

General

Reflective functioning and dissociative experiences: A comparison study between adolescents at “high-risk” of psychosis and healthy controls

Alberto Sardella¹, Alessandra Geraci², Vittorio Lenzo^{3a}, Laura Fusar Poli⁴, Alessandro Rodolico⁴, Maria C. Quattropani³, Maria Salvina Signorelli⁵

¹ Department of Clinical and Experimental Medicine, University of Messina, ² Department of Social and Educational Sciences of the Mediterranean Area, Università per Stranieri Dante Alighieri, ³ Department of Educational Sciences, University of Catania, ⁴ Department of Clinical and Experimental Medicine, Department of Brain and Behavioral Sciences, University of Catania, University of Pavia, ⁵ Department of Clinical and Experimental Medicine, University of Catania

Keywords: Reflective functioning, Dissociative Experiences, Adolescence, High-risk, Atypical Development, Clinical psychology

<https://doi.org/10.52965/001c.88937>

Health Psychology Research

Vol. 11, 2023

Background

Despite the established contribution to psychological well-being in young subjects, the investigation of reflective functioning and dissociative experiences in help-seekers adolescents still appears an unmet need.

Objective

The study aimed to assess reflective functioning and dissociative symptoms in help-seekers adolescents, and compare them to gender-matched healthy controls.

Methods

The Reflecting Functioning Questionnaire (RFQ) was used to investigate mentalizing; the Adolescent Dissociative Experience Scale (A-DES) was used to explore dissociative symptoms.

Results

The study involved 102 adolescents (mean age 18.06 ± 1.78 years), split into “help-seekers” ($N= 51$; mean age 19 ± 1.98 years) and healthy controls ($N= 51$; mean age 17.12 ± 0.84). “Help-seekers” adolescents showed lower RFQ-certainty scores (mean 3.39 ± 2.47), compared to healthy controls (mean 6.73 ± 5.01). Furthermore, “help-seekers” adolescents reported higher scores on RFQ-uncertainty (mean 7.73 ± 4.38), compared to healthy controls (mean 5.14 ± 4.17), which indicates a greater lack of knowledge about mental states (hypomentalizing). Eventually, “help-seekers” adolescents showed significantly worse dissociative symptoms (A-DES total mean score 3.49 ± 2.04), compared to healthy controls (A-DES total mean score 2.06 ± 1.43).

Conclusion

The importance of an assessment in early adolescence denotes a topic of increasing concern, in order to identify failures in reflective functioning and the onset of dissociative experiences among help-seekers adolescents, toward the implementation of tailored psychological interventions.

INTRODUCTION

The clinical state of “high-risk” for psychosis (CHR) has acquired an increasing interest, and it has been acknowledged

as a remarkable clinical condition in the last decades.¹ According to the diagnostic criteria,^{2,3} the “high risk” condition is characterized by the presence of attenuated psychotic symptomatology, brief limited intermittent psychotic episodes, genetic vulnerability, or basic symp-

a *Corresponding author at: Via Biblioteca, 4 – 95124 Catania (Italy). E-mail address: vittorio.lenzo@unict.it (V. Lenzo)

toms. Furthermore, a previous meta-analysis has connoted the presence of impairment in functioning, and reduction in quality of life, as consistent with the core symptoms of the “high-risk” state.⁴

Several studies showed that the prevalence of positive symptoms appears higher in childhood and adolescence.⁵⁻⁸ Thus, reaching an early diagnosis of CHR is a crucial challenge, in order to facilitate both children’s and adolescents’ access to psychiatric clinical services, as well as in order to implement preventative intervention strategies.⁹ In accordance with recent evidence, it is important to note that early symptoms of mental illness may not reflect a fixed and pre-determined trajectory towards specific disorders, but the symptomatology may evolve into a wider range of psychiatric syndromes.^{8,10}

No matter only how early symptoms may be associated with the subset onset of the psychiatric syndrome. Because of its clinical implication, empirical research is also interested in understanding the role of the underneath psychological factors. In this vein, mentalizing (operationalized as reflective functioning) constitutes a useful transdiagnostic and transtheoretical construct to grasp the development of a mental disorder.¹¹

Mentalizing or reflective functioning is defined as the individual’s ability to reflect on one’s own and others’ mental states.¹² In accordance with the theoretical model proposed by Fonagy and colleagues,¹³ reflective functioning expresses the degree of certainty or uncertainty about internal mental states, and two different impairments may be identified, namely hypomentalizing and hypermentalizing. The former impairment produces concrete thinking and poor understanding of the mental states; on the contrary, the latter is characterized by an over-mentalizing attitude, resulting in an excessive certainty about one’s own and others’ mental states, despite not being supported by the evidence.¹³

