



## Harmony in schools: The role of instrumental ensembles in fostering student belonging

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### Abstract

Many factors, such as peer relationships and school climate, influence a student's sense of school belonging. A strong sense of belonging possesses a multitude of benefits in academic and social domains. This study aimed to investigate the impact of instrumental ensembles on overall school belonging through a quantitative ex post-facto research design. Participants of this quantitative study - high school students from a suburban area with rural roots in the New England region - were divided into two groups: musicians and non-musicians. Each participant submitted responses to the School Belongingness Scale (SBS). This metric measured musicians' and non-musicians' levels of belonging within their school. The results of this study found no significant differences in the responses of musicians and non-musicians. However, respondents across both groups reported a high sense of belonging, suggesting that other factors contributed to the SBS. Hence, this study underscores the need for future research to differentiate situational and overall belonging on SBS when assessing the effect of instrumental music ensemble participation, or any small-group extracurricular activity participation.

### Keywords

School belonging, School climate, Music participation, Music education, School Belongingness Scale, Social acceptance, Social exclusion, Academic achievement, School community, Situational belonging

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## Introduction

School climate refers to a school's social and educational environment and plays a significant role in shaping a student's sense of belonging (1). Indeed, a positive school climate provides numerous benefits in social and academic aspects (2). Additionally, a student's level of school belonging can indicate the overall state of their school's climate (3). The National Library of Medicine defines belonging as the subjective feeling of a deep connection within a social group or physical place (4). Consequently, researchers investigate various methods to strengthen students' sense of belonging within their school community. For example, past studies explored how participation in instrumental ensembles influences students' perceived belonging, since music has been shown to foster social bonding (4). However, limited research specifically compares high school students involved in instrumental ensembles to uninvolved students. Therefore, this study aimed to investigate the extent to which instrumental ensemble participation impacts high school students' levels of perceived belonging within their school community compared to those who are uninvolved.

To address this research question, this study utilized a quantitative ex-post facto research design to examine the impact of band ensemble participation on overall school belonging. Participants were categorized into two groups: musicians, defined as students involved in instrumental ensembles (e.g., wind ensemble, jazz, concert, and marching band), and non-musicians, defined as uninvolved students. Participants completed Arslan and Duru's School Belongingness Scale (SBS) to assess

their sense of belonging (5). This study provides valuable insights for researchers and educators seeking strategies to enhance school climate since it examines the extent to which music ensemble participation influences students' sense of belonging.

## Literature review

### *Search strategies*

To ensure credibility, sources from various databases were retrieved. These sources were limited to peer-reviewed journals and other reputable sources and organizations such as those from Google Scholar, JSTOR, and the University of Connecticut Library Database. Keywords used were, sense of belonging, situational belonging, school climate, music participation, and music education.

### *The sense of belonging*

The sense of belonging attracts the attention of research in a variety of contexts since it serves as a central construct in human behavior and experience. In fact, researchers underscore the importance of belonging in a sociobiological context. For example, Baumeister and Leary suggested that the desire to belong is an innate and fundamental human motivation because this desire can trace its roots to evolutionary origins (6). Additionally, they found that individuals strongly connected within a social group yielded greater benefits in both reproduction and survival (6). Therefore, this demonstrates that the psychological desire and need to belong originates from and is significant in both biological and evolutionary terms.

### *Benefits of a strong sense of belonging on school climate*

Social scientists have also investigated the sense of belonging in the context of schools. Goodenow & Grady, researchers in the field of educational psychology, defined school belonging as a student's subjective perception of their value and level of support within their school community (7). In addition, students' level of belonging was suggested to serve as an indicator of the state of their school climate (3). Darling-Hammond and DePaoli, described a positive school climate as one in which students felt a sense of belonging, safety, and relational trust (1). Hence, cultivating a strong sense of belonging plays a fundamental role in influencing the broader school climate.

The importance of fostering a strong sense of belonging holds significant benefits in academic domains. Gillen-O'Neel and Fuligni's longitudinal study found that high school students who experienced a high connection to their school, felt that school was both enjoyable and useful (8). In line with this finding, Osterman found that individuals who experienced a higher level of acceptance and belonging in their school community were more likely to be highly motivated, engaged in learning, and committed to school (9). These studies indicate that a strong sense of belonging can positively influence students' attitudes toward their education. This positive attitude towards education translates to improved academic performance.

