Impact of Ostracism During Adolescence in Developing Sensitivity, and the Correlation Between Sensitivity and Self-Regulation in Learning.

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Abstract

The social environment significantly affects adolescents during this critical period of development. During adolescence, complex relationships, heightened sensitivity, and the need to excel academically all become influential, and these experiences can shape the development of the brain, defining characteristics that solidify into adulthood. While numerous studies have conducted research on the impacts of social and academic factors on adolescent development, little is known about the correlation between the two. This study aims to explore how social experiences may shape an adolescent's learning strategies. To do so, ostracism experience, sensitivity, self-compassion, and self-regulation in learning is measured in a sample of 45 high school participants via an online survey. Participants were high school international students residing in Vietnam. Following a mediation analysis structure, ostracism's effect on the development of sensitivity was analyzed, and then whether this sensitivity has an influence on self-compassion and self-regulation in learning (learning strategies that influence academic success) was also analyzed. I hypothesized that ostracism would have an impact on the development of sensitivity, and that sensitivity would be positively associated with self-regulation and negatively associated with self-compassion. Although a positive correlation between sensitivity levels and controlled self-regulation, and a negative relationship between sensitivity and self-compassion was found, ostracism and sensitivity did not show a correlation. This suggests that ostracism experiences don't necessarily affect adolescent sensitivity levels, but in contrast, sensitivity is associated with an increase in self-regulation abilities in learning. Because sensitivity, ostracism, and school performances are such common yet impactful factors, this study becomes very relevant. This study could help in understanding adolescence, to find out how, in the broader picture, negative social experiences and learning strategies intertwine with each other. Based on the results of this study, researchers can develop better interventions to improve and support teenage learning by implementing ways to help them cope with sensitivity and interaction among peers.

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Modern adolescence carries a unique and evolving set of stress inducers in regards to new social societal pressures and heightened academic expectations. Children and teenagers carry the burden of learning how to balance social dynamics and academic goals, which have significantly more impact on one's mental health and academic aptitude. Prior research found that social competence during childhood is often a powerful predictor of academic achievement (Wentzel, 1991). With increasing attention towards adolescent mental health specifically, unchecked social and academic environments can create harmful conditions, such as competition, rivalry, academic struggles, and, to a more severe extent, damage to self-worth.

Adolescence is a period that is marked by significant social and emotional growth, which can become adversely impeded by social conflicts. As there is evidence by others that ostracism can make individuals more sensitive to social information (Gardner et al. 2000, Pickett et al. 2004, as cited in Williams, 2007), adolescents experiencing complex relationships may experience an increase in sensitivity. The present paper focuses on ostracism, which is defined as "[...] acts of ignoring and excluding of an individual or groups by an individual or group" (Williams, 2001, p. ix). Prior research has explained that ostracism causes negative effects and

threatens basic psychological needs in children and adolescents (Abrams, Weick, Thomas, Colbe, & Franklin, 2011, as cited in Wölfer, R., & Scheithauer, H., 2013) with an age-related hypersensitivity to ostracism during adolescence (Pharo, Gross, Richardson, & Hayne, 2011; Sebastian, Viding, Williams, & Blakemore, 2010, as cited in Wölfer, R., & Scheithauer, H., 2013). Therefore, adolescents who experience ostracism may experience heightened forms of sensitivity. However, this connection and its implications are not yet fully understood. In this paper, the relationship between ostracism and sensitivity during adolescence is explored.

In this context, sensitivity is defined as how easily someone is affected by stimuli. Sensitivity plays a role in how an individual perceives and processes information about the environment. The way in which an individual processes incoming stimuli and response is dependent upon a number of factors, including previous experiences, environmental factors, genetic predispositions, and personality constructs (Gartstein et al., 2016; Lionetti et al., 2018; Pluess et al., 2018; Smolewska et al., 2006). In addition, highly sensitive individuals are ready to respond to emerging situations, such as by behaving cooperatively, responding to another's needs and also by perceiving threats (Acevedo et al., 2014; Acevedo et al., 2017, as cited in Naumann et al., 2020). This survival strategy is thought to be effective as long as the benefits of increased sensitivity outweigh the costs (Wolf, van Doorn, & Weissing, 2008, as cited in Naumann et al., 2020). Thus, in the current study we aim to explore how ostracism may affect sensitivity in adolescents, and how this sensitivity interprets and responds to academic and social stimuli.

The development of self-regulation, defined as "a systematic process of human behavior that involves setting personal goals and steering behavior toward the achievement of established goals" (Zeidner, Boekaerts, & Pintrich, 2000, p.751), is a significant influence that can determine academic success: "…all agree that self-regulated learning mediates how academic context and student characteristics influence achievement" (Pintrich 2000, as cited in Dent & Koenka, 2016, p.426). Dent and Koenka continue, "therefore, identifying which self-regulated learning strategies are most important and what factors facilitate their use is essential to promote academic performance" (Dent & Koenka, 2016, p.426). In this paper, two different types of self-regulation in learning are explored: controlled and autonomous. Controlled self-regulation refers to self-regulation motivated by external factors, such as cultural values and social standards, while autonomous self-regulation is motivated intrinsically by an individual. Continuing, adolescents are heavily driven by their academic performances as the pressure to perform well in school must also be balanced through their engagement in the social environment. As a result, sensitivity may affect how an adolescent perceives and responds to the pressures of academic achievement, which the degree of self-regulation development can measure.