Failures in reflective functioning have been previously found in both clinical and healthy subjects, including patients with traumatic brain injury,¹⁴ schizophrenia,¹⁵ borderline personality disorder¹⁶ and antisocial personality disorder¹⁷ as well as in adolescents at risk of eating disorders^{18,19} and family caregivers who lost a loved one experienced symptom of anxiety and depression.²⁰ Despite the established contribution to psychological well-being in young subjects, the investigation of reflective functioning in adolescents at risk of developing psychosis still appears an unmet need.²¹

Dissociation is defined as a disruption of the integration between several individual processes, such as consciousness, identity, memory, emotion, perception, and behavior control.²² Dissociative symptoms may occur during adolescence; the explanation of this phenomenon can be based on the intrinsic characteristics of adolescence, which is acknowledged as a period of life full of physical and psychological changes that can alter and destabilize the balance of the self.²³ Previous studies on young subjects have discussed the link between dissociative symptoms and post-traumatic stress disorder,^{24,25} and first episode psychosis.²⁶ The investigation of dissociative symptoms in adolescents

at high-risk of developing psychosis is currently a topic not fully explored.

In line with these premises, the first purpose of the present study was to assess both reflective functioning and dissociative symptoms in adolescents “at risk” of developing psychosis; in addition, the study aimed at investigating the presence of potential differences between adolescents “at risk” of psychosis and healthy controls in the two aforementioned psychological factors.

MATERIALS AND METHODS

PROCEDURE

The study involved native Italian speaker young individuals, living in Catania and Messina (Sicily). For the purpose of the present study, adolescents at risk of developing psychosis were compared to a gender-matched sample of healthy controls, extracted from a larger community sample¹⁸; it was not possible to perfectly match the two groups by age, as the original healthy adolescents’ sample resulted overall younger, even though slightly.

Adolescents at risk of developing psychosis were voluntarily recruited at the Adolescent Outpatient Clinic of the Psychiatry Unit – University Hospital of Catania (Italy). Adolescents were classified as at “high-risk” of developing psychosis based on the established diagnostic criteria.^{2,4} Community healthy controls have been originally recruited through advertisement, by involving local associations, psychology students, as well as researchers’ acquaintances.¹⁸

MEASURES

The Reflecting Functioning Questionnaire (RFQ) was used to investigate the individual ability of mentalizing, namely the ability to interpret one’s own and other people’s mental states.¹³ The RFQ is an 8-item, self-report questionnaire; items are valued on a 7-point Likert scale, which evaluates the extent of agreement with the reported statements, ranging from 1 (completely disagree) to 7 (completely agree). The RFQ provides two sub-scores, referring to individual certainty (RFQ-C) and uncertainty (RFQ-U) about mental states. According to the scoring procedure, each obtained score needs to be subsequently reconverted, rating it from 0 to 3, based on referring to the RFQ-C or the RFQ-U.¹³ Higher scores on RFQ-U are the expression of hypomentalizing (e.g., higher scores on items such as “*Sometimes I do things without really knowing why*”); conversely, some extent of disagreement in the answers reflects a more adaptive acknowledgment of the opaqueness of one’s own mental states. Lower scores on RFQ-C are expressions of hypermentalizing (e.g., lower scores on items such as “*I don’t always know why I do what I do*”); on the other hand, some extent of disagreement is considered adaptive.

For the purpose of the present study, the Italian version of the questionnaire was employed, which previously reported a Cronbach’s alpha of 0.70 for both RFQ-U and RFQ-C.^{18,27}

The Adolescent Dissociative Experience Scale (A-DES) was used to evaluate the presence of dissociative symptoms.²⁸ The A-DES is a 30-item, self-report questionnaire; items are rated on an 11-point Likert scale, evaluating the frequency of dissociative symptoms, and ranging from 0 (never) to 10 (always). The questionnaire provides a total score, as well as four sub-scores, which refer to four categories of symptoms, namely dissociative amnesia, absorption and imaginative involvement, depersonalization and derealization, and passive influence.

For the purpose of the present study, the Italian version of the A-DES was administered, which previously showed Cronbach’s alpha of 0.79 for Amnesia, 0.71 for Absorption, 0.88 for Depersonalization, 0.73 for Influence, and 0.94 for the total score.^{18,23}

ETHICAL STATEMENT

The present study was conducted in accordance with the 1964 Declaration of Helsinki and its later amendments. The research was approved by the Research Ethics Committee for Psychological Research of the University of Messina (Prot. number 93,120). Written informed consent was collected from each subject before the participation; in the case of subjects aged less than 18 years, the informed consent was collected from their parents.

