ($Z=-5.47$, $p<.001$) behaviors in the opened condition (refer to Table A of the Online Supplemental Material for the complete results). Due to questionable reliability for immediacy-overall, caution is warranted when interpreting this result.

No significant differences were found among students' affect, motivation, and cohesion measures between the conditions. Among teachers' reports, Wilcoxon tests resulted in no significant differences for teachers between closed and opened conditions among any of the measures (refer to Table B of the Online Supplemental Material for the complete results). Table 2 presents the complete descriptive statistics for all measures among teachers and students in both conditions.

Question 2: relationships between teacher and student reports

Spearman correlations were calculated to determine the relationships between (a) teacher self-reported immediacy and affect measures, and (b) student-reported immediacy (of their teacher), affect, motivation, and cohesion measures. Due to the nature of the present investigation, concerned primarily with immediacy and use of space, only correlations between (a) the immediacy items (from both teachers and students including the overall, positive, negative, proximity, and move close scales) and (b) the affect, motivation, and cohesion measures are reported. Accordingly, correlations between non-immediacy items (e.g., correlations between affect and motivations measures) were excluded because such correlations do not include immediacy issues and are outside this investigation's scope.

In the closed condition, several significant correlations were found. Significant correlations were found between teacher immediacy-overall and both student immediacy-overall ($r=.83$,

Table 2. Descriptive Statistics for Students and Teachers in Closed and Opened Conditions by All Participants.

Measure	Students			Teachers			Alpha
	M	*SD*	Skew	*M*	*SD*	Skew	
Closed condition							
Immediacy–overall	91.23	10.21	−0.15	92.00	3.89	0.91	.67
Immediacy–positive	3.46	0.58	−0.13	3.93	0.12	−0.41	.78
Immediacy–negative	1.86	0.50	1.11	2.26	0.28	−0.47	.78
Immediacy–proximity	2.54	0.80	0.21	3.12	0.34	−1.37	.73
Immediacy–move close	2.85	1.16	0.17	3.50	0.54	0.00	
Affect–positive	35.45	8.13	−0.67	39.50	4.03	−0.10	.88
Affect–negative	16.89	6.16	1.47	18.33	4.80	−0.24	.83
Motivation–task	4.18	0.69	−1.05				.93
Motivation–ego	1.74	0.64	1.26				.90
Cohesion–social	5.61	1.51	−0.35				.77
Cohesion–task	6.38	1.33	−0.22				.72
Opened condition							
Immediacy–overall	87.69	10.19	0.01	93.40	6.42	−0.33	.67
Immediacy–positive	3.38	0.54	−0.17	4.05	0.22	−1.70	.75
Immediacy–negative	2.07	0.56	0.84	2.26	0.35	0.09	.79
Immediacy–proximity	2.44	0.80	0.46	3.55	0.41	−0.51	.74
Immediacy–move close	2.69	1.12	0.22	3.80	0.44	−2.23	
Affect–positive	35.45	7.99	−0.50	39.40	4.98	−0.72	.86
Affect–negative	18.21	7.29	1.43	16.80	4.08	0.31	.86
Motivation–task	4.11	0.78	−1.14				.94
Motivation–ego	1.85	0.73	1.56				.92
Cohesion–social	5.59	1.46	−0.19				.74
Cohesion–task	6.25	1.37	−0.43				.75

Note. Due to some incomplete data, number of student (*N* = 332–373) and teacher (*N* = 5–6) participants vary among each of the measures.

$p < .05$) and immediacy-positive ($r = .95$, $p < .01$). A significant correlation between teacher immediacy-proximity and student affect-negative ($r = .82$, $p < .05$) was found. Several significant correlations were found between teacher immediacy-move close and student immediacy-negative ($r = .87$, $p < .05$), immediacy-proximity ($r = −.87$, $p < .05$), immediacy-move close ($r = −.87$, $p < .05$), and cohesion-social ($r = −.87$, $p < .05$). Finally, a significant correlation between teacher affect-positive and student immediacy-positive ($r = .82$, $p < .05$) was found (refer to Table C of the Online Supplemental Material for complete results).