Some researchers hypothesize that students who experience higher levels of perceived belonging demonstrate higher levels of academic achievement (10, 11). To investigate the extent to which this variable influences academic achievement, researchers commonly

utilize the method of meta-analysis. In Moallem's meta-analysis, the findings demonstrated a small to moderate positive relationship between belonging in school and academic achievement (12). Korpershoek et al. conducted a meta-analysis of eighty-two studies on school belonging and student outcomes (13). These researchers also found a small positive association between school belonging and academic achievement (12, 13). Conversely, the researchers found that school belonging demonstrated stronger correlations with self-concept, self-efficacy, and engagement in school (12, 13). These studies suggest that while the sense of belonging may not strongly correlate with improved academic achievement, it still possessed significant influence over students' attitudes and behaviors, which could influence their development and success in school.

#### *Methods to improve school climate*

A positive school climate plays a crucial role in supporting the academic and social development of students. Therefore, researchers and educators seek to develop and implement methods that help foster a positive school climate. For instance, Darling-Hammond and DePaoli recommended methods to enhance school climate (1). They posited that to cultivate a positive school climate, students must be able to feel that they are able to develop stable and caring relationships with faculty in the building. In other words, they suggested methods that cultivated strong adult-student relationships (1). One recommended method was to implement advisory systems. In this system, teachers regularly conference with a small group of students to advise, advocate, and support their academic, social, and

emotional development (1). Hence, implementing methods that strengthen teacher-student relationships allow schools to significantly enhance students' overall development, which may improve both academic outcomes and mental well-being.

### *Music participation to improve belonging*

In addition to strengthening teacher-student relationships, educators should also endorse activities that support the development of belonging to further enhance school climate. One activity that may cultivate belonging is participating in music, since it promotes social bonding. Researchers demonstrated that students developed bonds and belonging with their peers through participation in music classes and ensembles (14-16). In line with these findings, Weinstein et al. studied both small and large group choirs of up to 232 members (17). They concluded that singing cultivated a sense of social closeness, even in large ensembles where individuals were not familiar with each other (17). These researchers found that even after a single session of singing, a large group of unfamiliar individuals could achieve the same level of closeness as those who were familiar with each other within that ensemble (17). These studies indicate that the intrinsic nature of music-making allows bonds to develop and may potentially cultivate a sense of belonging.

Siegal investigated the situational belonging of high school band students within their ensembles compared to their broader school environment. This study utilized a quantitative within-subjects approach, surveying suburban and rural high school band students in the Pacific Northwest (3). It utilized a modified

General Belongingness Scale and the Rosenberg Self-Esteem Scale. The results of this study indicated that students reported significantly higher levels of belonging in different contexts, suggesting the complexity of situational belonging. Additionally, Siegal found that self-esteem, band belonging, and age were significant predictors of school belonging (3). However, years of band participation did not significantly predict school belonging. These findings highlight the role of band ensembles in fostering social connection and emotional support, reinforcing the notion of prior research on music participation to potentially cultivate community and belonging in educational settings.

### **Gap in the research**

The pre-existing literature focuses on the benefits of school belonging with participants from the general school population (8, 13, 18). To date, only one study focuses on school belonging and high school students involved within instrumental ensembles (3). However, rather than only focusing on the levels of belonging of musicians, this study aims to compare their responses to non-musicians to investigate the effect of music ensemble participation on overall school belonging. Therefore, the objective of this study is to quantitate the extent to which instrumental ensemble participation impacts high school students' levels of perceived belonging within their school community compared to those who are uninvolved.

### **Methods**

#### *Hypotheses*

Based on the pre-existing body of literature on music and belonging, it was hypothesized that

musicians would exhibit higher levels of perceived belonging compared to non-musicians. This hypothesis stemmed from the idea that music promotes social bonding, builds meaningful connections within individuals in the ensemble, and therefore, likely cultivates a sense of belonging. In this study, the null hypothesis ( $H_0$ ) states no difference in perceived belonging between musicians and non-musicians, while the alternative hypothesis ( $H_1$ ) predicts a difference.

### *Research design overview*

This study followed a quantitative ex post-facto research design, comparing two pre-existing groups, *viz.* musicians and non-musicians. Data was collected using the SBS to assess students' perceived sense of belonging within their school community. The study was conducted over a three-month period. In the first month, ethical approval was obtained from the school administration and psychologists, the research design was finalized, a pilot study was conducted, as was a participant recruitment process, and a non-consent form was released. In the second month, the study design was presented at a faculty meeting and both digital and paper copies of instructions were distributed with instructions on how the survey was to be administered. Data collection also occurred in the second month, with surveys administered to both musicians and non-musicians during a school advisory period. After data collection and during the third month, data analysis and statistical tests were performed in consultation with the statistics teacher.

