The Relationship between Students’ Sense of Belonging, Grit and Anxiety during Pandemic Times

Lynda S. LATTKE¹, Aurelia DE LORENZO², Emanuela RABAGLIETTI³

¹ Department of Psychology, University of Turin, Italy, lyndastella.lattke@unito.it
² Department of Psychology, University of Turin, Italy, aurelia.delorenzo@unito.it
³ Department of Psychology, University of Turin, Italy, emanuela.rabaglietti@unito.it

Abstract: Covid-19 restrictions in Italy have significantly reduced the ‘in-presence’ time spent with classmates and teachers. As a result, this new way of relating to one another has challenged many students by increasing anxiety and depression. In such reality, protective factors such as sense of belonging (SB) and Grit (GR) can reduce anxiety (ANX). Considering the pandemic context, the scope of this study is to explore the relationship between SB/GR and ANX, as a risk factor and to understand whether the relationship between these variables changes based on students’ grade level (GL): middle school (MS) versus high school (HS). For this purpose, a total of 451 students from North/Central Italy, 71% F (M=15.07, ±2.46), of which 266 from HS, answered an online questionnaire in Spring 2021. Data was analyzed by doing a correlation analysis, difference between groups based on GL and hierarchical regression with SPSS 27. Results for the correlation analysis confirm that SB and GR are positively related; when controlling for differences in GL via t-test analysis, SB and GR are higher for MS. When measuring the SB/GR (Panorama Education, 2016) and its impact on the state of ANX (Spielberger et al., 1983) via the hierarchical regression, SB/GR decrease while ANX increases in particular for HS students. These results highlight that anxiety has had a greater impact specially on HS students. For these reasons we encourage schools to create environments in which they find strategies, as a community, to assist students in developing a sense of belonging and grit.

Keywords: sense of belonging; grit; anxiety; high and middle school students.

Introduction

The reduction of the ‘in-presence’ time spent with classmates and teachers due to the Covid-19 pandemic restrictions (Hertz et al., 2021; Kishida et al., 2021; UNICEF, 2021) has led to a new way of relating to each other. Because school is an important place for children and adolescents to learn how to relate to themselves and others, and where they develop an important part of their identity through these interactions (Rabaglietti & Ciairano, 2015), not being able to do so has been challenging for many students, leading to an increase in anxiety and depression (Edgcomb et al., 2021; Hawrilenko et al., 2021; Petretto et al., 2020; Pieh et al., 2021; Viner et al., 2021). Under these circumstances, socio-emotional skills may act as protective factors by reducing some of these risk factors (Beccaria et al., 2022; Cefai et al., 2018; Freudenberg & Ruglis, 2007). In this study, we focus on two of these factors, sense of belonging and grit, and examine how they relate to anxiety as a risk factor. More specifically, we aim to examine how one of the measures of peer relationships in adolescence (SB) along with a student’s agentive role (GR), is related to a student’s internalized state of discomfort (ANX).

Specifically, this study has two objectives:

Ob1: to examine the relationships between the variables, SB and GR, which are considered protective factors, and ANX, which is considered a risk factor, in a sample of adolescents one year after the beginning of the pandemic.

Ob2: to examine whether these relationships between the variables change according to grade level (GL), i.e. Middle School (MS) and High School (HS).

Literature Review

Sense of Belonging is a protective factor that can help adolescents feel safe in school and feel that they are a meaningful part of the school and class group (Craggs & Kelly, 2018; Uslu & Gizir, 2017): Does the student feel that it is possible to express him/herself without being judged or ridiculed? Does the student feel that others are genuinely interested in the student’s background and heritage? Does the student feel included in various activities? According to Craggs & Kelly (2018), there are four ways to
understand a sense of belonging: "...feeling safe and secure in the educational setting; being able to form positive relationships with staff and peers; feeling able to express individual identity (enabling pupils to feel safe to be themselves) and having opportunities to experience a sense of group membership” (p.12). All of these interpretations are related to the student's background and identification as a person (Verhoeven et al., 2019), as well as how valued they feel by their community. In Hamm & Faircloth's (2005) study, the weight of friendship is examined as a factor contributing to the sense of belonging. They explain that the presence of this emotional bond, manifested through friendship, interacts with an increased interest in school, which brings not only academic but also non-academic benefits. Such a bond leads to a sense of inclusion that "makes shared activities very enjoyable" and, as a result, can reduce students’ anxiety. Similarly, other protective factors, such as grit, can also improve a student’s well-being. Duckworth et al. (2007) define it as "perseverance and passion for long-term goals” (p. 1087). The school context can be a place where students are encouraged to set goals and learn to sustain them, especially if this type of mastery is modeled in school and students perceive it as such (Park et al., 2018). For example, when students are more committed to their studies, their academic engagement also increases (Tang et al., 2019). In addition, consistency and persistence in pursuing goals may be viewed positively by a social group and thus increase popularity among peers (Lan, 2020).