In the opened condition, several significant correlations were also found. A significant correlation was found between teacher immediacy-overall and both student immediacy-proximity ($r = 1.00$, $p < .001$) and immediacy-move ($r = 1.00$, $p < .001$). Significant correlations between teacher immediacy-positive and both student immediacy-proximity ($r = .97$, $p < .01$) and immediacy-move close ($r = .97$, $p < .01$) were found. Finally, a significant correlation was found between teacher affect-positive and student immediacy-negative ($r = .97$, $p < .01$) (refer to Table D of the Online Supplemental Material for the complete results).

Spearman correlations between all the student reports resulted in numerous significant correlations in both conditions, presented in Table E of the Online Supplemental Material. Given the relative weakness of these correlations, they are briefly summarized here. In both conditions, significant weak to moderate positive correlations between immediacy-overall and immediacy-positive, immediacy-proximity, immediacy-move close, affect-positive, motivation-task, cohesion-social, and cohesion-task. In contrast, significant weak to moderate negative correlations between immediacy-overall and immediacy-negative, affect-negative, and motivation-ego were found in both conditions.

Discussion

The primary purpose of this study was to examine the effect of closed and opened setup conditions on students' and teachers' reported immediacy, affect, motivation, and group cohesion in band and orchestra classrooms. A secondary purpose was to explore relationships among students' and teachers' reported immediacy, affect, motivation, and group cohesion. Although limited due to a dearth of existing literature, connections between the present research and prior research are also briefly highlighted.

Question 1: effect of closed versus opened conditions

When exploring differences among students for each of the 11 primary variables under investigation—(1) immediacy-overall, (2) immediacy-positive, (3) immediacy-negative, (4) immediacy-proximity, (5) immediacy-move close, (6) affect-positive, (7) affect-negative, (8) motivation-task, (9) motivation-ego, (10) cohesion-social, and (11) cohesion-task—between closed and opened conditions, students perceived their teachers' overall immediacy to be lower in the opened condition, which is largely attributed to a significant increase in negatively-related immediacy behaviors (including looking away, moving away, bland facial expressions, stiff posture, avoid gesturing, not sit or stand close, and lean away).

It is unclear from the data why there was a significant increase in the negatively-related immediacy behaviors in the opened condition. Some of these behaviors, like looking away, moving away, not sitting or standing close, and leaning away may be attributed to the proximity-related intervention. For example, if a teacher moves off or away from the podium and toward the back of the ensemble, students in the front will report higher levels of looking away, moving away, and not sitting or standing close behaviors. Or, if a teacher favors the left side of the podium when moving off and away, students on the right side of the ensemble may report higher levels of these immediacy-negative behaviors. Additionally, as teachers move around the classroom, instead of remaining on or near the podium, their backs will likely be turned to all students more frequently. These behavior changes during the intervention may lead to increased perceptions of immediacy-negative behaviors.

Increases in behaviors like stiff posture, bland facial expressions, and avoiding gesturing may be attributed to students perceiving discomfort as their teachers engage in proximity-related behaviors. These behaviors might be expected by teachers performing proximity-related behaviors that are otherwise unnatural or atypical in relation to their usual teaching. Although analyses of teachers' perceptions of their immediacy behaviors did not reveal any significant differences between closed and opened conditions, it is plausible that students perceived a change in how their teachers use their bodies.

Question 2: relationships between teacher and student reports

Exploring the relationships between teacher and student reports—where teachers completed the immediacy and affect measures and where students completed the immediacy, affect, motivation, and cohesion measures—resulted in several interesting findings. The students completed the immediacy measure regarding their teachers' immediacy behaviors and the affect, motivation, and cohesion measures about themselves.

In general, as teacher self-reported immediacy-related behaviors increased, students also reported an increase in immediacy-related behaviors. Additionally, in the opened condition where proximity-related behaviors were manipulated, as teacher immediacy-overall increased, students' immediacy-proximity and immediacy-move close also increased. These findings are unsurprising and should be expected given the nature of the intervention.

The results also suggest that as teachers reported higher levels of immediacy-proximity and immediacy-move close behaviors, students reported higher levels of affect-negative and immediacy-negative. These results seem inconsistent with Hesler (1972) who found positive relationships between instructors' movement among students and "student affection." The results in this study might be expected in a classroom where proximity and move close behaviors by teachers are perceived as negative among students. For example, students might feel uncomfortable by a teacher who is getting closer simply to hear better. Or, students may associate their teacher's proximity as negative in classrooms where teachers rely on their proximity to address misbehavior. This second example may be further supported when considering the negative relationship between teacher immediacy-move close and cohesion-social; as teachers reported engaging in higher levels of move close behaviors, students reported a decrease in the social component of group cohesion.