### *Participants*

This study recruited a representative sample of high school students while excluding those from the pilot study and those who returned non-consent forms. Of the 701 students recruited, 633 (90.3%) completed the survey. To maintain accuracy and consistency, six pilot study participants were excluded to prevent bias, and 20 incomplete responses were removed, resulting in a final sample of 613 ( $N = 613$ ). Participants provided demographic information, including age, grade, and instrumental ensemble participation. Additionally, the current study focused specifically on instrumental ensembles (wind ensemble, concert, jazz, and marching band) since existing literature on belonging primarily focused on these ensembles.

The demographic breakdown of the study participants was as follows: the mean age of participants was 15.5 years. Among the participants ( $N = 613$ ), there were 154 freshmen (25.1%), 165 sophomores (27.0%), 157 juniors (25.6%), and 137 seniors (22.3%). In addition, 13.6% of participants were involved in instrumental ensembles ( $n = 83$ ) and 86.4% were uninvolved ( $n = 530$ ). Among the ninety-two students involved in an instrumental ensemble, eighty-three (90.2%) participated in this study. Of those involved ( $n = 83$ ), the reported participation in instrumental ensembles was as follows: marching band ( $n = 83$ , 100%), concert band ( $n = 72$ , 86.7%), wind ensemble ( $n = 29$ , 35.0%), and jazz band ( $n = 15$ , 18.1%). It is important to note that in this school, all musicians are required to participate in marching band and thus, they may be involved in multiple ensembles.

### *Metrics*

The existing body of literature uses a variety of metrics to measure belonging. For example, Siegal's study employed a modified version of the General Belongingness Scale, which assesses perceived inclusion, connectedness, and exclusion using a 7-point Likert scale (3, 19). Another metric, the Sense of Belonging to School Scale, measures school satisfaction and adherence to rules using ten items (20). These metrics highlight the different ways in which belonging can be measured and conceptualized.

Before 2017, no metric specifically measured students' subjective sense of school belonging, leading Arslan and Duru to develop the SBS (5). They validated the SBS through psychometric exploratory and confirmatory factor analyses, to confirm its factor structure. The SBS showed strong internal reliability with a Cronbach's alpha of 0.86 ( $\alpha = .86$ ), illustrating that the items consistently measured the same concept. They confirmed convergent validity through strong correlations with related constructs, such as academic engagement, and demonstrated discriminant validity through low correlations with unrelated measures. The SBS consists of 10 items on a 4-point Likert scale (1 = almost never, 4 = almost always), which was compiled into a Google Form for this study's survey (Figure 1). Additionally, this metric contains two subscales: that of social-acceptance and of social-exclusion. Odd and even numbered items denote the social-acceptance and the social exclusion subscale, respectively.

### *Study administration*

Institutional Review Board (IRB) authorization was obtained for this study. Approval was also obtained from the school psychologists to

utilize the SBS in the school-wide survey. A month prior to data collection, the principal of the participating high school distributed a non-consent form to the parents and guardians of students to opt out of this study. Those who wished to opt out of this study filled out the non-consent form and returned it to the student's advisor. Parents and guardians who did not return the non-consent form and students who participated in this study indicated passive consent. Due to ethical requirements, the non-consent form disclosed the research question to inform parents of the purpose of this study. To ensure the complete confidentiality of each participant, the survey from this study did not collect any personal identifiers, such as names or school emails.

A pilot study was conducted to iron out any design bugs and limit potential errors. In the pilot study, six students provided feedback on the survey, ensuring that the Google Form functioned properly and contained no errors. They helped identify any problems with the survey's design, such as unclear wording or technical problems, and provided suggestions for improvement. This process ensured that the survey was user-friendly and that participants would be able to complete it accurately in the main study. Based on the pilot study feedback, necessary adjustments were made to enhance the survey's clarity before distributing it to the full sample of participants. Students who participated in this pilot study were excluded from the current study to avoid bias.

Several steps were taken to ensure that the staff administered the study consistently. One week before data collection, the study design and administration procedure were presented at a

faculty meeting, explaining its significance and outlining the guidelines to maintain the validity and consistency of the administration process. Advisors were instructed not to assist students with interpreting the survey questions and to prohibit students from collaborating with their peers in order to ensure that each response was representative of the student's own, personal feelings. Instructions were then distributed to the staff in both paper form and electronically via e-mail.

Data collection for the study took place in early December 2024 during one of the high school's advisory periods, with steps taken to ensure consistency in the survey administration process. During the study, each advisor was provided with a script (see Appendix A) to ensure that each survey was administered consistently throughout the entire school. In addition, advisors were also provided with a video presentation to encourage student participation in this study. The video did not disclose the specific objective. After the video presentation, the advisors then instructed students to complete the survey using the Google Form (see Appendix B). After collecting the results of the survey, data interpretation and analysis were performed with the guidance of the statistics teacher.