As adolescents continue to manage the demands of academic success and social factors, the development of self-compassion becomes important. Self-compassion is "a way of kindly relating to oneself and one's emotional experiences, even in instances of personal suffering such as perceived inadequacy or failure" (Neuenschwander & von Gunten, 2024, p. 756). Self-compassion can allow adolescents to develop the necessary emotional regulatory competencies to manage the adverse effects of ostracism and heightened sensitivity. Examining the interplay among sensitivity, self-regulation, and self-compassion is vital in understanding the collective influence they have on academic performance.

This study aims to investigate the following research question: *How do social environments, ostracism and sensitivity, affect an adolescent's ability to self-regulate?* While there have been multiple studies on the independent influences of adolescent ostracism, sensitivity, self-compassion, and self-regulation abilities in learning, there is a dearth of research on how impactful these factors are all influencing each other. My aim is to address this gap and explore whether there is a correlation between ostracism and sensitivity, and if this sensitivity impacts self-regulation and self-compassion in learning.

Based on the prior literature reviewed above, I hypothesized that adolescents with higher ostracism experiences would develop a higher degree of sensitivity; however, their sensitivity would contribute to higher levels of controlled self-regulation in learning and lower self-compassion levels. This interrelationship can be diagrammed with a mediation format (Figure 1.1).

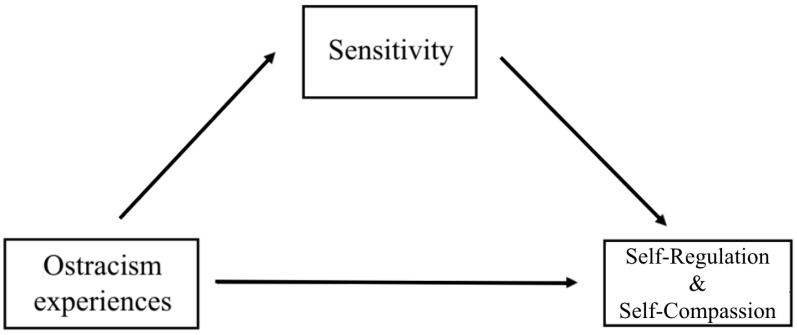

Fig. 1.1. *Mediation Diagram of Hypothesis*

The study therefore measured ostracism experiences, level of sensitivity, then self-regulation and self compassion in learning to determine a correlation.

Method

In order to test my hypotheses, I collected survey data from a sample of high school students in Vietnam. Informed consent was obtained for all participants. Data on all four factors– ostracism, sensitivity, self-regulation in learning, self-compassion– were collected using pre-existing measures, which were incorporated into a single survey. The Google Forms survey was sent out via email, and the link to the form was also advertised on personal social media accounts by the author and other individuals (upon the author's request) for engagement. The survey was administered by Google Forms and took 15 to 20 minutes to complete.

Participants

We conducted a power analysis and determined a sample size of 64 was required to achieve sufficient statistical power to detect a difference of 0.25 SD, which would be in line with other studies on sensitivity. However, due to difficulty in recruiting, we were not able to recruit the intended sample size of 64, and a total of 45 participants completed the survey. Thus we proceeded with a sample size of 45.

The volunteers' demographic information (age, grade, gender) was not collected. However, the scope of recruitment was restricted to high school international students residing in Hanoi, Vietnam. All participants were thus high school students ranging from grades 9 to 12 (ages 14-18), residents of Hanoi, Vietnam, and capable of speaking fluent English.

Measures

Ostracism

Ostracism experiences were measured through the Ostracism Experience Scale for Adolescents (OES-A, Gilman et al., 2013). This self-report provides descriptions of ostracism participants experienced, along with emotional responses when in such situations. The 11-item version was used, with each question answered based on a 5-point rating scale (1 never, 5 always). Questions included "In general, others treat me as if I am invisible" and "In general, others invite me to join them for weekend activities, hobbies, or events."Sensitivity was measured through the Highly Sensitive Person questionnaire, the HSP Scale (Aron, E. N., & Aron, A., 1997). It contained 27 questions, which were answered on a scale of 1 to 7 (1 not at all, 7 extremely). "Are you annoyed when people try to get you to do too many things at once?" and "Do you seem to be aware of subtleties in your environment?" were questions included in the survey.