When any of these social-emotional skills, particularly sense of belonging and grit, are low, anxiety can increase (Arslan, 2021; Cefai et al., 2018; Lan & Radin, 2020; Pendergast et al., 2018) and affect their school performance (Mazzone et al., 2007), general well-being and relationships with others (Henker et al., 2002). As a consequence, school closures and quarantines resulting from the government’s Covid-19 restrictions have further increased anxiety levels amongst adolescents (Hertz et al., 2021; Pieh et al., 2021).

**Methodology**

**Participants**

A total of 451 students from North/Central Italy, 71% F (M=15.03, ±2.45), including 258 from high school and 193 from middle school, answered an online questionnaire in Spring 2021. Consent to participate was obtained from both students and their parents/guardians.
Data collection and analysis

The online questionnaire included a socio-demographic section and 13 scales. For this study, we analyzed the scales that collected data on sense of belonging, grit, and anxiety. Below is a description of each scale:

The Panorama Education scale (2016) on Sense of belonging includes 5 items on a Likert scale and it measures “how much students feel they are valued members of the school community.” The answer options range from 1 to 5 with a minimum score of 5 to a maximum score of 25. There is one type of answer option ranging from “not at all” to “always”.

The Panorama Education scale (2016) on Grit includes 5 items on a Likert scale and measures "how well students are able to persevere through setbacks to achieve important long-term goals." The answer options range from 1 to 5 with a minimum score of 5 to a maximum score of 25. The answer options range from “not at all” to “always” except for the last item where answer options range from “not at all likely” to “very likely”. For these two scales, Sense of belonging and Grit, we used the translated version of the Panorama Education scales which have been adapted/validated by Lattke, De Lorenzo, Settanni & Rabaglietti (in press).

The STAI anxiety scale consists of 20 items and measures a person’s current state of mind, independent of their tendency to be anxious or not. It is based on a 4-point Likert scale. The total score for the STATE-S scale is calculated by adding the scores of all responses. For all items, the response options are "not at all," which is worth one point, "somewhat," which is worth two points, "quite a bit," which is worth three points, and "very much," which is worth four points. This scoring is reversed for items number 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20. "The total score is between 20 and 80 with a threshold predictive value of anxiety symptomatology placed at 40. It is also possible to define the level of severity: from 40 to 50 mild form, from 50 to 60 moderate, > 60 severe" (Barisone et al., 2004). We used the Italian version by Pedrabissi and Santinello (1989).

Data was then analyzed (using SPSS 27) by performing a correlation analysis based on grade level and a t-test to assess the differences between middle and high school students for the three variables (SB, GR and ANX). We then conducted a hierarchical regression controlling for any differences between middle and high school students, and then measured SB/GR
(Panorama Education, 2016) and its effects on the state of ANX (Spielberger et al., 1983).

Results

Descriptive analysis

Information on descriptive statistics for the total sample and the sub-samples, Middle School and High School (Table 1).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>skewness</th>
<th>kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grit</td>
<td>Tot</td>
<td>451</td>
<td>6</td>
<td>25</td>
<td>17,64</td>
<td>3,38</td>
<td>-0.38</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>193</td>
<td>11</td>
<td>24</td>
<td>18,28</td>
<td>2,90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HS</td>
<td>258</td>
<td>6</td>
<td>25</td>
<td>17,16</td>
<td>3,62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of Belonging</td>
<td>Tot</td>
<td>451</td>
<td>5</td>
<td>25</td>
<td>15,37</td>
<td>4,39</td>
<td>-0.10</td>
<td>-0.61</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>193</td>
<td>5</td>
<td>25</td>
<td>16,72</td>
<td>4,21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HS</td>
<td>258</td>
<td>5</td>
<td>25</td>
<td>14,38</td>
<td>4,26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>Tot</td>
<td>451</td>
<td>23</td>
<td>79</td>
<td>50,00</td>
<td>10,41</td>
<td>0,48</td>
<td>-0,12</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>193</td>
<td>27</td>
<td>62</td>
<td>46,49</td>
<td>5,74</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HS</td>
<td>258</td>
<td>23</td>
<td>79</td>
<td>52,72</td>
<td>12,18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: MS= Middle school students; HS= High school students
Source: Authors' own conception