STATISTICAL ANALYSIS

Data were analyzed through the IBM SPSS Statistics version 26 (IBM Corporation, Armonk, New York, USA). Descriptive statistics were first performed, in terms of mean and standard deviation (SD) for continuous variables, and as percentages for categorical variables. Spearman’s correlation coefficient was adopted to describe correlations between variables. One-way analysis of variance (ANOVA) and Mann-Whitney test were performed, in order to investigate differences between the two groups. We considered p values < 0.05 as statistically significant.

An a priori power analysis has been computed by using G*Power (version 3.1.9.4).²⁹ T-test was selected as the test family; two groups including 40 subjects each, with a determined effect size of 0.84 (based on means and SDs between the two groups), and with α error probability set to 0.05 would reach a power ($1 - \beta$ error probability) of 0.95.

RESULTS

The study involved 102 adolescents (mean age 18.06 ± 1.78 years; 49% females), divided into “high-risk” psychosis ($N=51$; mean age 19 ± 1.98 years) and healthy controls ($N=51$; mean age 17.12 ± 0.84). No significant gender differences were found between the two groups ($p=0.62$); “At risk” adolescents were slightly older than “Healthy controls” ($p<0.001$).

DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

The psychological assessment of “high-risk” adolescents additionally covered depressive and anxiety symptomatology,

as well as attachment style. Indeed, they exhibited moderate levels of depression and anxiety, as emerged from the BDI (mean 29.16) and BAI (mean 28.67) scores, respectively. With regard to their attachment style, “high-risk” adolescents showed lower levels of Confidence, and greater scores on the remaining ASQ subscales, namely Discomfort for Closeness, Relationship as secondary, Need for Approval, and Preoccupation with Relationship, compared to the available normative data for the Italian population.³⁰

In the “high-risk” group, significant positive correlations were found between RFQ-U and depressive symptoms ($r=0.36$; $p=0.009$), anxiety ($r=0.34$; $p=0.013$), and ASQ Discomfort with Closeness ($r=0.047$). Furthermore, several significant positive correlations were found between dissociative symptomatology (A-DES) and both depressive and anxiety levels; similarly, the A-DES scales (including the total score) were positively correlated with the majority of the ASQ subscales, except for Confidence and Preoccupation with Relationship.

In both the “high-risk” and the healthy controls groups, significant positive correlations were found between RFQ-U and A-DES domains (including the total score), meaning that hypomentalizing (i.e. higher uncertainty on mental states) was correlated with greater dissociative symptomatology. Negative correlations between RFQ-C and A-DES domains (including the total score) were found significant only in the healthy controls, suggesting that lower scores on RFQ-C (expression of hypermentalizing) were correlated with higher dissociative symptomatology in this group.

Descriptive statistics and correlation analysis for the “high-risk” and the healthy control groups are reported in [Table 1](#) and [Table 2](#), respectively.

DIFFERENCES IN REFLECTIVE FUNCTIONING AND DISSOCIATIVE EXPERIENCES BETWEEN “HIGH-RISK” ADOLESCENTS AND HEALTHY CONTROLS

“High-risk” subjects and healthy controls exhibited significantly different scores on both RFQ and A-DES questionnaires. With regard to reflective functioning, “high-risk” subjects showed lower RFQ-C scores (mean 3.39 ± 2.47), compared to healthy controls (mean 6.73 ± 5.01), thus exhibiting a tendency to encourage inaccurate models of one’s and others’ mind, in absence of evidence to support these models (hypermentalizing). Furthermore, “high-risk” subjects reported higher scores on RFQ-U (mean 7.73 ± 4.38), compared to healthy controls (mean 5.14 ± 4.17), which indicates a greater lack of knowledge about mental states, and higher concrete thinking in the first group (hypomentalizing).

Furthermore, based on the A-DES total score, “high-risk” subjects showed significantly worse dissociative symptoms (mean 3.49 ± 2.04), compared to healthy controls (mean 2.06 ± 1.43 ; $p<0.001$). Consistently, “high-risk” subjects reported greater levels of dissociative experiences, namely dissociative amnesia, absorption and imaginative involvement, depersonalization and derealization, and passive influence, compared to healthy controls.

Differences between groups are summarized in [Table 3](#).

Table 1. Descriptive statistics and correlation analysis of the psychological assessment in help-seekers adolescents (N = 51)