Self-Regulation in Learning

The individual's self-regulation in learning was assessed through the Learning Self-Regulation Questionnaire, SRQ-L; it consisted of 32 questions divided over 4 subscales. The questions were based on a question and answer format: each subscale would ask a single question such as "Why do I complete the homework my instructor assigns?" and the respondent would have to rate the given answer (such as "Because my instructor will think less of me if I don't") on a scale from 1 to 7, "Not true at all" to "Very True". This measure provided information on the individual's regulation, whether it was controlled or autonomous.

Self-Compassion

The self-compassion scale had 26 questions, all answered on a scale of 1 to 5 (almost never to almost always). This questionnaire included questions such as "I try to be understanding and patient towards those aspects of my personality I don't like" and "When I'm feeling down I tend to obsess and fixate on everything that's wrong".

Social Desirability

The survey ended with a Social Desirability scale (Crowne & Marlowe, 1960). This scale measures the participants' social desirability—the tendency to answer questions in a manner that deviates from their actual emotions, to seem acceptable to the social norms. Some questions were "It is sometimes hard for me to go on with my work if I am not encouraged", "I'm always willing to admit it when I make a mistake". This response bias influences individuals' answers to over-report behaviors that conform to standards and under-report 'undesirable

behaviors', rather than reporting their true feelings or behaviors. This scale was used to ensure that participant's need to portray themselves positively do not bias the experiment (Silvers et al., 2012).

Results

The data was analyzed in R. Scatter plots were utilized to determine trends between the different variables. Each analysis that follows aims to answer a specific hypothesis relating to the overall topic of this paper: whether ostracism during adolescence poses an impact on developing sensitivity, and if a correlation between sensitivity and self-regulation in learning exists.

Pearson's correlation coefficient was computed in each analysis.

A. Ostracism and Sensitivity

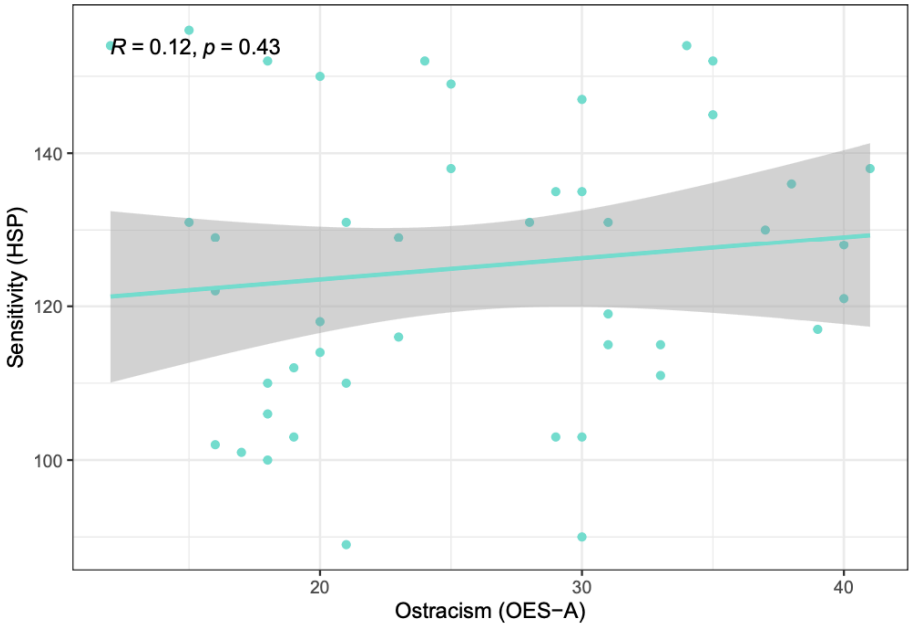

Fig. 2.1. *Scatter plot of ostracism and sensitivity data. Each point represents an individual participant; the gray ribbon represents the 95% confidence interval.*

My first hypothesis was that higher ostracism experiences would lead to higher sensitivity levels in adolescents. Therefore data on ostracism and sensitivity levels were first analyzed (Figure 2.1). A Pearson correlation coefficient was computed to assess the linear relationship between the two variables. No significant correlation was found between the two variables; although the trend line exhibits a slight positive trend among participants, the p-value indicated the results were not statistically significant (R = .12, p = .43). Thus the hypothesis that ostracism affects sensitivity in adolescents is not supported.

B. *Sensitivity and Self-Regulation in Learning*

Next, I analyzed the relationships between sensitivity and the different types of self-regulation.