### *Statistical tests*

This study used an ex-post facto design to collect quantitative data on students' perceived belonging through the SBS. The independent samples t-test compared the responses of musicians and non-musicians. This test enabled thorough analysis of group differences and overall belonging, contributing to existing research and providing insights into factors that

may potentially influence students' sense of belonging in school. To ensure thorough analysis of the results, the researcher performed the independent samples t-test three times, each with a different focus: individual SBS items, subscales, and grade level comparisons. A  $p$  value  $< 0.05$  was considered significant.

### *Assumptions of normality*

This study used the independent samples t-test, which assumes normality. Histograms can provide a visual representation for determining the type of distribution. For instance, normal distribution in a histogram follows a bell-shaped curve. Histograms of the data (Figures 2 and 3) reveal non-normal distributions, with a bimodal distribution for musicians and a right-skewed distribution for non-musicians. Despite this, the large sample size ( $N = 613$ ) reduces sensitivity to deviations from normality, as the Central Limit Theorem suggests that a sufficiently large sample of thirty or more participants, approximates a normal distribution (21). Hence, this theorem supports the robustness of these tests despite the lack of observed normality.

### *Assumptions of homoscedasticity*

The independent samples t-test also requires assumptions of homoscedasticity or equal variance. Variance is a statistical measure that describes the spread or dispersion of a set of data points around the mean. In this study, equal variance means that the spread of SBS scores, throughout each item, among non-musicians and musicians are roughly the same. A Levene's test was performed using Python to determine the homoscedasticity within the data. A  $p$ -value greater than the alpha-level ( $\alpha < 0.05$ ) would determine that the data had equal

variance. This test yielded an F-statistic of 2.328 and a p-value of 0.128, indicating equal variance.

## Results

### *Individual SBS Item Analysis*

It is important to note that for the social-exclusion subscale, a larger magnitude of negative (number) responses indicate higher levels of belonging. In order to standardize these responses with those in the social acceptance subscale, a reverse scoring formula was applied to this (social exclusion) subscale.

A student's response of one, two, three or four was 'reversed' to a response of four, three, two or one, respectively. The reverse scoring formula was applied prior to performing the t-tests. Table 1 shows the scores before and after the reversing process. The numbers to even-numbered questions; which pertain to the social-exclusion subscale; hence may appear counterintuitive in subsequent tables; with greater numbers indicating lesser social-exclusion. This is because of the necessity for standardization.

**Table 1.** Reverse scores for the social-exclusion subscale

| Original Score | Reverse Score |
|----------------|---------------|
| 1              | 4             |
| 2              | 3             |
| 3              | 2             |
| 4              | 1             |

The results of the independent samples t-test suggested that while there were no significant overall differences between musicians and non-musicians across all the 10 questions ( $p = 0.130$ ), the test did yield nuanced results when individual questions were compared. The p-values for eight out of the ten questions on the SBS resulted in values  $> 0.05$ ). This data is

shown in Table 2, which presents the mean, standard deviation, and p-value for each SBS question based on the responses of musicians and non-musicians. However, only two items demonstrated significant differences, with p-values  $< 0.05$ . Items 7 and 8 highlighted significant differences, with musicians reporting significantly more positive responses.

**Table 2.** Results of the independent samples t-test for individual SBS items

| SBS Item                                                                 | Musician   |          | Non-Musician |          | Results |         |
|--------------------------------------------------------------------------|------------|----------|--------------|----------|---------|---------|
|                                                                          | Group mean | Group SD | Group mean   | Group SD | t-value | p-value |
| 1. I can really be myself in this school.                                | 3.072      | 0.712    | 2.962        | 0.777    | 1.293   | 0.099   |
| 2. I feel like I don't belong to this school.                            | 3.482      | 0.705    | 3.445        | 0.796    | 0.433   | 0.333   |
| 3. I have close/sincere relationships with my teachers and friends.      | 3.193      | 0.689    | 3.140        | 0.772    | 0.642   | 0.261   |
| 4. I think that I am not involved in most of the activities at school.   | 3.120      | 0.861    | 2.960        | 0.943    | 1.554   | 0.061   |
| 5. I feel that I am accepted by other people at school.                  | 2.928      | 0.745    | 3            | 0.813    | -0.811  | 0.790   |
| 6. I feel myself excluded in this school.                                | 3.373      | 0.807    | 3.406        | 0.772    | -0.340  | 0.063   |
| 7. I see myself as a part of this school.                                | 3.096      | 0.743    | 2.906        | 0.901    | 2.109   | 0.018   |
| 8. In this school, my friends, teachers, and managers usually ignore me. | 3.771      | 0.502    | 3.670        | 0.579    | 1.673   | 0.049   |
| 9. I think that people care about me in this school.                     | 3          | 0.749    | 3.057        | 0.763    | -0.639  | 0.738   |
| 10. I have no close/sincere connections with people in this school.      | 3.627      | 0.676    | 3.540        | 0.745    | 1.074   | 0.143   |