Variable	Mean	SD	Skew	Kurt	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. RFQ-U	7.73	4.38	-0.08	-1.07	1													
2. RFQ-C	3.39	2.47	0.35	-0.75	-0.38**	1												
3. A-DES Tot	3.49	2.04	0.28	-0.84	0.49**	-0.17	1											
4. A-DES Amn	2.88	2.22	0.58	-0.76	0.47**	-0.22	0.84**	1										
5. A-DES Abs	3.24	2.30	0.49	-0.67	0.37**	-0.17	0.81**	0.59**	1									
6. A-DES Dep	3.76	2.25	0.26	-0.81	0.47**	-0.16	0.95**	0.73**	0.75**	1								
7. A-DES Infl	3.85	2.40	0.17	-1.10	0.42**	-0.18	0.93**	0.78**	0.73**	0.86**	1							
8. ASQ Confid	29.60	7.94	-0.90	-0.39	0.061	-0.12	-0.16	-0.13	-0.03	-0.18	-0.20	1						
9. ASQ Discomf	42.92	8.20	-0.18	-0.46	0.27*	-0.05	0.48**	0.38**	0.41**	0.47**	0.54**	-0.40**	1					
10. ASQ Second	18.90	5.02	-0.05	-0.31	0.25	0.08	0.43**	0.33**	0.47**	0.38**	0.43**	0.08	0.22	1				
11. ASQ Appr	30.33	11.84	2.84	15.01	0.19	0.07	0.41**	0.24	0.34*	0.44**	0.34*	-0.33*	0.39**	0.05	1			
12. ASQ Preocc	33.55	7.73	-0.31	-0.40	0.22	-0.13	0.26	0.18	0.20*	0.30*	0.16	-0.10	0.20	-0.02	0.62**	1		
13. BAI	28.67	14.73	0.20	-0.57	0.34*	-0.13	0.69**	0.56**	0.57**	0.70**	0.65**	-0.25	0.47**	0.18	0.64**	0.45**	1	
14. BDI	29.16	15.29	-0.17	-0.98	0.36**	-0.18	0.60**	0.54**	0.43**	0.58**	0.55**	-0.51**	0.62**	0.05	0.52**	0.33	0.57	1

Abbreviations: SD = standard deviation; Skew = skewness; Kurt = kurtosis; RFQ-C = Reflective Functioning Questionnaire-Certainty; RFQ-U = Reflective Functioning Questionnaire-Uncertainty; A-DES = Adolescent Dissociative Experience Scale; ADES-Amn = Dissociative Amnesia; A-DES Abs = Absorption and imaginative involvement; A-DES Dep = Depersonalization and derealization; A-DES Infl = Passive influence. ASQ = Attachment Style Questionnaire; ASQ Confid = Confidence; ASQ Discomf = Discomfort with Closeness; ASQ Second = Relationships as Secondary; ASQ Appr = Need for Approval; ASQ Preocc = Preoccupation with Relationships; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory.

Notes: **p<0.001; *p<0.05

Table 2. Descriptive statistics and correlation analysis of the psychological assessment in healthy controls (N = 51)

Variable	Mean	SD	Skew	Kurt	1	2	3	4	5	6	7
1. RFQ-U	5.14	4.17	0.59	-0.76	1						
2. RFQ-C	6.73	5.01	0.75	-0.12	-0.72**	1					
3. A-DES Tot	2.06	1.43	1.10	0.91	0.40**	-0.44**	1				
4. A-DES Amn	1.77	1.48	1.01	0.50	0.30*	-0.41**	0.84**	1			
5. A-DES Abs	2.12	1.53	0.95	0.36	0.38**	-0.26**	0.82**	0.64**	1		
6. A-DES Dep	1.99	1.64	0.90	0.42	0.39**	-0.48**	0.91**	0.68**	0.65**	1	
7. A-DES Infl	2.31	1.50	1.54	2.91	0.35*	-0.39**	0.85**	0.68**	0.67**	0.76**	1

Abbreviations: SD = standard deviation; Skew = skewness; Kurt = kurtosis; RFQ-C = Reflective Functioning Questionnaire-Certainty; RFQ-U = Reflective Functioning Questionnaire-Uncertainty; A-DES = Adolescent Dissociative Experience Scale; ADES-Amn = Dissociative Amnesia; A-DES Abs = Absorption and imaginative involvement; A-DES Dep = Depersonalization and derealization; A-DES Infl = Passive influence.

Notes: **p<0.001; *p<0.05

Table 3. Differences in reflective functioning and dissociative experiences between the two groups

Variable	Healthy controls (N=51)		Help-seekers (N=51)		F	Z	p
	Mean	SD	Mean	SD			
RFQ-U	5.14	4.17	7.73	4.38	9.33	-2.95	0.003
RFQ-C	6.73	5.01	3.39	2.47	18.11	-3.51	<0.001
A-DES Tot	2.06	1.43	3.49	2.04	16.60	-3.69	<0.001
A-DES Amn	1.77	1.48	2.88	2.22	8.76	-2.57	0.010
A-DES Abs	2.12	1.53	3.24	2.30	8.26	-2.41	0.016
A-DES Dep	1.99	1.64	3.76	2.25	20.53	-4.02	<0.001
A-DES Infl	2.31	1.50	3.85	2.40	14.25	-3.22	0.001

Abbreviations: SD = standard deviation; RFQ-C = Reflective Functioning Questionnaire-Certainty; RFQ-U = Reflective Functioning Questionnaire-Uncertainty; A-DES = Adolescent Dissociative Experience Scale; ADES-Amn = Dissociative Amnesia; A-DES Abs = Absorption and imaginative involvement; A-DES Dep = Depersonalization and derealization; A-DES Infl = Passive influence.

