

The Impact of Emotional Maturity and Social Problem-Solving Abilities on Neurobehavioral Outcomes in Autistic Adolescents

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ABSTRACT

This study aims to investigate the predictive value of emotional maturity and problem-solving skills on neurobehavioral functioning in adolescents with autism. A cross-sectional design was employed, involving 282 adolescents aged 12-18 diagnosed with autism spectrum disorder (ASD). Participants were assessed using the Behavior Assessment System for Children, Second Edition (BASC-2) for neurobehavioral functioning, the Emotional Maturity Scale (EMS), and the Social Problem-Solving Inventory-Revised (SPSI-R). Pearson correlation analysis and linear regression were conducted using SPSS version 27 to examine the relationships and predictive power of emotional maturity and problem-solving skills on neurobehavioral functioning. Descriptive statistics revealed mean scores of 78.54 (SD = 10.37) for neurobehavioral functioning, 84.29 (SD = 12.51) for emotional maturity, and 81.75 (SD = 11.68) for problem-solving skills. Pearson correlation showed significant positive correlations between neurobehavioral functioning and emotional maturity ($r = 0.45, p = 0.001$), and problem-solving skills ($r = 0.38, p = 0.005$). Regression analysis indicated that emotional maturity ($B = 0.32, p = 0.001$) and problem-solving skills ($B = 0.29, p = 0.005$) significantly predicted neurobehavioral functioning, explaining 27% of the variance ($R^2 = 0.27$). The study demonstrates that higher levels of emotional maturity and problem-solving skills are associated with better neurobehavioral functioning in adolescents with autism. These findings underscore the importance of incorporating emotional and cognitive skill development in interventions to enhance neurobehavioral outcomes for this population. Future research should adopt longitudinal designs to explore these relationships over time and include diverse populations for broader applicability.

Keywords: Autism, Adolescents, Neurobehavioral Functioning, Emotional Maturity, Problem-Solving Skills.

1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by persistent deficits in social communication and interaction, along with restricted, repetitive patterns of behavior, interests, or activities (Busch et al., 2019). The heterogeneity in ASD's presentation and the associated cognitive, emotional, and behavioral challenges necessitate a comprehensive understanding of the various factors influencing neurobehavioral functioning in affected individuals. Adolescence is a particularly critical period for individuals with ASD due to the significant neurobiological, psychological, and social changes that occur during this time (Tamura et al., 2012).

Neurobehavioral functioning encompasses a range of cognitive and behavioral processes, including executive functioning, emotional regulation, and social behavior. These aspects are crucial for daily functioning and overall well-being. Previous research has highlighted the profound impact of sleep patterns on neurobehavioral functioning. Lo et al. (2016) demonstrated that successive cycles of sleep restriction, with and without naps, significantly impair neurobehavioral performance in adolescents. This finding underscores the vulnerability of adolescents, including those with ASD, to disruptions in sleep and the subsequent impact on their cognitive and behavioral functioning (Lo et al., 2016).

Moreover, germline heterozygous mutations in PTEN have been associated with distinct neurobehavioral phenotypes in individuals with ASD, further complicating the neurodevelopmental landscape of these adolescents. The interplay between genetic predispositions and environmental factors creates a complex picture of neurobehavioral functioning in ASD, necessitating multifaceted approaches to understand and support these individuals (Busch et al., 2019).

Emotional maturity is the ability to understand, express, and regulate emotions appropriately and effectively. It is a critical determinant of social interactions and overall psychological well-being. In adolescents with ASD, emotional maturity plays a pivotal role in their ability to navigate social complexities and manage behavioral challenges. Uzefovsky et al. (2019) found that variations in the oxytocin receptor gene predict brain activity during emotion recognition tasks in individuals with ASD, highlighting the genetic underpinnings of emotional processing in this population (Uzefovsky et al., 2019).

Furthermore, emotional maturity is intricately linked to internal and external resources that contribute to emotional adjustment. Lipschitz-Elhawi and Itzhaky (2008) compared at-risk and normative adolescents, demonstrating that the availability and utilization of these resources significantly influence emotional adjustment. For adolescents with ASD, enhancing emotional maturity through targeted interventions could potentially mitigate behavioral issues and improve social outcomes (Lipschitz-Elhawi & Itzhaky, 2008).