### *Social-acceptance/social-exclusion analysis*

Despite demonstrating non-significant variation in responses to individual items, musicians and non-musicians reported more nuanced results on the SBS subscales. To test for these differences, aggregate data was used, which sums responses from individual items, rather than analyzing them separately. This approach allowed for a clearer view of overall patterns within the population, minimizing the influence of outliers and increasing the reliability of the statistical tests. Specifically, the means and standard deviations of the responses on the social acceptance and social exclusion subscales were aggregated for both groups. These results are shown in Table 3.

The t-test on the social-acceptance subscale yielded a p-value of 0.126, suggesting that there was no significant difference between the perception of musicians and non-musicians in terms of social acceptance. On the other hand, the t-test on the social-exclusion subscale resulted in a p-value of 0.035, indicating a statistically significant difference between the two groups. Specifically, musicians reported experiencing less social exclusion, which suggested that participation in music ensembles may mitigate feelings of social exclusion. Musicians hence may perceive themselves to be less socially excluded than non-musicians,

but no more socially accepted than non-musicians.

**Table 3.** Independent samples t-test results for Social Acceptance and Social Exclusion among musicians and non-musicians.

|                   | Musicians      |              | Non-Musicians  |              | Results |         |
|-------------------|----------------|--------------|----------------|--------------|---------|---------|
|                   | Aggregate mean | Aggregate SD | Aggregate mean | Aggregate SD | t-value | p-value |
| Social-acceptance | 15.289         | 1.628        | 15.064         | 1.804        | 1.153   | 0.126   |
| Social-exclusion  | 17.373         | 1.612        | 17.021         | 1.735        | 1.834   | 0.035   |

#### *Grade level comparison analysis*

Potential differences in responses across grade levels were also analyzed. Table 4 presents the independent samples t-test results by grade level for both musicians and non-musicians. This analysis explored whether there were significant differences in the belongingness

scores between musicians and non-musicians across different grade levels (freshmen, sophomores, juniors, and seniors). The aggregate means and standard deviations for both groups across these grade levels were calculated and compared.

**Table 4.** Independent samples t-test results by grade level for musicians and non-musicians.

|            | Musicians      |              | Non-Musicians  |              | Results |         |
|------------|----------------|--------------|----------------|--------------|---------|---------|
|            | Aggregate mean | Aggregate SD | Aggregate mean | Aggregate SD | t-value | p-value |
| Freshmen   | 32.8           | 3.764        | 33.129         | 4.002        | -0.424  | 0.663   |
| Sophomores | 32.176         | 3.627        | 32.027         | 4.709        | 0.155   | 0.439   |
| Juniors    | 32.65          | 3.675        | 31.672         | 5.047        | 1.054   | 0.150   |
| Seniors    | 32.938         | 5.603        | 31.554         | 5.603        | 0.928   | 0.182   |

Across all grade levels, freshmen, sophomores, juniors, and seniors, there were no statistically significant differences in SBS between musicians and non-musicians. The t-values

ranged from -0.424 to 1.054 and p-values from 0.150 to 0.663, all exceeding the significance threshold of 0.05, as shown in Table 4. These findings indicate that perceived social belonging is independent of grade level in high school.

## Discussion

The survey found no overall or subscale statistical difference between the perceived SBS between musicians and non-musicians. Furthermore, the results found no difference even when comparing the responses of musicians and non-musicians across specific grade levels. The results are particularly striking given that Siegal's study concluded that musicians experienced a stronger sense of situational belonging in band than in the broader school environment (3). The results of the current study suggest that while participation did not universally enhance belonging, musicians did report more positive responses on certain items and subscales, highlighting important nuances.

The initial hypothesis suggested that musicians would have a higher level of belonging, based on Siegal's study, which found that music ensembles enhance belonging, and Weinstein et al., which concluded they foster a sense of community (4, 17). Music ensemble participation did not significantly impact belonging. This may be explained as students already felt a strong sense of acceptance, potentially due to various existing school initiatives promoting belonging.