FURTHER ANALYSES

To assess the robustness of these findings, an additional analysis was carried out considering the means of tests in both experimental and control samples, focusing on the possibility that adolescents at high-risk react differently. This possibility predicts that across groups (i.e., experimental and control), adolescents at high-risk respond differently from healthy controls (experimental hypothesis) as opposed to equally (null hypothesis) at the tests. A Bayes factor analysis using the Jeffrey-Zellner-Siow (JZS) for paired t-tests allowed us to assess whether these results failed or not to reject the null hypothesis.³¹ According to conventional cut-offs, a Bayes factor above 3 indicates at least moderate support for a hypothesis.³² We obtained a scaled JZS BF of 0.096 for the RFQ-U, and 0.002 for the RFQ-C in favor of the experimental hypothesis. We also obtained a scaled JZS BF of 0.004 for the A-DES (total score), 0.123 for the A-DES Amn, 0.152 for the A-DES Abs, 0.001 for the A-DES Dep, and 0.009 for the A-DES Infl supporting the experimental hypothesis.

These results confirmed different performances between adolescents at high-risk and healthy controls.

DISCUSSION

The present study aimed to investigate reflective functioning and dissociative symptoms in adolescents "at risk" of developing psychosis, compared to healthy adolescent controls. To sum up, "at risk" adolescents exhibited greater hypermentalizing (i.e., the tendency to encourage inaccurate models of one's and others' minds, without supporting evidence) and greater hypomentalizing (i.e., lack of knowledge about mental states and concrete thinking), compared to healthy adolescents. Nonetheless, unlike the uncertainty factor, research has documented that certainty about mental states is inversely associated with a broad range of maladaptive indices, including the use of primitive defenses and interpersonal problems.¹⁹ In addition, "at risk" adolescents showed a worse dissociative symptomatology, compared to healthy adolescents.

The findings from the current study can be discussed within the association between family and internalizing symptoms, according to the attachment theory.³³ This theory asserted that the quality of early parent and child interactions affects children's social and personality development. In particular, when parents are not available and emotionally responsive, children develop insecure attachment styles (e.g., an anxious attachment characterized by fears of abandonment and/or an avoidant attachment characterized by avoidance of intimacy). These two insecure styles of attachment correlate with the development of internalizing symptoms of anxiety and depression.³⁴⁻³⁷ In the current study, "high risk" adolescents showed moderate levels of depression and anxiety, and greater scores on ASQ subscales, namely Discomfort for Closeness, Relationship as secondary, Need for Approval, and Preoccupation with Relationship, compared to the available normative data for the Italian population.³⁰ These results confirm an insecure

attachment in high-risk adolescents. Crucially, we found that dissociative symptomatology (A-DES) was positively correlated with different ASQ subscales, except for Confidence and Preoccupation with Relationships. These findings extend prior developmental research, supporting the interplay between dissociative symptoms and disorganized/insecure models of attachment,³⁸⁻⁴¹ and that disorganized/insecure attachment may be a powerful predictor of dissociation in adulthood.^{42,43} Another caveat concerns the relationships between attachment factors and reflective functioning. Mentalizing abilities arise within the development of the attachment system, despite they represent two separate constructs.^{44,45} Promisingly, our study revealed the correlation between Discomfort for Closeness and hypomentalizing (RFQ-U); nonetheless, the association between attachment styles and reflective functioning in adolescents "at risk" of developing psychosis still appears a topic needing further investigations.

Although the findings of this study contribute to understanding the differences in reflective functioning and dissociative experiences between adolescents "at risk" of psychosis and healthy controls, some limitations should be taken into account by future research. First, the use of a cross-sectional design did not allow us to conclude a causal relationship between the observed variables. Future research adopting a longitudinal design would help to ascertain this kind of relationship. Second, the limited sample size may not allow us to extend our findings to other adolescents "at risk" of psychosis. Consequently, future research should verify our findings among larger samples. Third, a wide array of factors, such as parental style, may potentially impinge in many ways on the results we obtained. Forthcoming research should consider their role in influencing the onset of psychiatric disorders.

CONCLUSION

In sum, our results suggested that adolescents at "high risk" of psychosis showed greater impairment in reflective functioning than healthy subjects. More specifically, a low certainty about mental states, together with a higher uncertainty about mental states seem to characterize high-risk subjects. Not unexpectedly, these latter tend to have higher levels of dissociative experiences than the healthy subjects. A major implication of our study concerns the importance of an assessment in early adolescence, as well as the clinical practice of psychotherapists within the field. Indeed, they should carefully consider failures in reflective functioning among individuals potentially "at risk" of psychosis. Then, an assessment of the mentalizing abilities is paramount, while a psychological intervention to increase them could be very useful for lowering psychiatric symptoms.