Interestingly, no significant relationships between any two of the items were found in both conditions. This may suggest that each condition elicited very different responses from teachers and students.

When reviewing relationships between variables in the student reports, many correlations, albeit weak to moderate, were significant and consistent with prior research (e.g., Andersen et al., 1981; Chesebro, 2003; Christophel, 1990; Comadena et al., 2007; Frymier, 1993; Pogue & Ahyun, 2006; Witt & Wheeless, 2001). In both conditions, significant positive correlations were found between immediacy-overall and immediacy-positive, immediacy-proximity, immediacy-move close, affect-positive, motivation-task, cohesion-social, and cohesion-task. In contrast, significant negative correlations between immediacy-overall and immediacy-negative, affect-negative, and motivation-ego were found in both conditions. Regarding the intervention, all correlations between immediacy-proximity or immediacy-move close and the affect, motivation, and cohesion variables were either non-significant and/or very weak. In short, as students perceived higher levels of teacher immediacy, students reported higher levels of positive affect, motivation, and cohesion, regardless of condition. Additionally, proximity-related behaviors had little to no relationship with affect, motivation, and cohesion.

Limitations and future research

The most significant limitations of this study can be found in its sample size of teachers and the subsequent within-subjects design necessitated by the small sample. This study's inclusion of just six teachers limits the generalizability and interpretation of the results. The remaining limitations, which might be considered minor limitations to this study, are presented as areas of future research.

This discussion of future research presents several ideas that may inform the study's replication and extension or represent several possible independent studies. First, researchers are encouraged to replicate this study using a larger teacher sample and a between-subjects experimental design. A larger teacher sample will make a between-subject design possible and increase data fidelity. Furthermore, existing research suggests important differences regarding the use of space by gender. A larger sample of teachers would permit further exploration of gender.

Second, collecting videos or in-person data about teachers' immediacy and proximity behaviors may provide additional insights. This study relied on teachers' and students' perceptions of immediacy and proximity behaviors. Using outside observers would bring additional reliability and objectivity to teacher immediacy and proximity measures. Differences in immediacy as perceived by a teacher and as recorded by an outside observer may yield important findings. Outside observers might also explore relationships between immediacy behaviors and other teaching behaviors (e.g., student interactions, instructional strategies, lesson objectives, etc.).

Third, perceptions of students' affect, motivation, and group cohesion may vary by the location of student seating when teacher immediacy or proximity behaviors are manipulated. For example, among teachers who frequently remain on or near the podium, students seated in the front row of an ensemble have a different proximity relationship with their teacher than students seated in the back; perceptions of their teachers' immediacy behaviors more broadly may also vary. As such, as teacher immediacy and proximity behaviors change, students may have different affective and motivational responses based on their seating.

Finally, in this study, teachers and students participated in the opened condition for one week (2 weeks if counting the practice week) and the data indicate an increase in negative affect during the opened condition. This may be attributed to students perceiving the intervention as disruptive to routine classroom procedures and expectations. Accordingly, future research might explore the effects of an opened condition over a more extended period. While future research may find an increase in negative affect in the short term, what might be found when students and teachers acclimate to the opened condition is unknown.

This study explored the effect of closed and opened conditions on affect, motivation, group cohesion, and immediacy. The intervention seemed to increase negative affect among students, teacher proximity was associated with negative affect among students, and students' perceptions of their teacher's immediacy were found to have positive relationships with student affect, motivation, and group cohesion. Although opened setups were found to increase negative affect, the cause may be attributed to a change in expected routines. Accordingly, teachers are encouraged to experiment with opened setups to improve performance and instruction. Teachers who use proximity primarily as a behavior management strategy might be encouraged to make proximity behaviors a more routine and natural part of their interactions with students. Finally, given the apparent benefits of immediacy behaviors, educators are encouraged to improve their use of positive immediacy behaviors when teaching. The findings in this study also suggest that ongoing considerations of these issues among teachers and researchers may be justified, given important implications for teaching and learning.

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Supplemental material

Supplemental material for this article is available online.

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