Correlations

The Pearson correlation analysis (Table 2 and Table 3) shows that there is a positive relationship between GR and SB for both grade levels. For MS students, ANX does not correlate significantly with GR and SB (GR: r=0,060, p=0,404; SB: r=-0,028, p=0,697), while for HS students, two negative correlations emerge.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample</th>
<th>N</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Grit</td>
<td>MS</td>
<td>193</td>
<td>0,202**</td>
<td>0,060</td>
<td></td>
</tr>
<tr>
<td>2.Sense of Belonging</td>
<td>MS</td>
<td>193</td>
<td></td>
<td>-0,028</td>
<td></td>
</tr>
<tr>
<td>3.Anxiety</td>
<td>MS</td>
<td>193</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p<0.001
Source: Authors' own conception
The Relationship between Students’ Sense of Belonging, Grit and Anxiety …
Lynda S. LATTKE, et al.

Tab. 3 Correlations Analysis for High School

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample</th>
<th>N</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Grit</td>
<td>HS</td>
<td>258</td>
<td>0,295**</td>
<td>-0,276**</td>
<td></td>
</tr>
<tr>
<td>2. Sense of Belonging</td>
<td>HS</td>
<td>258</td>
<td></td>
<td>-0,303**</td>
<td></td>
</tr>
<tr>
<td>3. Anxiety</td>
<td>HS</td>
<td>258</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p<0,001

Source: Authors' own conception

Differences between Middle School (MS) and High School (HS) students

Statistically significant differences emerged between MS and HS students (analysis conducted with Welch's correction): Grit [F(449)=12,53; p<0,001] and Sense of Belonging [F(449)=33,91; p<0,001] were higher for MS students; Anxiety [F(449)=43,27; p<0,001] was higher for HS students.

Hierarchical Regression

A three-step hierarchical multiple regression was conducted with ANX as the dependent variable. Grade Level was included in the first step of the regression to control the impact of the students’ age. GR was entered at step two and SB at step three.

Table 4. Hierarchical Regression on Anxiety of the total sample (n=451)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>β</th>
<th>t</th>
<th>R2adj</th>
<th>ΔR²</th>
<th>F(gdl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Grade Level</td>
<td>0,296**</td>
<td>6,578</td>
<td>0,086</td>
<td>0,088</td>
</tr>
<tr>
<td>Step 2</td>
<td>Grade Level</td>
<td>0,265**</td>
<td>5,910</td>
<td>0,119</td>
<td>0,035</td>
</tr>
<tr>
<td></td>
<td>Grit</td>
<td>-0,191**</td>
<td>-4,255</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>Grade Level</td>
<td>0,225**</td>
<td>4,954</td>
<td>0,146</td>
<td>0,028</td>
</tr>
<tr>
<td></td>
<td>Grit</td>
<td>-0,145**</td>
<td>-3,175</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sense of Belonging</td>
<td>-0,180</td>
<td>-3,846</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p<0,001

Source: Authors' own conception
The hierarchical multiple regression (Table 4) revealed that at step one, Grade Level contributed to the regression model, \( F(1,149) = 43,27; \ p < 0,001 \) and accounted for about 8% of the variation in Anxiety. Introducing GR produced different outcomes in the second step explaining an additional 3,5% of variation in ANX \( F(1,148) =31,51; \ p < 0,001 \). Since Grade Level \( (\beta = 0,265; \ p < 0,001) \) continues to be a significant predictor of ANX, the predictive contribution of GR \( (\beta =-0,191; \ p < 0,001) \) was added. Adding SB in the third step explained an additional 2,8% of the variation in ANX \( F(1,147) = 26,58; \ p < 0,001 \). In detail, Grade Level \( (\beta =0,225; \ p < 0,001) \), GR \( (\beta =-0,145; \ p < 0,001) \) and SB \( (\beta = -0,180; \ p < 0,001) \) are significant predictors of ANX.