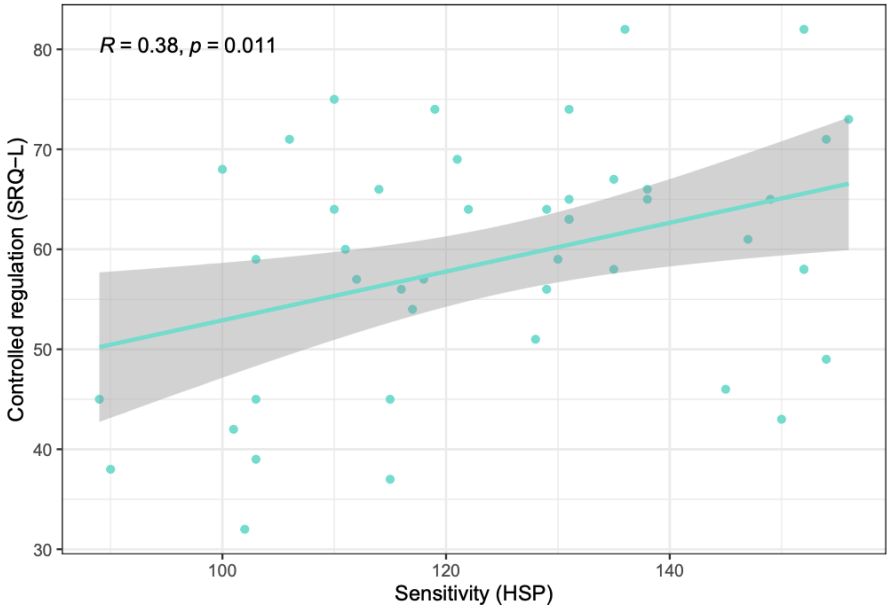

Fig. 3.1. *Scatter plot of sensitivity and controlled self-regulation. Sensitivity level is measured on the x-axis, and controlled regulation on the y-axis. Each point represents an individual participant; the gray ribbon represents the 95% confidence interval.*

The relationship between sensitivity and controlled self-regulation was measured to explore the hypothesis “higher sensitivity will be reported with higher controlled regulation in adolescents”. The overall trend, distinguished from the trend line, seems to be that the two variables have a positive relationship. Again a Pearson’s correlation coefficient was run, and this time an association emerged between two variables (R = .38, p = .011). Thus it is concluded that there is a significant positive correlation between sensitivity and controlled self-regulation in adolescents. Ultimately my hypothesis that adolescents with higher sensitivity will also report higher levels of controlled self-regulation, is supported.

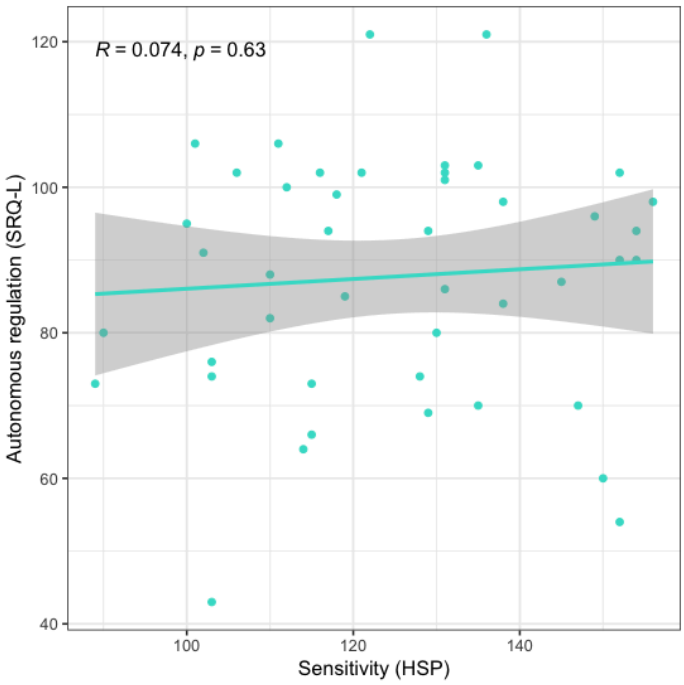

Fig. 3.2. *Scatter plot of sensitivity and autonomous self-regulation. Sensitivity is on the x-axis, while autonomous regulation is on the y-axis. Each point represents an individual participant; the gray ribbon represents the 95% confidence interval.*

Figure 3.1. Illustrates the relationship between sensitivity and autonomous self-regulation. I hypothesized that higher levels of sensitivity will be reported with lower levels of autonomous self-regulation.

Without computation, the trend line indicates a mild positive relationship between sensitivity and autonomous regulation, which contradicts the hypothesis assumed prior to the analysis. A Pearson correlation coefficient was then computed to assess the linear relationship to determine whether a correlation was present. I found that the correlation was not statistically significant (R = .074, p = .63). Sensitivity and autonomous regulation were not associated with each other. In this section, my hypothesis that higher levels of sensitivity will be reported with lower levels of autonomous self-regulation is not supported.