While participation in instrumental ensembles did not universally enhance overall belonging, musicians reported more positive responses on

specific items, particularly item 7 ("I see myself as a part of this school") and item 8 ("In this school, my friends and teachers usually ignore me") of the SBS. This suggests that while instrumental ensemble participation did not significantly impact overall belonging, it may influence dimensions like students' connection to school activities and their sense of support from peers and teachers. Band students may feel a stronger sense of belonging due to regular involvement in school events, and musicians may report more positive responses due to the feedback and inclusion in ensemble rehearsals.

Despite the lack of a direct correlation between ensemble participation and SBS, the students in this particular high school exhibited a particularly high sense of belonging. This suggests that other key factors, such as the overall school climate and the school's initiatives to enhance belonging, potentially played a significant role in cultivating this strong sense of community and connectedness; such that any contribution of music participation paled by comparison. Indeed, this school's practices are focused on promoting positive relationships between students and faculty, creating opportunities for student engagement, and promoting a culture of acceptance to foster a positive school climate. The school has long embraced the initiatives towards improving belonging as part of its culture and history. Notably, an unpublished 2002 report from the visiting committee of the New England Association of Schools and Colleges (NEASC) listed the school climate as a commendation, underscoring the impact and effectiveness of the effort invested in these initiatives. Additionally, specific strategies such

as the school's advisory system highlight the efforts towards these initiatives. In fact, an unpublished 2012 NEASC report listed the advisory system as a commendation, acknowledging its significance in improving school climate since its implementation during the 2008-2009 school year. Moreover, this strategy is consistent with previous studies, such as Darling-Hammond and DePaoli's study which also recommended advisory systems to foster a positive school climate (1). They recommended advisory systems as teachers are able to regularly conference with a small group of students to advise, advocate, and support their academic, social, and emotional development in this school (1). This suggests the effectiveness of advisory systems in building meaningful relationships in smaller groups to support and improve student's educational experiences. Thus, this system may be a key factor that contributes to students' sense of belonging.

Prior to this study, this participating high school conducted longitudinal unpublished surveys over the past four years to gather data on student's levels of belonging. Early surveys revealed that a number of students reported feeling a lack of significant connection within the building. According to the 2022-2023 survey, 77% of students felt that they were a part of the school community. In the 2023-2024 school year, this percentage dropped slightly to 76%. In a personal interview with the assistant principal of this school on January 9, 2025, he stated that as a result of these findings, the high school's administration aimed to enhance this statistic. To achieve this, the administration played a dynamic role in investing significant time, resources, and training for faculty and

students to ensure that the high school continually learns from the data and feedback from the responses. For example, the school implemented the creation of a culture and climate committee, which consists of students, teachers, parents, firefighters, police officers, and resource officers, focused on improving school climate and belonging. This committee significantly contributed to a revised structure of the school's advisory system focused on cultivating positive relationships in a more "natural and organic" manner with time set aside for addressing relevant issues, heritage lessons, and opportunities for students to choose how they engage and spend their time with their peers and advisor. This initiative proved effective, as student reports demonstrated a 12% increase in belonging compared to the previous year, with 88% feeling part of the school community in the 2024-2025 school year. This notable improvement suggests that targeted efforts to foster belonging within the school environment produced a measurable impact. The data indicates that initiatives promoting engagement and support can significantly enhance students' sense of belonging, reinforcing the importance of investing in such programs to maintain and further improve these outcomes.

Additionally, it is important to note that while the current study shares some results as Siegal's study, the findings of the current study do not completely align with his findings due to differences in research design and focus (3). Siegal's research approach employed a within-subjects design (3). In this type of design, the researcher exposes the same participants to all conditions evaluated. Siegal's study assessed situational belonging within two different

contexts, band ensembles and the broader school environment, and required participants to report their sense of belonging in these two distinct settings (3). The within-subjects approach is useful for examining differences in individual experiences across multiple contexts without the need for a control group. It allows for the comparison of the effects of different conditions on the same group of participants, making it possible to observe how a participant's behavior or responses change under different circumstances or situations. Furthermore, Siegal investigated situational belonging, which refers to how students perceive their sense of acceptance and connection within specific contexts, such as that within their music ensembles compared to the broader school environment (3). Siegal's focus on situational belonging enabled a more nuanced understanding of how students' perceptions of their place within the school community may shift depending on the context, highlighting the dynamic nature of belonging.