.....

DECLARATION OF COMPETING INTERESTS

The authors have no conflicts of interest to declare.

FUNDING

There is no funding to report.

ACKNOWLEDGMENTS

None.

REFERENCES

1. Pattnaik JI, Panda UK, Chandran S, Padhy S, Ravan JR. Treatment resistant psychosis in children and adolescents and clozapine: Nuances. *Front Psychiatry*. 2023;14:1014540. [doi:10.3389/fpsy.2023.1014540](https://doi.org/10.3389/fpsy.2023.1014540)
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. American Psychiatric Association; 2000.
3. Fusar-Poli P, Borgwardt S, Bechdolf A, et al. The psychosis high-risk state: a comprehensive state-of-the-art review. *JAMA Psychiatry*. 2013;70(1):107-120. [doi:10.1001/jamapsychiatry.2013.269](https://doi.org/10.1001/jamapsychiatry.2013.269)
4. Fusar-Poli P, Rocchetti M, Sardella A, et al. Disorder, not just state of risk: meta-analysis of functioning and quality of life in people at high risk of psychosis. *Br J Psychiatry*. 2015;207(3):198-206. [doi:10.1192/bjp.bp.114.157115](https://doi.org/10.1192/bjp.bp.114.157115)
5. Mennigen E, Bearden CE. Psychosis Risk and Development: What Do We Know From Population-Based Studies? *Biol Psychiatry*. 2020;88(4):315-325. [doi:10.1016/j.biopsych.2019.12.014](https://doi.org/10.1016/j.biopsych.2019.12.014)
6. Driver DI, Thomas S, Gogtay N, Rapoport JL. Childhood-Onset Schizophrenia and Early-onset Schizophrenia Spectrum Disorders: An Update. *Child Adolesc Psychiatr Clin N Am*. 2020;29(1):71-90. [doi:10.1016/j.chc.2019.08.017](https://doi.org/10.1016/j.chc.2019.08.017)
7. Schultze-Lutter F, Kindler J, Ambarini TK, Michel C. Positive psychotic symptoms in childhood and adolescence. *Curr Opin Psychol*. 2022;45:101287. [doi:10.1016/j.copsyc.2021.11.007](https://doi.org/10.1016/j.copsyc.2021.11.007)
8. Raballo A, Poletti M, Preti A, McGorry P. Clinical high risk for psychosis in children and adolescents: a meta-analysis of transition prevalences. *Schizophr Res*. 2022;243:254-261. [doi:10.1016/j.schres.2020.03.063](https://doi.org/10.1016/j.schres.2020.03.063)
9. Raballo A, Poletti M, McGorry P. Architecture of change: rethinking child and adolescent mental health. *Lancet Psychiatry*. 2017;4(9):656-658. [doi:10.1016/s2215-0366\(17\)30315-2](https://doi.org/10.1016/s2215-0366(17)30315-2)
10. McGorry PD, Hartmann JA, Spooner R, Nelson B. Beyond the "at risk mental state" concept: transitioning to transdiagnostic psychiatry. *World Psychiatry*. 2018;17(2):133-142. [doi:10.1002/wps.20514](https://doi.org/10.1002/wps.20514)
11. Luyten P, Lemma A, Target M. Mentalizing and depression. In: Bateman A, Fonagy P, eds. *Mentalizing in Mental Health Practice*. American Psychiatric Publishing Inc; 2012:385-418.
12. Bateman AW, Fonagy P, eds. *Handbook of Mentalizing in Mental Health Practice*. American Psychiatric Publishing Inc; 2012.
13. Fonagy P, Luyten P, Moulton-Perkins A, et al. Development and Validation of a Self-Report Measure of Mentalizing: The Reflective Functioning Questionnaire. *Plos One*. 2016;11(7):e0158678. [doi:10.1371/journal.pone.0158678](https://doi.org/10.1371/journal.pone.0158678)
14. Geraci A, Surian L, Ferraro M, Cantagallo A. Theory of Mind in patients with ventromedial or dorsolateral prefrontal lesions following traumatic brain injury. *Brain Inj*. 2010;24(7-8):978-987. [doi:10.1099/02699052.2010.487477](https://doi.org/10.1099/02699052.2010.487477)
15. Geraci A, Cantagallo A. Inferential reasoning: Comparison of patients with schizophrenia and patients with traumatic brain injury. *Psychiatry Res*. 2011;188(2):291-293. [doi:10.1016/j.psychres.2010.12.012](https://doi.org/10.1016/j.psychres.2010.12.012)
16. Ulvestad DA, Selsbakk Johansen M, Hartveit Kvarstein E, Pedersen G, Wilberg T. A borderline focused Reflective Functioning measure – Interrater reliability of the Mentalization Breakdown Interview. *Nord J Psychiatry*. 2023;77(4):360-366. [doi:10.1080/08039488.2022.2123040](https://doi.org/10.1080/08039488.2022.2123040)
17. Bateman A, Fonagy P. Comorbid antisocial and borderline personality disorders: mentalization-based treatment. *J Clin Psychol*. 2008;64(2):181-194. [doi:10.1002/jclp.20451](https://doi.org/10.1002/jclp.20451)
18. Quattropani MC, Geraci A, Lenzo V, Sardella A, Schimmenti A. Failures in Reflective Functioning, Dissociative Experiences, and Eating Disorder: a Study On a Sample of Italian Adolescents. *J Child Adolesc Trauma*. 2022;15(2):365-374. [doi:10.1007/s40653-022-00450-9](https://doi.org/10.1007/s40653-022-00450-9)
19. Cucchi A, Hampton JA, Moulton-Perkins A. Using the validated Reflective Functioning Questionnaire to investigate mentalizing in individuals presenting with eating disorders with and without self-harm. *PeerJ*. 2018;6:e5756. [doi:10.7717/peerj.5756](https://doi.org/10.7717/peerj.5756)
20. Lenzo V, Sardella A, Musetti A, Petralia MC, Grado I, Quattropani MC. Failures in Reflective Functioning and Reported Symptoms of Anxiety and Depression in Bereaved Individuals: A Study on a Sample of Family Caregivers of Palliative Care Patients. *Int J Environ Res Public Health*. 2022;19(19):11930. [doi:10.1037/cns0000333](https://doi.org/10.1037/cns0000333)