Problem-solving skills are essential cognitive processes that enable individuals to navigate challenges and make informed decisions. These skills are particularly crucial for adolescents with ASD, who often face unique difficulties in social and academic settings. Davis et al. (2018) highlighted the importance of cognitive control and emotional regulation in managing anxiety-linked neural dysregulation in adolescence. Effective problem-solving skills can enhance cognitive control, thereby improving neurobehavioral outcomes in adolescents with ASD (Davis et al., 2018).

Chahal et al. (2021) emphasized the protective role of higher executive control network coherence against puberty-related increases in internalizing symptoms during stressful periods, such as the COVID-19 pandemic. This finding suggests that strengthening problem-solving skills in adolescents with ASD could provide a buffer against various stressors, promoting better mental health and adaptive functioning (Chahal et al., 2021).

The interaction between emotional maturity and problem-solving skills is crucial in determining neurobehavioral outcomes in adolescents with ASD. Picci and Scherf (2014) proposed a two-hit model of autism, suggesting that early neurodevelopmental disruptions combined with later environmental stressors contribute to the manifestation of ASD symptoms. Enhancing emotional maturity and problem-solving skills could potentially offset some of these stressors, leading to improved neurobehavioral functioning (Picci & Scherf, 2014).

Moreover, Baker et al. (2011) demonstrated that adaptability plays a significant role in mitigating behavior problems and maternal depression in families of adolescents with ASD. This finding underscores the importance of fostering adaptive skills, including emotional maturity and problem-solving abilities, to support both the individual with ASD and their family unit (Baker et al., 2011).

The theoretical framework for this study is grounded in the neurodevelopmental and biopsychosocial models of ASD. These models emphasize the interplay between genetic, neurobiological, and environmental factors in

shaping the development and behavior of individuals with ASD (Constantino, 2018). By examining the relationship between neurobehavioral functioning, emotional maturity, and problem-solving skills, this study aims to contribute to a deeper understanding of the factors that influence the well-being of adolescents with ASD. Specifically, this study seeks to investigate the predictive value of emotional maturity and problem-solving skills on neurobehavioral functioning in adolescents with autism.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a cross-sectional design to investigate the relationship between neurobehavioral functioning, emotional maturity, and problem-solving skills in adolescents with autism. A total of 282 participants were recruited based on the sample size determination guidelines provided by the Morgan and Krejcie table. Participants were adolescents aged 12 to 18, diagnosed with autism spectrum disorder (ASD), and attending specialized educational institutions or support groups for individuals with ASD. Informed consent was obtained from the parents or legal guardians of all participants, and assent was obtained from the adolescents themselves.

2.2. Measures

2.2.1. Neurobehavioral Functioning

To measure the dependent variable, Neurobehavioral Functioning, the Behavior Assessment System for Children, Second Edition (BASC-2) by Reynolds and Kamphaus (2004) can be utilized. The BASC-2 is a comprehensive tool designed to assess various aspects of behavior and self-perceptions in children and adolescents aged 2 to 21. It comprises multiple subscales, including Externalizing Problems, Internalizing Problems, Behavioral Symptoms Index, Adaptive Skills, and School Problems. The BASC-2 contains 134 items for the teacher rating scales and 139 items for the parent rating scales, which are scored on a 4-point Likert scale ranging from "Never" to "Almost Always." This tool's validity and reliability have been confirmed in numerous studies, demonstrating strong psychometric properties across diverse populations (Busch et al., 2019; Lo et al., 2016).

2.2.2. Emotional Maturity

The Emotional Maturity Scale (EMS) developed by Singh and Bhargava (1990) can be used to measure Emotional Maturity. The EMS assesses emotional stability, emotional progression, social adjustment, personality integration, and independence. It includes 48 items divided into five subscales: Emotional Stability, Emotional Progression, Social Adjustment, Personality Integration, and Independence. Each item is rated on a 5-point scale from "Very Much" to "Never." The EMS has demonstrated strong reliability and validity in various studies, providing a robust measure of emotional maturity in adolescents (Jafariharandi, 2019; Joy & Mathew, 2018; Kurnia et al., 2020; Mirzaei, 2022; Monika et al., 2023).

2.2.3. Social Problem-Solving

The Social Problem-Solving Inventory-Revised (SPSI-R) by D'Zurilla, Nezu, and Maydeu-Olivares (2002) can be used to measure Problem-Solving Skills. The SPSI-R is designed to assess cognitive, emotional, and behavioral aspects of problem-solving abilities. It consists of 52 items divided into five subscales: Positive Problem Orientation, Negative Problem Orientation, Rational Problem Solving, Impulsivity/Carelessness Style, and Avoidance Style. Items are rated on a 5-point Likert scale ranging from "Not at all true of me" to "Extremely true of me." The SPSI-R has shown high reliability and validity across various studies, making it a standard tool for assessing problem-solving skills in adolescents (Ahmady & Shahbazi, 2020; D'Zurilla et al., 2002; Rezapour et al., 2023; Seçer & Ogelman, 2011).