In contrast, the current study focused on examining students' overall belonging, which refers to their general perceptions of inclusion, acceptance, and connection within the school environment as a whole, rather than within specific contexts. This focus examined how students felt about their place in the school community, considering factors such as their relationships with peers, teachers, and the school culture in general. Unlike Siegal's study, which examined how belonging might change across different situations, the current study did not distinguish between specific settings (3). Instead, it focused on students' overall sense of belonging to the school, providing a broader, more stable view of how connected they felt

within the entire school context. The intrinsic nature of situational belonging is more likely to fluctuate depending on the environment or social group, whereas overall belonging represents a more stable, long-term sense of inclusion that may not be as responsive to changes in context.

The current study underscores the need to differentiate between situational and overall belonging as it suggests the heightened sensitivity of the social-exclusion subscale. While music ensembles may mitigate social exclusion in the context of band, musicians and non-musicians reported no difference in terms of social-acceptance. This indicates that students may feel consistent high levels of belonging to the school as a whole, regardless of whether they are in a music ensemble or in a different school activity potentially due to the strong initiatives on belonging. Additionally, the intrinsic nature of music programs promotes social bonding (17). This holds potential in creating a close-knit group where students may feel accepted and supported, which may reduce feelings of exclusion within that specific environment. The nuanced results in the social-exclusion subscale illustrate the concept of situational belonging, where students may feel a heightened sense of belonging in specific contexts.

### **Limitations**

Limitations of this study include the use and reliance on a self-report questionnaire, such as the SBS. The reliance on a self-report questionnaire can potentially introduce biases. For example, self-report questionnaires can introduce the social desirability bias. This bias refers to the likelihood of participants to

present themselves in a more favorable light during self-reporting. This often leads to the over-reporting of positive behaviors or under-reporting of negative ones (22). However, this limitation was partly mitigated with the assurance of anonymity to encourage participants to provide accurate responses.

Furthermore, conducting research on a single school presents limitations on generalizing the results. Findings from a single school may not be applicable to other schools due to differences in demographics, resources, and educational practices. To address this limitation, future research may consider including a more diverse sample size that consists of multiple schools or a longitudinal study to improve generalizability.

## Conclusion

### *Implications*

The findings of this study highlight the difference between situational and overall belonging. Previous research, such as Siegal's study, emphasized music ensembles' role in fostering situational belonging (3). However, this study suggests that in schools with already high levels of overall belonging, music ensemble participation does not significantly influence SBS. This highlights the need for future research to differentiate between situational and overall belonging when assessing the impact of music programs. It also suggests that greater SBS scores in students' who participate in music ensembles; or participate in any small group activity; may be inversely correlated with the school culture of deliberate methods to foster belonging.

These findings also have broader educational implications for understanding factors contributing to school belonging. High levels of belonging suggest that school-wide initiatives, rather than specific activities, may play a critical role in fostering inclusion, supporting existing research on the importance of a positive school climate (23, 24). Schools should evaluate their belonging-focused initiatives to identify key elements that strengthen community. To further enhance belonging, schools could implement or strengthen advisory systems, providing consistent, small-group interactions with teachers and peers. These programs foster relationship-building, mentorship, and individualized support, improving students' sense of connection and inclusion. Investing in school-wide strategies, such as advisory programs, can ensure all students feel valued and supported, regardless of extracurricular involvement.

### *Perspectives*

Future research may consider replicating this study in schools with low levels of belonging to determine whether band participation influences belonging in places where school belonging is low. Since band may have little impact in schools where belonging is already high, examining its effect in different school environments could provide deeper insights. Moreover, this study collected data on age, grade level, and instrumental ensemble participation status. To expand on this focus, future research may consider also collecting data on biological sex for further analysis. Additionally, rather than focusing solely on the impact of instrumental ensemble participation, future researchers may also include other

activities, such as sports or theater. Another activity most significantly influences students' area for future research is studying which sense of belonging at school.

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## Appendix A.

Teacher Instruction Page & Script

### AP Research Study (December 10, 2024): Instruction Page for Teachers

*Please remember to adhere exactly to this script to ensure that this research study will be administered consistently throughout all roundtable sections.*

#### I. Introduction to the Research Study:

Please share the following with students:

*“Today, you are being asked to participate in an AP Research study. Before we begin, we will start by watching a video presentation to explain the AP Capstone program.”*

After reading this to students, please play the [video presentation](#). (runs approx. 2:30)

#### II. Administering the Survey

After playing the video, please share the following with students:

*“After watching the video presentation, you will need to complete a google form which is posted in the roundtable google classroom. The survey should take no more than 5 minutes to complete.*

*Please remember that the survey must be completed individually to ensure the validity of each response.*

*Please refrain from collaborating with your peers in answering the questions and talking with others until everyone has completed the survey in its entirety.*