21. Boldrini T, Pontillo M, Tanzilli A, et al. An attachment perspective on the risk for psychosis: Clinical correlates and the predictive value of attachment patterns and mentalization. *Schizophr Res.* 2020;222:209-217. [doi:10.1016/j.schres.2020.05.052](https://doi.org/10.1016/j.schres.2020.05.052)
22. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. American Psychiatric Publishing; 2013. [doi:10.1176/aipi.books.9780890425596](https://doi.org/10.1176/aipi.books.9780890425596)
23. Schimmenti A. Psychometric properties of the Adolescent Dissociative Experiences Scale (A-DES) in a sample of Italian adolescents. *J Trauma Dissoc.* 2015;17(2):244-257. [doi:10.1080/15299732.2015.1064507](https://doi.org/10.1080/15299732.2015.1064507)
24. Choi KR, Seng JS, Briggs EC, et al. The Dissociative Subtype of Posttraumatic Stress Disorder (PTSD) Among Adolescents: Co-Occurring PTSD, Depersonalization/Derealization, and Other Dissociation Symptoms. *J Am Acad Child Adolesc Psychiatry.* 2017;56(12):1062-1072. [doi:10.1016/j.jaac.2017.09.425](https://doi.org/10.1016/j.jaac.2017.09.425)
25. Luoni C, Agosti M, Crugnola S, Rossi G, Termine C. Psychopathology, Dissociation and Somatic Symptoms in Adolescents Who Were Exposed to Traumatic Experiences. *Front Psychol.* 2018;9:2390. [doi:10.3389/fpsyg.2018.02390](https://doi.org/10.3389/fpsyg.2018.02390)
26. Sun P, Alvarez-Jimenez M, Lawrence K, Simpson K, Peach N, Bendall S. Investigating the prevalence of dissociative disorders and severe dissociative symptoms in first episode psychosis. *Early Interv Psychiatry.* 2019;13(6):1366-1372. [doi:10.1111/eip.12773](https://doi.org/10.1111/eip.12773)
27. Morandotti N, Brondino N, Merelli A, et al. The Italian version of the Reflective Functioning Questionnaire: Validity data for adults and its association with severity of borderline personality disorder. *PLoS One.* 2018;13(11):e0206433. [doi:10.1371/journal.pone.0206433](https://doi.org/10.1371/journal.pone.0206433)
28. Armstrong JG, Putnam FW, Carlson EB, Libero DZ, Smith SR. Development and validation of a measure of adolescent dissociation: The Adolescent Dissociative Experiences Scale. *J Nerv Ment Dis.* 1997;185(8):491-497. [doi:10.1097/00005053-19970800-00003](https://doi.org/10.1097/00005053-19970800-00003)
29. Erdfelder E, Faul F, Buchner A. GPOWER: A general power analysis program. *Behav Res Meth Instr Comput.* 1996;28(1):1-11. [doi:10.3758/bf03203630](https://doi.org/10.3758/bf03203630)
30. Fossati A, Feeney JA, Donati D, et al. On the dimensionality of the attachment style questionnaire in Italian clinical and nonclinical participants. *J Soc Pers Relat.* 2003;20(1):55-79. [doi:10.1177/02654075030201003](https://doi.org/10.1177/02654075030201003)
31. Rouder JN, Speckman PL, Sun D, Morey RD, Iverson G. Bayesian t tests for accepting and rejecting the null hypothesis. *Psychon Bull Rev.* 2009;16(2):225-237. [doi:10.3758/pbr.16.2.225](https://doi.org/10.3758/pbr.16.2.225)
32. Jarosz AF, Wiley J. What are the odds? A practical guide to computing and reporting Bayes factors. *J Probl Solving.* 2014;7(1):2-9. [doi:10.7771/1932-6246.1167](https://doi.org/10.7771/1932-6246.1167)
33. Bowlby J. *Attachment and Loss: Attachment*. Vol 1. Basic Books; 1969.
34. Brenning K, Soenens B, Braet C, Bal S. The role of parenting and mother-adolescent attachment in the intergenerational similarity of internalizing symptoms. *J Youth Adolesc.* 2012;41(6):802-816. [doi:10.1007/s10964-011-9740-9](https://doi.org/10.1007/s10964-011-9740-9)
35. Brumariu LE, Kerns KA. Parent-child attachment and internalizing symptoms in childhood and adolescence: A review of empirical findings and future directions. *Dev Psychopathol.* 2010;22(1):177-203. [doi:10.1017/s0954579409990344](https://doi.org/10.1017/s0954579409990344)
36. Madigan S, Brumariu LE, Villani V, Atkinson L, Lyons-Ruth K. Representational and questionnaire measures of attachment: A meta-analysis of relations to child internalizing and externalizing problems. *Psychol Bull.* 2016;142(4):367-399. [doi:10.1037/bul0000029](https://doi.org/10.1037/bul0000029)
37. Rivers AS, Bosmans G, Piovonetti Rivera I, Ruan-lu L, Diamond G. Maternal and paternal attachment in high-risk adolescents: Unique and interactive associations with anxiety and depressive symptoms. *J Fam Psychol.* 2022;36(6):954-963. [doi:10.1037/fam0000989](https://doi.org/10.1037/fam0000989)
38. Cassidy J, Shaver PR, eds. *Handbook of Attachment: Theory, Research, and Clinical Applications*. Rough Guides; 2002.
39. Paetzold RL, Rholes WS, Andrus JL. A Bayesian analysis of the link between adult disorganized attachment and dissociative symptoms. *Pers Individ Dif.* 2017;107:17-22. [doi:10.1016/j.paid.2016.11.031](https://doi.org/10.1016/j.paid.2016.11.031)
40. Main M, Hesse E. Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In: Greenberg MT, Cicchetti D, Cummings EM, eds. *The John D. and Catherine T. MacArthur Foundation Series on Mental Health and Development. Attachment in the Preschool Years: Theory, Research, and Intervention*. University of Chicago Press; 1990:161-182.