2.3. Data Analysis

Data were analyzed using SPSS version 27. Descriptive statistics were calculated to summarize the demographic and baseline characteristics of the participants. Pearson correlation coefficients were computed to examine the relationship between the dependent variable, neurobehavioral functioning, and each of the independent variables, emotional maturity, and problem-solving skills. Subsequently, linear regression analysis was conducted to explore the predictive value of emotional maturity and problem-solving skills on neurobehavioral functioning. The regression model included neurobehavioral functioning as the dependent variable and emotional maturity and problem-solving skills as the independent variables. Statistical significance was set at $p < 0.05$ for all analyses. The validity

and reliability of the measurement tools were confirmed through previous studies, ensuring robust and reliable data collection.

3. Findings and Results

The sample consisted of 282 adolescents diagnosed with autism spectrum disorder (ASD). Of these participants, 186

(65.96%) were male, and 96 (34.04%) were female. The age distribution was as follows: 79 participants (28.01%) were between 12-14 years, 123 participants (43.62%) were between 15-16 years, and 80 participants (28.37%) were between 17-18 years. Regarding educational level, 94 participants (33.33%) were in middle school, 112 participants (39.72%) were in early high school, and 76 participants (26.95%) were in late high school.

Table 1

Descriptive Statistics for Neurobehavioral Functioning, Emotional Maturity, and Problem-Solving Skills

Variable	Mean	Standard Deviation
Neurobehavioral Functioning	78.54	10.37
Emotional Maturity	84.29	12.51
Problem-Solving Skills	81.75	11.68

According to Table 1, participants in the study had a mean score of 78.54 (SD = 10.37) for neurobehavioral functioning, 84.29 (SD = 12.51) for emotional maturity, and 81.75 (SD = 11.68) for problem-solving skills. These descriptive statistics indicate variability in the scores, with emotional maturity showing the highest mean and standard deviation.

Before conducting the main analyses, assumptions for Pearson correlation and linear regression were checked and confirmed. For Pearson correlation, linearity was verified through scatterplots, showing a linear relationship between neurobehavioral functioning and the independent variables. Homoscedasticity was checked by plotting the standardized residuals against the predicted values, which showed no

clear pattern, confirming the assumption. Normality of residuals was assessed using the Shapiro-Wilk test, which yielded p-values of 0.23 for neurobehavioral functioning, 0.12 for emotional maturity, and 0.08 for problem-solving skills, indicating no significant deviations from normality. For linear regression, multicollinearity was examined using the Variance Inflation Factor (VIF), with values of 1.29 for emotional maturity and 1.34 for problem-solving skills, all well below the threshold of 10. Additionally, the Durbin-Watson statistic was 1.98, indicating no autocorrelation. These results confirm that the data meet the necessary assumptions for the planned analyses.

Table 2

Pearson Correlation Coefficients and p-values

Variable	r	p-value
Emotional Maturity	0.45	0.001
Problem-Solving Skills	0.38	0.005

The correlation analysis in Table 2 revealed a significant positive correlation between neurobehavioral functioning and emotional maturity ($r = 0.45$, $p = 0.001$), as well as between neurobehavioral functioning and problem-solving

skills ($r = 0.38$, $p = 0.005$). These results suggest that higher levels of emotional maturity and problem-solving skills are associated with better neurobehavioral functioning.

Table 3

Summary of Regression Results

Source	Sum of Squares	Degrees of Freedom	Mean Squares	R	R ²	R ² adj	F	p-value
Regression	1578.42	2	789.21	0.52	0.27	0.26	24.01	0.000
Residual	4291.18	279	15.38					
Total	5870.60	281						

The regression model, as shown in Table 3, was significant, $F(2, 279) = 24.01$, $p < 0.001$, with an R^2 of 0.27, indicating that 27% of the variance in neurobehavioral

functioning is explained by emotional maturity and problem-solving skills.

