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Early Maladaptive Schemas and Their Associations with Perceived Parental Bonding among Adolescents Entering Specialized Health Care

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Abstract
Early maladaptive schemas (EMSs) have scarcely been studied in adolescents. The present study investigates EMSs in two clinical samples of 12–22-year-olds recruited from patients entering a specialized adolescent psychiatry clinic [$n=190$] or a pediatric clinic [$n=119$] in Finland. The endorsement of EMSs was compared between these samples, and the association of EMSs with perceived parental bonding was assessed. EMSs were assessed with the Young Schema Questionnaire-Short Form 2-Extended and particularly affectionless control parenting style with the Parental Bonding Instrument. The main analyses were conducted using general linear modeling. Significant differences existed between the two samples, with most EMSs and EMS domains being stronger in the adolescent psychiatry sample. The Disconnection and Rejection domain was associated with maternal affectionless control in the adolescent psychiatry sample and paternal affectionless control in the pediatric sample. The results provide novel findings of EMSs in adolescents and their links to parenting.

Keywords Adolescence · Adolescent Psychiatry · Early Maladaptive Schemas · Parental Bonding · Pediatrics

Introduction

Early maladaptive schemas (EMSs) can be defined as extensive detrimental psychological frameworks that someone holds regarding oneself and one's relationships; EMSs can be seen as models of how someone functions in one's interpersonal sphere (Young et al., 2018). Detrimental experiences and core emotional needs that have not been met during childhood are at the core of developing EMSs. In addition to cognitions and emotions, EMSs also comprise memories and bodily sensations. The

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association of EMSs with mental health symptoms has been repeatedly shown in adults (Bishop et al., 2022; Frías et al., 2018; Hawke et al., 2012; Renner et al., 2012). So far, studies among adolescents have been quite scarce. However, some evidence shows that EMSs also have relevance in psychological distress in young people (e.g., Nicol et al., 2020). EMSs are connected with, for example, social anxiety and depression (Calvete et al., 2015), aggression (Van Wijk-Herbrink et al., 2021), behavioral addictions, and substance abuse (Aloi et al., 2020; Shorey et al., 2013, 2014), and eating disorders (Turner et al., 2005).

The EMSs were originally divided into five domains (Disconnection and Rejection, Impaired Autonomy and Achievement, Other-Directedness, Impaired Limits, and Hypervigilance or Inhibition) (Young et al., 2018). However, research has led to a new four-domain categorization: (1) Disconnection and Rejection, (2) Impaired Autonomy and Performance, (3) Excessive Responsibility and Standards, and (4) Impaired Limits (Bach et al., 2018). These domains comprise 18 EMSs, listed here according to the four-domain model: Emotional Deprivation, Mistrust/Abuse, Emotional Inhibition, Defectiveness and Negativity/Pessimism, and Social Isolation (Disconnection and Rejection); Dependence, Enmeshment, Failure, Vulnerability, Abandonment and Subjugation (Impaired Autonomy and Performance); Unrelenting Standards, Self-Sacrifice, and Punitiveness (Excessive Responsibility and Standards); and Entitlement, Approval-Seeking, and Insufficient Self-Control (Impaired Limits) (Bach et al., 2018). Previous studies on the psychometric properties of assessment measures for EMSs have shown that EMSs can be assessed and measured in different types of adolescent samples, such as in community samples (Santos et al., 2018), high school student samples (Saritaş & Gençö, 2011), and cross-cultural validations of the most commonly used EMS measure—the Young Schema Questionnaire (Borges et al., 2020).

Studies among adolescents and young adults have not only shown that the EMS domains are quite extensively associated with mental health symptoms but are connected to different psychiatric symptoms in different ways (Balsamo et al., 2015; Calvete et al., 2015; Orue et al., 2014; Yiğit et al., 2021). It has been suggested that EMSs may be relevant even in children (Stallard, 2007). However, research among particularly underaged adolescents has been scarce, hindering the possibility to generalize these findings. Two key aspects of psychological development in adolescence are identity and emotional development. Both social and individual factors are associated with identity development, and the interaction between identity development and the surrounding environment is bidirectional (Kroger, 2008). One framework for understanding identity development is to understand identity creation as a process in which one tries to integrate their experiences into meaningful narratives (Waterman, 2015). Developing cognitive abilities enables new skills, such as thinking and reasoning about feelings and emotions. Abstract thinking enables one to have new emotional experiences regarding memories of past events; and ideas about and anticipations of future events may also trigger emotions (Rosenblum & Lewis, 2008).