C. Sensitivity and Self-Compassion

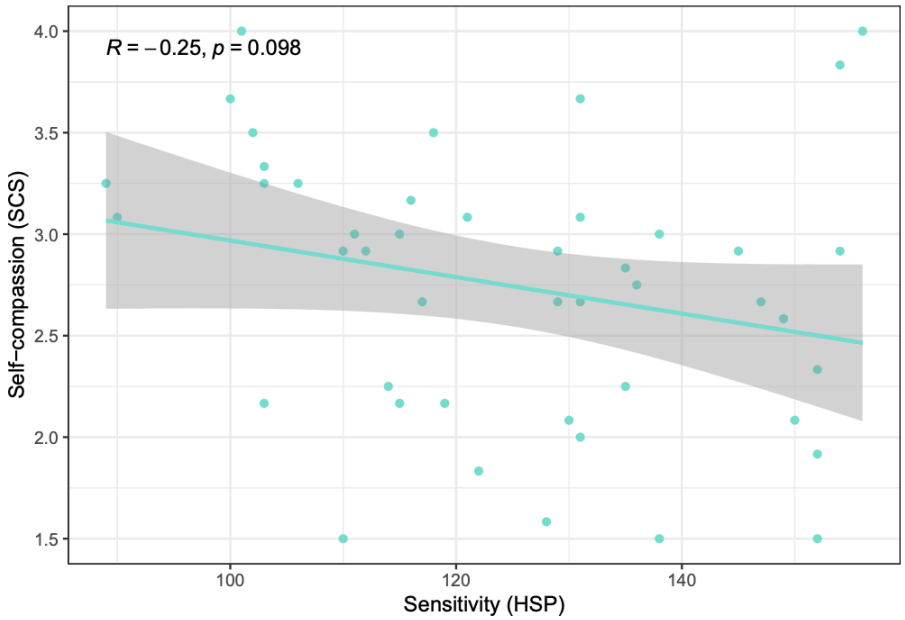

Fig. 4.1. *Scatter plot of sensitivity and self-compassion. Each point represents an individual participant; the gray ribbon represents the 95% confidence interval.*

Next, I analyzed the correlation between sensitivity and self-compassion to investigate the hypothesis that sensitivity level is inversely related to self-compassion level in adolescents (see Figure 4). The trend line displays a negative relation, indicating that a possible association between sensitivity and self-compassion would be an inverse relationship, as hypothesized. This means that adolescents with higher sensitivity levels are likely to report lower levels of self-compassion.

After computing Pearson's correlation coefficient, it was shown that the linear relationship between self-compassion and sensitivity had a small association (R = -0.25), yet the p-value (p = .098) evaluated the data as not statistically significant, concluding that the data had no association. As a result, the hypothesis that sensitivity and self-compassion levels are inversely related is not supported. There is a possibility this statistical insignificance may be due to the small sample size.

D. Ostracism and Self-Regulation in Learning

For ostracism and self-regulation, there are two graphs: ostracism and controlled self-regulation, and ostracism and autonomous self-regulation.

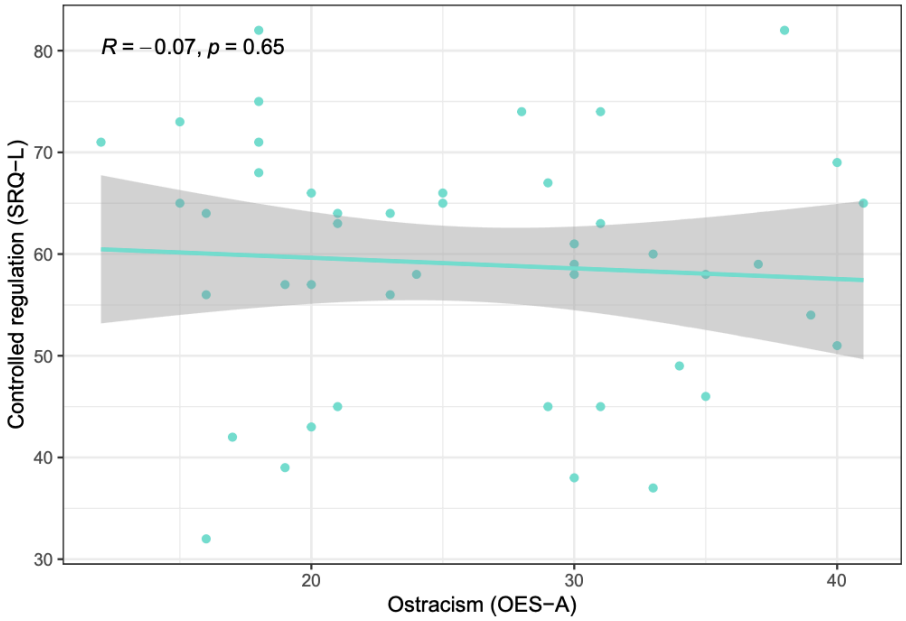

Fig. 5.1. *Scatter plot of ostracism and controlled self-regulation*

For ostracism and controlled regulation, Pearson's correlation test concluded no relation between the two (R = -0.07, p = .65). Thus the hypothesis that adolescents with higher ostracism levels would report higher controlled self-regulation levels remains unsupported, lacking evidence. Ostracism and controlled self-regulation are not significantly correlated.