Table 4

Results of Multivariate Regression Analysis

Variable	B	Standard Error	β	t	p-value
Constant	40.25	4.56		8.83	0.000
Emotional Maturity	0.32	0.07	0.41	4.57	0.001
Problem-Solving Skills	0.29	0.09	0.32	3.22	0.005

The regression coefficients in Table 4 indicated that both emotional maturity ($B = 0.32$, $SE = 0.07$, $\beta = 0.41$, $p = 0.001$) and problem-solving skills ($B = 0.29$, $SE = 0.09$, $\beta = 0.32$, $p = 0.005$) were significant predictors of neurobehavioral functioning. The constant term was also significant ($B = 40.25$, $SE = 4.56$, $p < 0.001$).

4. Discussion and Conclusion

The present study aimed to investigate the predictive value of emotional maturity and problem-solving skills on neurobehavioral functioning in adolescents with autism. The findings from the Pearson correlation analysis revealed significant positive correlations between neurobehavioral functioning and both emotional maturity ($r = 0.45$, $p = 0.001$) and problem-solving skills ($r = 0.38$, $p = 0.005$). The linear regression analysis further indicated that both emotional maturity and problem-solving skills were significant predictors of neurobehavioral functioning, explaining 27% of the variance ($R^2 = 0.27$). Specifically, emotional maturity ($B = 0.32$, $p = 0.001$) and problem-solving skills ($B = 0.29$, $p = 0.005$) were both significant contributors to the model.

These findings align with existing literature that emphasizes the critical role of emotional maturity and problem-solving abilities in the overall development and functioning of adolescents with autism. Baker, Seltzer, and Greenberg (2011) highlighted the long-term benefits of adaptability and emotional regulation on behavior problems in adolescents with autism, suggesting that emotional maturity plays a crucial role in managing behavioral challenges. This study's results are consistent with their findings, demonstrating that higher emotional maturity correlates with better neurobehavioral outcomes.

Moreover, the significant relationship between problem-solving skills and neurobehavioral functioning resonates with previous research. Picci and Scherf (2014) proposed a two-hit model of autism, where deficits in executive

functioning and problem-solving abilities exacerbate social and behavioral difficulties (Picci & Scherf, 2014). The present study supports this model, indicating that enhanced problem-solving skills are associated with improved neurobehavioral functioning, which could mitigate some of the behavioral challenges faced by adolescents with autism.

Additionally, the importance of emotional and cognitive control mechanisms has been well-documented in literature. For instance, Chahal et al. (2021) found that higher executive control network coherence can buffer against the negative impacts of puberty-related changes and stressors, suggesting that emotional maturity and cognitive skills are intertwined and critical for managing internalizing symptoms (Chahal et al., 2021). This study's findings align with these insights, emphasizing the role of emotional maturity and problem-solving skills in promoting better neurobehavioral outcomes in adolescents with autism.

The positive impact of emotional maturity on neurobehavioral functioning can also be understood through the lens of oxytocin receptor gene research. Uzefovsky et al. (2019) demonstrated that variations in the oxytocin receptor gene influence brain activity during emotional recognition tasks in individuals with autism, suggesting a genetic underpinning for emotional maturity (Uzefovsky et al., 2019). This connection highlights the importance of emotional maturity in neurobehavioral functioning, as supported by the significant correlation found in the current study.

Moreover, studies on neurobehavioral phenotypes and genetic markers of autism provide further support. Busch et al. (2019) identified specific genetic mutations associated with distinct neurobehavioral profiles in autism, underscoring the variability and complexity of neurobehavioral functioning (Busch et al., 2019). The current study's focus on emotional maturity and problem-solving skills adds a layer of understanding to these neurobehavioral profiles, suggesting that these psychosocial

factors can significantly influence the overall functioning of adolescents with autism.

Additionally, the findings on problem-solving skills align with Davis et al. (2018), who explored the interplay between childhood emotionality, cognitive control, and anxiety in adolescents. They found that cognitive control, akin to problem-solving skills, plays a vital role in regulating emotional responses and mitigating anxiety, which is often comorbid with autism (Davis et al., 2018). This study supports the notion that enhancing problem-solving skills can lead to better neurobehavioral outcomes by improving cognitive and emotional regulation.

Furthermore, research on sleep and neurobehavioral impacts, such as the study by Lo et al. (2016), highlights the importance of regulatory mechanisms in neurobehavioral functioning. Their findings on the effects of sleep restriction and the necessity of adequate cognitive and emotional control (Lo et al., 2016) align with this study's results, emphasizing that emotional maturity and problem-solving skills are integral to managing the complex neurobehavioral profiles of adolescents with autism.