These developmental standpoints highlight the importance of studying EMSs in adolescence. Although the foundation of EMSs is formed during the early years, EMSs often activate throughout life when individuals experience situations somehow reminiscent of the experiences in which their EMSs began to form (Young et

al., 2018). Thus, individuals tend to observe and interpret situations based on their EMSs rather than the reality of events, creating a risk for psychological symptoms and disorders. If an adolescent's views about themselves, their emotional experiences, and other people are maladaptive and distorted, emerging EMSs may affect their identity and adaptive emotional development. For example, studies in adults have shown that EMSs are connected to difficulties in adapting to psychological and psychosocial developmental phases and tasks (Thimm et al., 2010). EMSs may also hamper young adults' relationships with peers (Gyesook et al., 2014) and adjustment to higher education studies (Cecero et al., 2008). In adults, EMSs have been shown to be relatively stable over time (e.g., Riso et al., 2006). To our knowledge, the stability of EMSs in adolescence has not been studied. However, this also highlights the importance of understanding adolescence as a key developmental phase regarding the rooting of EMSs.

Experiences related to attachment and bonding between the child and parent are at the core of developing EMSs (Young et al., 2018). Evidence from adolescents also shows that EMSs are associated with childhood emotional neglect and abuse experiences (e.g., May et al., 2022). In young adulthood, EMSs are more prevalent among individuals whose attachment in childhood was characterized by ambivalence and insecurity and among those whose attachment style in adulthood is characterized by preoccupation and insecurity (Simard et al., 2011). Interestingly, these patterns were not found to be EMS domain-specific. In young adulthood, EMS domains mediate the association between perceived rejection or control from the mother during childhood and different psychological symptoms (Saritas-Atalar et al., 2020). In particular, EMSs related to experiences of disconnectedness are linked to individuals' representations of potential outcomes of situations when experiencing distress, and EMSs are also connected to self-reported attachment avoidance (McLean et al., 2014). A study in a sample of mother–daughter dyads revealed that maternal parenting style and EMSs predicted the daughters' EMSs (Gibson et al., 2019). EMSs appear to be connected to individuals' attachment style in adulthood (Mason et al., 2005) and EMSs can be transmitted intergenerationally (Zeynel et al., 2020). Moreover, Other-Directedness, as well as Disconnection and Rejection, mediate the connection between anxious attachment style and psychopathology (Bosmans et al., 2010). The same study also showed that Disconnection and Rejection mediate to some extent the association between avoidant attachment and psychopathology.

The present study aims to assess the prevalence of EMSs in two clinical adolescent samples: One was recruited from patients entering a specialized adolescent psychiatry clinic, and the other was recruited from patients entering a pediatric clinic. Additionally, the aim was to assess how perceived parental bonding, specifically affectionless control, was associated with EMS in these two samples. Specifically, the present study aims to address the following questions:

1. To what extent are different EMSs and EMS domains endorsed in the adolescent psychiatry sample in comparison to the pediatric sample? The former was hypothesized to endorse stronger EMSs and EMS domains.
2. Is the affectionless control parenting style associated with adolescents' EMSs; if so, are the associations different between the two patient samples?

Methods

Participants

The present study was conducted as a part of the 'Emotions and well-being in adolescents' research project. The recruitment was directed at first-visit adolescent patients referred to specialized health care at the adolescent psychiatry outpatient clinic or the pediatric clinic in Satakunta Hospital District in Finland. The adolescent psychiatry outpatient clinic provides specialized mental health services and serves 13–22-year-old patients. The pediatric clinic offers specialized health care for physical illnesses for adolescents between 12 and 16. No strict exclusion and inclusion criteria were used, as the aim was that the sample would be as representative as possible. Hence, all first-visit patients could participate in the study.

The recruitment in the adolescent psychiatry clinic occurred from November 2017 to December 2018. The professionals who met the adolescent at the first visit conducted the recruitment. The recruitment phase had 749 eligible first-visit patients. Data on refusals were not collected. Altogether, 190 gave an informed consent and all of them returned the study questionnaire, forming the first study sample.