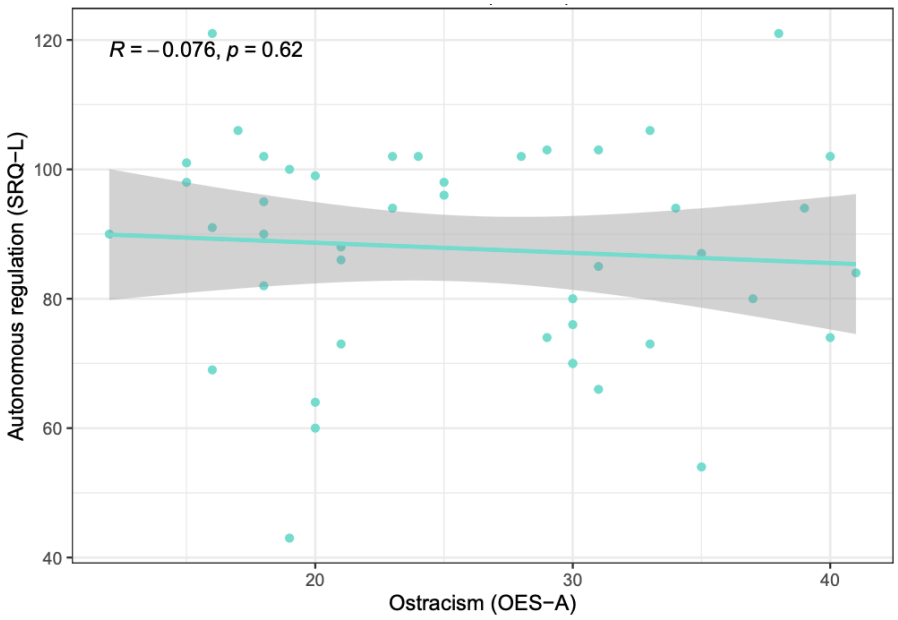

Fig. 5.2. *Scatter plot of ostracism and autonomous self-regulation*

Similarly, ostracism and autonomous self-regulation have no relationship (R = -0.076, p = .62). Ostracism levels and self-regulation levels in adolescents do not seem to have any correlation.

E. Ostracism and Self-Compassion

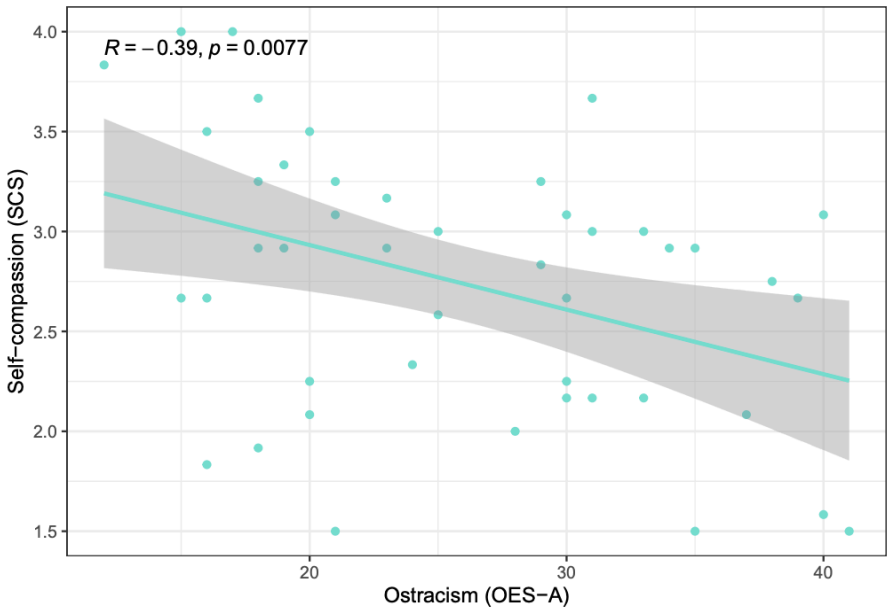

Fig. 6.1. *Scatter plot of ostracism and self-compassion*

The hypothesis investigated in this section was that higher ostracism levels will be reported with lower self-compassion in adolescents. The two variables did display a linear relationship that supported this hypothesis; there was a negative correlation between ostracism and self-compassion, R =.39, p =.008. In addition, the trend line demonstrated a visible negative slope, supporting the aforementioned hypothesis—adolescents who reported higher levels of ostracism also reported lower self-compassion. Therefore ostracism and self-compassion have a statistically significant, negative association.

F. Social Desirability and Factors

Finally, I tested the association between social desirability and each of the three main factors—sensitivity, self-compassion, and self-regulation.