**Discussions and limits**

The results of our study show that the relationship between sense of belonging and grit is positive, whereas the relationship between these two protective factors and anxiety is negative.

These results confirm that sense of belonging and grit are positively related as social-emotional skills, and furthermore, they can act as protective factors by reducing situations of discomfort such as anxiety (Arslan, 2021; Minnesota state department of Education, 2019; Oriol et al., 2017).

The difference between groups shows that sense of belonging and grit are higher in students from middle school than in students from high school, who have fewer socio-emotional resources, especially considering that these skills are not promoted in the Italian school context in a systemic way (Cefai et al., 2018). Moreover, we find that grade level predicts anxiety (the higher the grade level, the more anxious older students become). As the two protective variables are introduced, grade level becomes less important. For this reason, we can assume that working on the sense of belonging and grit can attenuate the influence of age on inducing anxiety.

One possible explanation for the increase in anxiety in high school students is that the ‘in-presence’ school attendance for these students was not guaranteed in Italy during the 2020/2021 school year when compared to middle school students. As a result, high school students spent more online hours of instruction than middle school students (Mascheroni et al., 2021); this situation worsened when taking into account the lockdown experience of the previous year (Commodari & La Rosa, 2021), i.e.: cumulatively high school students spent more time physically isolated from their classmates (Buonsenso et al., 2021). This scenario coupled with the change in the mode of instruction (König et al., 2020) together with school closures in the
previous year, as well as quarantine periods in the 2020/2021 school year which were based on the rate of infection in classes (MIUR, 2020), may have caused students to lower their academic expectations (Save the Children, 2021) and feel less motivated to persevere in the face of the difficulties at the time. Their sense of belonging may have also been affected by the uncertainty of not knowing how long they would be in school before the class was asked to follow online lessons from home once the class had reached a maximum number of infections (Buonsenso et al., 2021). The Covid pandemic, as Hader et al. (2020) noted, brought the VUCA (Volatile, Uncertain, Complex, and Ambiguous) experience to an extreme, and although Hader's article refers to the level of teacher preparation for these circumstances, this reality applies to students as well. Furthermore, several studies have shown that anxiety was not only prevalent prior to the pandemic (Hawrilenko et al., 2021; Pelissier et al., 2021), but that these mental health problems have continued to increase with the onset of the pandemic, particularly among adolescents (Hawrilenko et al., 2021). In this sense, Covid-19 can be considered to have affected the spontaneity that used to exist when it came to socializing and making decisions about when, where, and how to meet (Tosolini & Venturi, 2020).

A possible limitation of our study is the difference in sample size between middle and high school students. Our sample is mostly from the North/Central regions of the country therefore it would be interesting to extend this research to MS and HS students in other regions. In future studies, we would like to take into account any gender differences and, given that Italy is becoming more multicultural, to examine the extent to which these protective factors are more or less pronounced amongst students with a different nationality or ethnic background.

Conclusion

The results of our study contribute to the current literature by confirming that the Covid-19 pandemic has led to an increase in anxiety, particularly among older adolescents. School closures and quarantines although called upon to safeguard the public’s health were detrimental for adolescents’ mental health, especially for those who spent more time learning from a distance. At the same time, this study confirms that a sense of belonging and grit are important protective factors, within the school context, that may reduce the level of anxiety among adolescents themselves. Furthermore, we could argue that these protective factors have acquired an even greater importance in light of the VUCA world we live in. It is
important that schools, places where students spend many hours of their lives, create spaces to discuss these skills and find strategies to promote them, such as training for teachers and students; this will ensure that students have the opportunity to develop these skills to have a better chance of protecting their mental health and overall well-being and face their future adult lives with more serenity.

Declaration of Conflicting Interest

The Author(s) declare(s) that there is no conflict of interest.

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The Relationship between Students’ Sense of Belonging, Grit and Anxiety …
Lynda S. LATTEK, et al.