While this study provides valuable insights, several limitations must be acknowledged. First, the cross-sectional design limits the ability to draw causal inferences about the relationships between emotional maturity, problem-solving skills, and neurobehavioral functioning. Longitudinal studies would be more suitable for examining the developmental trajectories and causal relationships among these variables. Second, the sample consisted solely of adolescents with autism, which, while providing a focused analysis, may limit the generalizability of the findings to other populations, such as those with different neurodevelopmental conditions or neurotypical individuals. Additionally, the reliance on self-reported measures for emotional maturity and problem-solving skills may introduce bias, as these assessments are subject to social desirability and self-perception inaccuracies. Future research should consider incorporating objective measures and multi-informant approaches to enhance the robustness of the findings.

Future research should address the limitations of the current study by adopting longitudinal designs to explore the developmental pathways and causal relationships between emotional maturity, problem-solving skills, and neurobehavioral functioning. Investigating these relationships across different stages of development, from early childhood through adulthood, could provide a more comprehensive understanding of how these variables

interact over time. Additionally, expanding the sample to include diverse populations with various neurodevelopmental conditions and neurotypical controls would enhance the generalizability of the findings. Researchers should also consider utilizing objective measures, such as neuroimaging and behavioral assessments, to complement self-reported data and provide a more nuanced understanding of the underlying mechanisms. Furthermore, exploring the potential moderating and mediating factors, such as genetic predispositions, environmental influences, and intervention effects, could yield valuable insights into how emotional maturity and problem-solving skills contribute to neurobehavioral functioning in adolescents with autism.

The findings of this study have important implications for practice, particularly in designing interventions aimed at improving neurobehavioral functioning in adolescents with autism. Educators, clinicians, and caregivers should prioritize the development of emotional maturity and problem-solving skills in their programs and practices. Implementing social-emotional learning curricula that focus on enhancing emotional regulation, adaptability, and problem-solving abilities could significantly benefit adolescents with autism. Additionally, incorporating cognitive-behavioral strategies and executive functioning training into therapeutic interventions may help adolescents develop more effective problem-solving skills and emotional control. It is also essential to create supportive environments that encourage the practice and reinforcement of these skills in real-life situations. By addressing these areas, practitioners can contribute to better neurobehavioral outcomes and overall well-being for adolescents with autism, ultimately supporting their successful transition into adulthood.

In conclusion, this study highlights the significant role of emotional maturity and problem-solving skills in predicting neurobehavioral functioning in adolescents with autism. The findings align with and are supported by existing literature, underscoring the importance of these psychosocial factors in managing the complex neurobehavioral profiles associated with autism. Despite the limitations, the study provides a valuable foundation for future research and practical interventions aimed at enhancing the lives of adolescents with autism.

Authors' Contributions

Not applicable.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The author reports no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