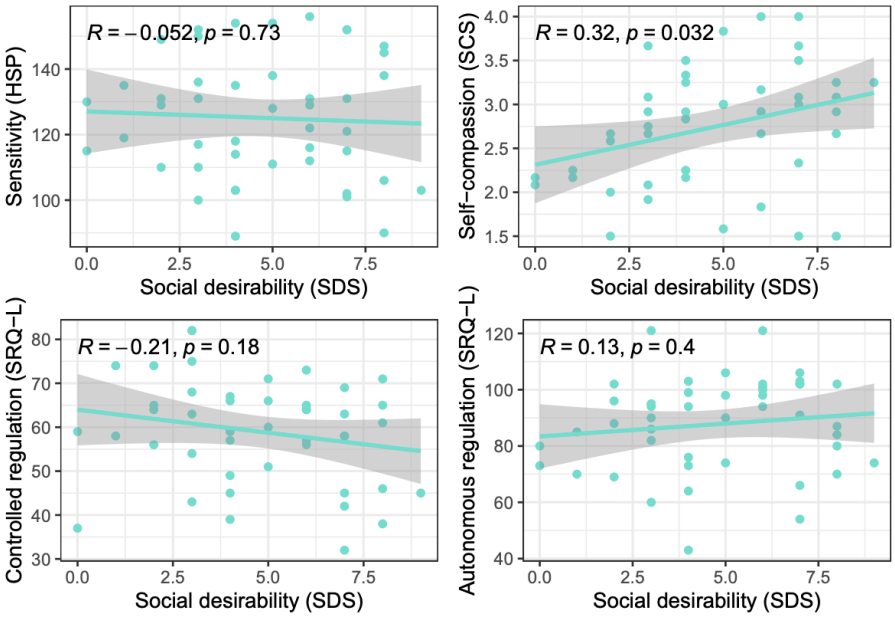

Fig. 7.1. *4 scatter plots, each between social desirability and the remaining factors measured for this study.*

All four associations were tested using Pearson's correlation coefficients to assess the linear relationship between the variables. The hypotheses included social desirability would show a negative correlation with sensitivity levels, and a positive correlation with self-compassion and controlled self-regulation levels. However, social desirability and sensitivity saw no correlation in this sample, as demonstrated by the R and p-values (R =.05, p =.73). This means that social desirability bias did not affect the participants' responses on their sensitivity levels. The social desirability and self-regulation graph did not illustrate any correlations; the relationship between controlled regulation and social desirability displayed R =.21, p =.18, while autonomous regulation and social desirability showed R =.13, p =.4, both of which indicated no correlation. Lastly, the linear relationship between social desirability and self-compassion was analyzed. Unlike the other variables, self-compassion was positively correlated with social desirability (R =.32, p =.032), aligning with the hypothesis. This signifies that adolescents who scored higher in self-compassion may have a stronger tendency to answer the survey in a way that conforms to social standards—rather than reporting their true feelings and behaviors.

Discussion

Through this study, the relationship between ostracism, sensitivity, self-compassion, and self-regulation in adolescents was examined, to address the question of how the development of ostracism could influence sensitivity levels, which could then affect the development of self-compassion and self-regulation in learning in adolescents. The research analyzed the components of the hypothesis separately: the relationship between ostracism & sensitivity, the relationship between sensitivity & self regulation, and the relationship between sensitivity & self compassion (see Figure 1.1. Mediation Diagram of Hypothesis).

Overall, while a relationship connecting all four variables did not emerge, the results found meaningful correlations between some hypothesized variables; notably, the positive relationship

between sensitivity and controlled self-regulation, and the negative association between ostracism and self-compassion. Note that although there are correlations, we cannot infer any causation relationships of the variables or how they may be intertwined.

One of the key hypotheses was that ostracism and sensitivity would have a positive correlation, meaning adolescents who had experienced greater ostracism would report heightened sensitivity. Contrary to the hypothesis, however, ostracism and sensitivity were unrelated. This could be due to several reasons. It could be that self-reporting ostracism resulted in different interpretations of the 1-5 scale (an individual's 1 could be another's 3), and thus the survey could not have been effective in measuring ostracism experiences. Another plausible reason could be that the relationship between ostracism and sensitivity may not be as straightforward as hypothesized. Many factors may moderate the impact of ostracism on sensitivity in individuals such as differences in coping mechanisms, resilience, or external support may have led to buffering the development of heightened sensitivity. Additionally, sensitivity as a trait can be a result of genetic influence and, therefore, may not be shaped by social experiences.

However, there were significant correlations between sensitivity and self-regulation. An interesting finding was that sensitivity did not have a relationship with autonomous self-regulation, but it did with controlled self-regulation—regulation that is motivated externally. This was in line with the hypothesis that high levels of sensitivity and high levels of controlled self-regulation would be reported together. It is reasonable that adolescents who are more sensitive to the environment develop self-regulatory strategies that align with external standards and expectations, like academics, which are a looming pressure on adolescents in the modern world. This gives us insight to inform the impact of sensitivity on self-regulation in learning.