The second study sample was recruited from the pediatric clinic between January 2018 and January 2019. Emergency patients were not recruited. At the pediatric clinic, a research nurse conducted the recruitment. During the recruitment period, 419 eligible patients were on their first visit to the clinic; the research nurse could approach 188 of them. Of those, 18.1% ($n=34$) declined directly. Altogether, 154 adolescents gave informed consent and received the study questionnaire. The questionnaire was completed directly after the visit or at home and returned by mail. Of those who gave their informed consent, 35 (22.7%) later refused or did not return the questionnaire. Thus, the second study sample included 119 participants.

All the participants gave informed and written consent to participate in the study; for those under 15 years of age, their guardians also gave written consent. The guardians of the 15–17-year-old adolescents received a written notification of the adolescent's participation. The Ethics Committee of the Hospital District of Southwest Finland approved the research protocol (ETMK 89/1801/2017).

Measures

Young Schema Questionnaire-Short Form 2-Extended (YSQ) comprises 18 EMSs assessed with 90 items (5 items for each EMS); each item is scored from 1 to 6 (Saariaho et al., 2009; Young & Brown, 2003). The strength of each EMS is represented by a mean score of the respective items, with a higher score representing a stronger EMS. The measure's factor structure corresponds with the original 18 EMS configuration, and the psychometric properties of it have been found to be good (Saariaho et al., 2009). Various versions of the measure has been utilized also in adolescent populations, and evidence shows that EMSs are also verifiable in adolescents (Borges et al., 2020; Van Vlierberghe et al., 2010). For each participant, a minimum of 4/5 (80%) of the items for each EMS had to be answered for the measurement to be

included in the analyses. The mean value of the individually completed items for the same EMS was used as an estimate for the missing items.

The internal consistency for the scale was calculated using Cronbach's alpha. In the adolescent psychiatric sample, the Cronbach's alphas for the separate EMSs varied between 0.683 and 0.955, and for the EMS domains between 0.819 and 0.953. In the pediatric sample, the Cronbach's alphas for the separate EMSs varied between 0.680 and 0.964, and for the EMS domains between 0.835 and 0.941. Thus, the internal consistency varied from acceptable to excellent for the separate EMSs and EMS domains.

Parental Bonding Instrument (PBI) assesses one's perceptions regarding experienced parenting during the first 16 years of life (Parker et al., 1979). Maternal and paternal parenting styles are assessed with separate questionnaires. The measure consists of 25 items, 12 of which relate to the Care subscale and 13 to the Overprotection subscale. All items are scored on a four-point Likert-scale ranging from 'Very unlike'=0 to 'Very like'=3. The sum score range for the Care subscale is 0–36, and for the Overprotection subscale 0–39. For Care, the high pole represents affection and emotional warmth, while the negative pole represents emotional coldness and rejection. For Overprotection, the low pole represents the promotion of autonomy, while the high pole is characterized by intrusion and infantilization. The scale's psychometric properties have gained support both in adults and adolescents, and the measurements have been shown to be stable over time (Ngai et al., 2018; Parker et al., 1979; Wilhelm et al., 1990). Affectionless control is a parenting style characterized by low Care and high Overprotection scores (Parker et al., 1979). Since the two samples were analyzed separately, we used separate cut-offs for both samples to identify features of affectionless control for mothers and fathers separately. The cut-offs for low Care were based on the lowest quartile, and the cut-offs for high Overprotection were based on the highest quartile. For the adolescent psychiatry sample, the cut-off scores for affectionless control were ≤22.0 for maternal Care, ≥16.0 for maternal Overprotection, ≤17.0 for paternal Care, and ≥14.0 for paternal Overprotection. The cut-off scores for the pediatric sample were ≤25.0 for maternal Care, ≥18.0 for maternal Overprotection, ≤20.0 for paternal Care, and ≥14.0 for paternal Overprotection. In the adolescent psychiatric sample, the Cronbach's alphas for the PBI subscales were between 0.886 and 0.942; in the pediatric sample, the alphas were between 0.819 and 0.900.