*Each question will have a set of answer options, and you should select the one that feels closest to how you feel. There are no right or wrong answers—just answer as honestly as possible.*

*If everyone is ready, you may open the survey and begin.”*

### III. Research Study Rules

Please be sure to enforce these rules as students complete the survey:

1. Teachers **cannot** help students with interpreting the survey questions
2. Students **cannot** collaborate with their peers

***\*It is extremely important that students complete the survey individually. Student collaboration will compromise the entire data set and affect the results of the research.\****

***OVER →***

### IV. Closing Remarks:

After all students complete the survey, please share the following with students:

*“On behalf of [Researcher’s Name] thank you all for your help in participating in this research study.”*

To all advisors,

I would like to express my deepest gratitude for your help and support in administering the survey for my research study. This research would not have been possible without all your help, and I truly appreciate the time and effort you dedicated in making it a success.

Thank you,  
[Researcher’s Name]

## Appendix B.

### Student Survey & Questionnaire

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AP Research Student Survey

#### AP Research Student Survey

Answers will remain anonymous and please be sure to complete this form in its entirety

\* Indicates required question

1. What is your age? \*

Mark only one oval.

- ☐ 13
- ☐ 14
- ☐ 15
- ☐ 16
- ☐ 17
- ☐ 18

2. What grade are you? \*

Mark only one oval.

- ☐ Freshman
- ☐ Sophomore
- ☐ Junior
- ☐ Senior

3. Are you involved in any instrumental ensembles? \*

Mark only one oval.

- ☐ Yes
- ☐ No

<https://docs.google.com/forms/d/1ZBAM39wFNAqhASzN6NPAeuLoIvIQ3jRehKT-1vccfVU/edit>

1/5

12/15/24, 8:24 PM

AP Research Student Survey

## 4. If selected yes, which ensembles? \*

*Check all that apply.*

- ☐ Wind Ensemble
- ☐ Jazz Band
- ☐ Concert Band
- ☐ Marching Band / Colorguard
- ☐ (No) I do not participate in any instrumental ensembles

*Skip to question 5*

## School Belongingness Scale

**PLEASE NOTE BEFORE ANSWERING QUESTIONS:** (1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

5. 1. I can really be myself in this school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

*Mark only one oval.*

1   2   3   4

---

Alm ☐ ☐ ☐ ☐ Almost Always

---

6. 2. I feel like I don't belong to this school.  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

*Mark only one oval.*

1   2   3   4

---

Alm ☐ ☐ ☐ ☐ Almost Always

---

<https://docs.google.com/forms/d/1ZBAM39wFNAqhASzN6NPAeuLofVIQ3jRehKT-1vccfVU/edit>

2/5

12/15/24, 8:24 PM

AP Research Student Survey

7. 3. I have close/sincere relationships with my teachers and friends  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

|     |                       |                       |                       |                       |               |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
|     | 1                     | 2                     | 3                     | 4                     |               |
| Alm | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Almost Always |

8. 4. I think that I am not involved in most of the activities at school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

|     |                       |                       |                       |                       |               |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
|     | 1                     | 2                     | 3                     | 4                     |               |
| Alm | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Almost Always |

9. 5. I feel that I am accepted by other people at school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

|     |                       |                       |                       |                       |               |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
|     | 1                     | 2                     | 3                     | 4                     |               |
| Alm | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Almost Always |

10. 6. I feel myself excluded in this school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

|     |                       |                       |                       |                       |               |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
|     | 1                     | 2                     | 3                     | 4                     |               |
| Alm | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Almost Always |

<https://docs.google.com/forms/d/1ZBAM39wFNAqHAsZN6NPAeuLoVlQ3jRehKT-1vccfVU/edit>

3/5

12/15/24, 8:24 PM

AP Research Student Survey

11. 7. I see myself as a part of this school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

1 2 3 4

---

Alm ☐ ☐ ☐ ☐ Almost Always

12. 8. In this school, my friends and teachers usually ignore me  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

1 2 3 4

---

Alm ☐ ☐ ☐ ☐ Almost Always

13. 9. I think that people care about me in this school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

1 2 3 4

---

Alm ☐ ☐ ☐ ☐ Almost Always

14. 10. I have no close/sincere connections with people in this school  
(1. Almost Never 2. Sometimes 3. Often 4. Almost Always)

Mark only one oval.

1 2 3 4

---

Alm ☐ ☐ ☐ ☐ Almost Always

<https://docs.google.com/forms/d/1ZBAM39wFNAqhASzN6NPaeuLoVIQ3jRehKT-1vccfVU/edit>

4/5