In contrast, sensitivity was not related with autonomous self-regulation. In other words, sensitivity did not affect intrinsically motivated self-regulation. This was somewhat expected, as I previously hypothesized that sensitivity would not directly hinder an adolescent's ability to regulate themselves autonomously. This could be explained by the fact that every individual exhibits different qualities and personalities; therefore autonomous regulation and sensitivity could be independent of each other. Thus, regardless of an individual's level of sensitivity, autonomous self-regulation skills could vary. Another key finding showed that high levels of sensitivity had an inverse relationship with self-compassion. Although this correlation was not statistically significant, the negative trend supported the hypothesis behind the research[1]. This suggests that adolescents with higher sensitivity levels may be more self-critical or less forgiving towards themselves. Also given that highly sensitive individuals tend to process social and emotional stimuli intensely, these results could be explained when considering that these individuals will likewise internalize negative experiences more deeply than others would, causing lower self-compassion.

This paper also examined the direct relationship between ostracism and self-regulation, but no significant correlation was found. This means that experiencing ostracism does not necessarily predict an adolescent's ability to regulate their learning behaviors, whether it be controlled or autonomous. This finding is noteworthy, as it challenges common assumptions that social exclusion affects an adolescent's ability to perform in their learning environment. It is

[1] There is a possibility this statistical insignificance may be due to the small sample size—this is discussed in the limitations section

possible that factors such as personal resilience, determination, or support from an individual's learning environment mitigate the effect of ostracism on self-regulation in learning.

Interestingly, an unexpected correlation was found between ostracism and self-compassion. The data suggests the two variables have a negative association—adolescents with higher levels of ostracism reported lower levels of self-compassion. This finding aligns with existing research on the psychological effects of social exclusion, which has been linked to lower self-esteem (Arslan, 2019, 2021; Baumeister & Tice, 1990; Büyükcebeci & Deniz, 2017; Duru & Arslan, 2014; Gilman et al., 2013). Adolescents who experience ostracism may personalize exclusion experiences, creating negative self-perceptions and reduced self-compassion.

Limitations

While this paper provides multiple insights, several limitations should be noted. First, the sample size (N = 45) was smaller than my goal of 65 participants, which may have impacted the analyses. A larger sample size could provide more reliable results, and possibly present different results in terms of the statistical significance of the data gathered. Most notably, the analyses between sensitivity and self-compassion saw a rather strong association that may have been significant with a larger sample size.

Because self-report measures and social desirability could have affected the study's results, the study includes a social desirability scale to determine possible bias in participants' responses. From the analysis, social desirability did show a significant positive correlation with self-compassion. This suggests that adolescents who scored higher in self-compassion may have answered in a way that is more socially acceptable, in this case overreporting their self-compassion levels to meet the desired expectations. Alternatively, no correlations were found with the other measures, indicating that social desirability was not a concern for sensitivity, self-regulation, and ostracism measures.

Additionally, this study and data collection was limited to international highschool students in Hanoi, Vietnam, meaning that cultural factors may influence the findings. Many international students experience cultural hybridity or hold third-culture identities, having been shaped by both their home cultures and the international environments in which they study. Their responses may reflect different coping strategies than the average person—such as emotional suppression, code-switching, or heightened self-monitoring—which can influence how they report and regulate feelings of exclusion. Due to frequent transitions between countries, schools, and peer groups, these students might also exhibit either greater resilience or heightened sensitivity to social exclusion. Moreover, international schools often promote Western-style education that emphasizes self-expression, critical thinking, and individual achievement. While this environment may encourage students to articulate their emotions more openly than they might in more traditional or conservative cultural settings, some students may still underreport their sensitivity to ostracism due to Asian cultural stigmas (stemming from the Vietnamese context in this case) around expressing vulnerability or negative emotions. Additionally, although participants may be fluent in English, cultural differences and language nuances could affect how they interpret survey items or psychological constructs—such as "self-regulation" or "social pain"—which may not translate perfectly across cultural lines.

As a result, the findings of this study likely reflect a unique intersection of cultural influences and educational experiences, and may not be fully generalizable to either Western or Vietnamese adolescent populations, or to prior studies' findings conducted in other countries. Cultural background may also serve as a moderator of how students experience and manage exclusion, underscoring the importance of acknowledging the cultural diversity within the sample when interpreting results and assessing broader implications. Further research should explore these relationships in more diverse populations to assess whether cultural contexts provide different patterns of findings between factors analyzed above.

Conclusion

This study contributes to the understanding of how ostracism, sensitivity, self-regulation, and self-compassion interact in adolescents. While ostracism did not show a direct relationship with sensitivity or self-regulation, it was found to be correlated with lower self-compassion. Sensitivity, in turn, was positively associated with controlled self-regulation but negatively associated with self-compassion. Overall, these findings emphasize the importance in understanding factors that may influence adolescent's performances in academic and social environments, especially when these environments become such critical moments in shaping their lives.

Future research should continue to explore complex relationships between these factors of social and academic engagement, incorporating larger samples and advanced methodologies to better understand how these factors shape adolescent well-being and learning.

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