Overall Anxiety Severity and Impairment Scale (OASIS) consists of five items assessing the severity of anxiety and loss of function associated with it (Norman et al., 2006). Each item is scored on a range between 0 and 4, and the scale's total score ranges between 0 and 20. The scale's reliability and validity have gained support (Norman et al., 2006). In the present study, the OASIS score was used solely to control for the potential impact of anxiety as a confounding factor. However, the OASIS score could not be used as a continuous variable in the multivariate analyses due to potential multicollinearity. Therefore, to control for current psychological distress to some extent, a cut-off score based on the highest quartile was used to indicate high anxiety. For the adolescent psychiatry sample, the cut-off score was ≥13.0 for high anxiety and ≥8.0 for the pediatric sample. In the adolescent psychiatric sample, the Cronbach's alpha for OASIS was 0.897; in the pediatric sample, the alpha was 0.870.

Background Variables

Information regarding the following background variables for the participants were collected based on self-reports: participants' gender, age, living arrangements (with biological parents/with family of one biological parent/alone or other), and occupation/education (comprehensive school/upper secondary school or higher education student/working/other) to control for potential confounding factors.

Data Analysis

The continuous variables' distributions were assessed both graphically and using the Shapiro-Wilk test. Since the distributions for most variables were non-parametric, the variables were characterized with medians and interquartile ranges (IQR) and analyzed with non-parametric tests.

The differences in the distributions of EMS and EMS domain scores, PBI scores, and age and OASIS scores were compared between the two samples using the Mann-Whitney U test. The correlations between the continuous variables were analyzed using Spearman's correlation. Regarding the comparisons for the categorized variables (gender, living arrangements, occupation/education) between the samples, a Chi-Square test was utilized. The EMS and EMS domain scores in different categories of the categorized variables were compared using the Mann-Whitney U test and the Kruskall-Wallis tests.

Considering the marked differences between the two samples regarding most of the variables, all further analyses for the samples were conducted separately. Regarding the EMS and EMS domain scores, many significant correlations and intercorrelations were observed; thus, the main multivariate analyses were conducted only for the EMS domain scores instead of building separate models for each EMS.

General linear models (GLM) were implemented in the final analyses to evaluate the significance of the affectionless control for the EMS domain scores while controlling for potential confounding variables. The variables that associated statistatistically significantly ($p < 0.05$) in the univariate analyses with the EMS domain scores were included in the models. Since experienced parental affectionless control was not significantly associated with the Excessive Responsibility and Standards EMS domain scores in either sample in the univariate analyses, multivariate analyses were not conducted for this domain. The variance and normality of the models' residuals were assessed to evaluate the models' fit. For all EMS domain models, the residuals had a good fit.

In all the analyses, p-values of < 0.05 were considered statistically significant. Statistical analyses were conducted using the IBM SPSS software, Version 25.

Results

Characteristics of the Adolescent Psychiatry and Pediatric Samples

The total number of participants was 309, of which 190 were from the adolescent psychiatric sample and 119 from the pediatric sample (Table 1). The median age in the whole sample was 15.00 (4.00) years; the age of the adolescent psychiatry sample averaged 18.00 (5.00); the pediatric sample averaged 14.00 (2.00) years of age ($p<0.001$). Both samples were mostly female, and no significant difference existed between the samples regarding the gender distribution ($p=0.24$). However, being younger, the participants in the pediatric sample more often lived with both biological parents and were still in comprehensive school.

The median PBI maternal Care score was 29.00 (11.00) in the adolescent psychiatry sample and 33.00 (10.00) in the pediatric sample ($p=0.005$), whereas the maternal Overprotection scores were 10.50 (10.00) and 10.00 (12.75, $p=0.96$), respectively. Regarding the paternal PBI scores, the Care score for the adolescent psychiatry sample was 25.50 (12.00) and 30.00 (14.00) for the pediatric sample ($p=0.001$), and the Overprotection scores were 8.00 (10.00) and 8.50 (10.00, $p=0.48$), respectively. In the adolescent psychiatry sample, 13.7% ($n=26$) were categorized as having experienced maternal affectionless control, and as many as 13.7% ($n=26$) paternal affectionless control. However, in the pediatric sample, 17.6% ($n=21$) had experienced maternal affectionless control, and 16.0% ($n=19$) had paternal affectionless control. The median OASIS score was 8.00 (8.00) for the whole sample, but the median score for the adolescent psychiatry sample [11.00 (6.50)] was significantly (<0.001) higher than the median score for the pediatric sample [4.00 (7.75)]. Based on the highest quartile, in the adolescent psychiatry sample, 58 participants were categorized into

Table 1 Characteristics of all participants and comparison of the adolescent psychiatry and pediatric samples