41. Simeon D, Knutelska M. The role of fearful attachment in depersonalization disorder. *Eur J Trauma Dissociation*. 2022;6(3):100266. [doi:10.1016/j.ejtd.2022.100266](https://doi.org/10.1016/j.ejtd.2022.100266)
42. Carlson EA. A prospective longitudinal study of attachment disorganization/disorientation. *Child Dev*. 1998;69(4):1107-1128. [doi:10.1111/j.1467-8624.1998.tb06163.x](https://doi.org/10.1111/j.1467-8624.1998.tb06163.x)
43. Dutra L, Bureau JF, Holmes B, Lyubchik A, Lyons-Ruth K. Quality of early care and childhood trauma: A prospective study of developmental pathways to dissociation. *J Nerv Ment Dis*. 2009;197(6):383-390. [doi:10.1097/nmd.0b013e3181a653b7](https://doi.org/10.1097/nmd.0b013e3181a653b7)
44. Fonagy P, Gergely G, Jurist E, Target M. *Affect. Regulation, Mentalization, and the Development of the Self*. Other Press; 2002.
45. Fonagy P, Target M. Attachment and reflective function: Their role in self-organization. *Dev Psychopathol*. 1997;9(4):679-700. [doi:10.1017/s0954579497001399](https://doi.org/10.1017/s0954579497001399)

SUPPLEMENTARY MATERIALS

Table S1. Descriptive statistics and correlation analysis (N= 102)

Download: <https://healthpsychologyresearch.openmedicalpublishing.org/article/88937-reflective-functioning-and-dissociative-experiences-a-comparison-study-between-adolescents-at-high-risk-of-psychosis-and-healthy-controls/attachment/183629.html>