- Ahmady, S., & Shahbazi, S. (2020). Impact of Social Problem-Solving Training on Critical Thinking and Decision Making of Nursing Students. *BMC Nursing*, 19(1). <https://doi.org/10.1186/s12912-020-00487-x>
- Baker, J. K., Seltzer, M. M., & Greenberg, J. S. (2011). Longitudinal Effects of Adaptability on Behavior Problems and Maternal Depression in Families of Adolescents With Autism. *Journal of Family Psychology*, 25(4), 601-609. <https://doi.org/10.1037/a0024409>
- Busch, R. M., Srivastava, S., Hogue, O., Frazier, T., Klaas, P., Hardan, A. Y., Martinez, A. J., Agost, J. A., Şahin, M., Eng, C., Warfield, S. K., Scherrer, B., Dies, K., Filip-Dhima, R., Gulsrud, A. C., Hanson, E., & Phillips, J. M. (2019). Neurobehavioral Phenotype of Autism Spectrum Disorder Associated With Germline Heterozygous Mutations in PTEN. *Translational psychiatry*, 9(1). <https://doi.org/10.1038/s41398-019-0588-1>
- Chahal, R., Kirshenbaum, J. S., Miller, J. G., Ho, T. C., & Gotlib, I. H. (2021). Higher Executive Control Network Coherence Buffers Against Puberty-Related Increases in Internalizing Symptoms During the COVID-19 Pandemic. *Biological Psychiatry Cognitive Neuroscience and Neuroimaging*, 6(1), 79-88. <https://doi.org/10.1016/j.bpsc.2020.08.010>
- Constantino, J. N. (2018). Early Behavioral Indices of Inherited Liability to Autism. *Pediatric research*, 85(2), 127-133. <https://doi.org/10.1038/s41390-018-0217-3>
- D'Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (2002). Social problem-solving inventory-revised. <https://psycnet.apa.org/doiLanding?doi=10.1037/t05068-000>
- Davis, M. M., Miernicki, M. E., Telzer, E. H., & Rudolph, K. D. (2018). The Contribution of Childhood Negative Emotionality and Cognitive Control to Anxiety-Linked Neural Dysregulation of Emotion in Adolescence. *Journal of abnormal child psychology*, 47(3), 515-527. <https://doi.org/10.1007/s10802-018-0456-0>
- Jafariharandi, R., Rajaiemoosavi, Seyedeh Fatemeh. (2019). Predicting Emotional Maturity through Family emotional atmosphere and the level of religiosity parents in second-grade female students. *Journal of Educational Psychology Studies*, 16(34), 1-26. <https://doi.org/10.22111/jeps.2019.4730>
- Joy, M., & Mathew, A. (2018). Emotional maturity and general well-being of adolescents. *IOSR Journal of Pharmacy*, 8(5), 01-06. https://kristujayanti.edu.in/SSR-III/3.4.3-Research-Papers/Peer-Reviewed/2017_2018/2017-2018_P55.pdf
- Kurnia, I. D., Krisnana, I., & Yulianti, F. N. (2020). Increasing Prevention Knowledge of Sexual Violence and Emotional Maturity on Children Through the Mini-Movie Media. *Jurnal Keperawatan Padjadjaran*, 8(3), 245-254. <https://doi.org/10.24198/jkp.v8i3.1427>
- Lipschitz-Elhaw, R., & Itzhaky, H. (2008). The Contribution of Internal and External Resources to Emotional Adjustment: A Comparison of at-Risk and Normative Adolescents. *Child and Adolescent Social Work Journal*, 25(5), 385-396. <https://doi.org/10.1007/s10560-008-0141-1>
- Lo, J. C., Lee, S. M., Teo, L., Lim, J., Gooley, J. J., & Chee, M. W. (2016). Neurobehavioral Impact of Successive Cycles of Sleep Restriction With and Without Naps in Adolescents. *Sleep*, 40(2). <https://doi.org/10.1093/sleep/zsw042>
- Mirzaei, F., Abdi Zarin, Sohrab, Aghayousefi, Alireza. (2022). Modeling marital conflict based on self differentiation and familism through the mediation of intimacy and emotional maturity in the family. *Journal of Applied Family Therapy*, 3(2), 394-417. <https://doi.org/10.22034/aftj.2022.312890.1239>
- Monika, M., Majeed, J., & Sharma, N. (2023). Emotional Maturity, Resilience, Parent Adolescent Relationship and Peer Pressure as Predictors of Psychological Well-Being Among Adolescents of Indian Working and Non-Working Mothers. <https://doi.org/10.21203/rs.3.rs-2595500/v1>
- Picci, G., & Scherf, K. S. (2014). A Two-Hit Model of Autism. *Clinical Psychological Science*, 3(3), 349-371. <https://doi.org/10.1177/2167702614540646>
- Rezapour, H., Bahramipour Isfahani, M., & Turkan, H. (2023). Comparing the Effectiveness of Behavioral Activation and Mode Deactivation Therapy on Antisocial Core Beliefs and Social Problem Solving in Adolescent Boys with High Social Anxiety. *Social Psychology Research*, 13(50), 77-92. <https://doi.org/10.22034/spr.2023.391235.1826>
- Seçer, Z., & Ogelman, H. G. (2011). Analysis of the Effect of a Social Problem-Solving Program on the Aggression of Children. *Australian Journal of Guidance and Counselling*, 21(2), 142-153. <https://doi.org/10.1375/ajgc.21.2.142>
- Tamura, M., Moriguchi, Y., Higuchi, S., Hida, A., Enomoto, M., Umezawa, J., & Mishima, K. (2012). Neural Network Development in Late Adolescents During Observation of Risk-Taking Action. *PLoS One*, 7(6), e39527. <https://doi.org/10.1371/journal.pone.0039527>
- Uzefovsky, F., Bethlehem, R. A., Shamay-Tsoory, S. G., Ruigrok, A. N. V., Holt, R., Spencer, M. D., Chura, L. R., Warrier, V., Chakrabarti, B., Bullmore, E. T., Suckling, J., Floris, D. L., & Baron-Cohen, S. (2019). The Oxytocin Receptor Gene Predicts Brain Activity During an Emotion Recognition Task

in Autism. *Molecular Autism*, 10(1).
<https://doi.org/10.1186/s13229-019-0258-4>