	All	Adolescent psychiatry sample	Pediatric sample	
	n (%)	*n* (%)	*n* (%)	*p*[a]
Gender				0.239
Female	202 (65.4)	129 (67.9)	73 (61.3)	
Male	107 (34.6)	61 (32.1)	46 (38.7)	
Living arrangements				<0.001
With biological parents	148 (48.7)	66 (35.1)	82 (70.7)	
With the family of one biological parent	92 (30.3)	62 (33.0)	30 (25.9)	
Alone/Other	64 (21.1)	60 (31.9)	4 (3.4)	
Occupation/Education				<0.001
Comprehensive school	162 (53.3)	58 (30.9)	104 (89.7)	
Upper secondary school or higher education	73 (24.0)	61 (32.4)	12 (10.3)	
Working	18 (5.9)	18 (9.6)	0 (0.0)	
Other	51 (16.8)	51 (27.1)	0 (0.0)	

[a]Chi-Square test

the high anxiety group (OASIS score ≥13.0), and 29 participants in the pediatric sample (OASIS score ≥8.0).

Comparisons of the EMSs Between the Study Samples

Almost all the EMS and EMS domain scores differed significantly between the two samples, except for Entitlement EMS (Table 2). Overall, the participants' EMS and EMS domain scores were higher in the adolescent psychiatric sample than in the pediatric sample. The most strongly endorsed EMSs (median score > 3.00) in the adolescent psychiatric sample were Abandonment, Failure, Self-Sacrifice, Unrelenting Standards, Approval-Seeking, Negativity/Pessimism, and Punitiveness, whereas the endorsement was the lowest for Enmeshment and Entitlement. Regarding the EMS domains, the highest endorsement was for Excessive Responsibility and Standards, and the lowest was for Impaired Autonomy and Performance.

Table 2 Young Schema Questionnaire-Short Form 2-Extended scores for Early Maladaptive Schemas (EMS) and EMS domains in the whole sample and comparison between the adolescent psychiatry and pediatric samples

	All	Adolescent Psychiatry	Pediatric	
EMS	Median (IQR)	Median (IQR)	Median (IQR)	(U) p[a]
Emotional Deprivation	1.80 (1.60)	2.20 (1.80)	1.20 (1.00)	(5398.00) < 0.001
Abandonment	2.60 (2.40)	3.20 (2.25)	1.60 (1.40)	(5231.50) < 0.001
Mistrust/Abuse	1.90 (1.80)	2.40 (1.60)	1.40 (1.00)	(5517.00) < 0.001
Social Isolation	2.20 (2.00)	2.70 (2.00)	1.40 (1.20)	(5099.00) < 0.001
Defectiveness	1.80 (2.00)	2.40 (2.40)	1.00 (0.80)	(5332.50) < 0.001
Failure	2.20 (2.60)	3.20 (2.40)	1.30 (1.00)	(4490.50) 0.000
Dependence	1.60 (1.40)	2.00 (1.40)	1.20 (0.80)	(6389.00) < 0.001
Vulnerability	1.80 (1.60)	2.20 (1.60)	1.40 (1.00)	(6858.00) < 0.001
Enmeshment	1.40 (1.00)	1.40 (1.10)	1.20 (0.60)	(8796.00) 0.005
Subjugation	1.80 (1.80)	2.40 (2.00)	1.30 (0.80)	(6103.50) < 0.001
Self-Sacrifice	3.40 (1.80)	3.60 (1.95)	3.20 (1.20)	(8441.50) 0.001
Emotional Inhibition	2.00 (1.60)	2.40 (1.80)	1.60 (1.40)	(6377.00) < 0.001
Unrelenting Standards	2.80 (2.00)	3.20 (2.20)	2.60 (1.60)	(8504.00) 0.003
Entitlement	1.60 (1.00)	1.60 (1.15)	1.60 (0.92)	(9507.00) 0.098
Insufficient Self-Control	2.40 (1.42)	2.70 (1.60)	1.80 (1.20)	(6074.00) < 0.001
Approval-Seeking	3.20 (1.80)	3.40 (1.80)	3.00 (1.45)	(7853.50) < 0.001
Negativity/Pessimism	3.20 (2.40)	3.80 (2.00)	2.20 (2.05)	(5528.00) < 0.001
Punitiveness	2.80 (1.80)	3.20 (1.83)	2.20 (1.60)	(6327.00) < 0.001
EMS Domain				
Disconnection and Rejection	2.27 (1.60)	2.78 (1.43)	1.53 (0.87)	(3808.50) < 0.001
Impaired Autonomy and Performance	2.07 (1.40)	2.42 (1.23)	1.47 (0.83)	(4504.50) < 0.001
Excessive Responsibility and Standards	3.00 (1.53)	3.40 (1.53)	2.67 (1.13)	(6745.00) < 0.001
Impaired Limits	2.53 (1.07)	2.73 (1.07)	2.20 (0.93)	(6639.50) < 0.001

[a]Mann-Whitney U test

IQR = Interquartile range

In the pediatric sample, EMSs Self-Sacrifice, Unrelenting Standards, Approval-Seeking, Negativity/Pessimism, and Punitiveness had the strongest endorsements (median score > 2.00). All the other EMSs had quite similar endorsements, with the median scores ranging between 1.00 (0.80) and 1.80 (1.20). Regarding the EMS domains, the results were similar for the adolescent psychiatry sample, as the highest endorsement was for Excessive Responsibility and Standards, and the lowest was for Impaired Autonomy and Performance.

Univariate Associations of Variables with EMS Domains

In the adolescent psychiatric sample, Disconnection and Rejection ($U = 2792.50$, $p = 0.010$), as well as Impaired Autonomy and Performance ($U = 2323.50$, $p < 0.001$), EMS domain scores significantly differed statistically between genders. For Excessive Responsibility and Standards, as well as Impaired Limits EMS domains, the difference between genders was non-significant. Regarding living arrangements and occupation/education, no significant differences between the EMS domain scores were observed. Age had statistically significant correlations with Excessive Responsibility and Standards ($r = 0.193$, $p = 0.008$) and Impaired Limits ($r = 0.146$, $p = 0.046$) EMS domain scores but not with the other two. Those with high OASIS scores had significantly higher EMS domain scores for all domains: Disconnection and Rejection ($U = 5173.00$, $p < 0.001$), Impaired Autonomy and Performance ($U = 5416.00$, $p < 0.001$), Excessive Responsibility and Standards ($U = 5147.50$, $p < 0.001$), and Impaired Limits ($U = 4636.50$, $p < 0.001$).

Disconnection and Rejection scores significantly differed between those who had experienced maternal affectionless control and others ($H = 18.82$, $p < 0.001$). The differences for Impaired Autonomy and Performance ($H = 16.01$, $p = 0.001$) and Impaired Limits ($H = 9.25$, $p = 0.026$) EMS domain scores were also significant. The scores for the Excessive Responsibility and Standards EMS domain did not significantly differ between those who had experienced affectionless control from their mothers or fathers.

In the pediatric sample, Disconnection and Rejection ($U = 1025.00$, $p = 0.008$), Impaired Autonomy and Performance ($U = 1081.00$, $p = 0.003$), and Excessive Responsibility and Standards ($U = 1138.50$, $p = 0.039$) EMS domain scores differed significantly between genders. Regarding living arrangements and occupation/education, no significant differences were found. Age did not correlate significantly with any of the EMS domain scores. Those with high OASIS scores had significantly higher EMS domain scores for the Disconnection and Rejection ($U = 1738.00$, $p < 0.001$) and Impaired Autonomy and Performance ($U = 2033.50$, $p < 0.001$) EMS domains but not for the other two.

Regarding parental bonding, for those with perceived affectionless control from mothers, significant differences were found for Disconnection and Rejection ($H = 10.81$, $p = 0.013$) and Impaired Autonomy and Performance ($H = 12.86$, $p = 0.005$) EMS domain scores. For fathers' parenting style, those who had experienced affectionless control had significantly higher EMS domain scores for Disconnection and Rejection ($H = 14.27$, $p = 0.003$) and Impaired Autonomy and Performance ($H = 11.60$, $p = 0.009$). Like the adolescent psychiatry sample, no significant associations between

Excessive Responsibility and Standards EMS domain scores and experienced affectionless control from mothers or fathers were found.

Multivariate Analyses for the EMS Domains

In the adolescent psychiatry sample, maternal affectionless control ($p=0.012$) and high anxiety ($p=0.003$) were independently and statistically significantly associated with the Disconnection and Rejection EMS domain scores in the GLM analyses (Table 3). Whereas in the pediatric sample, statistically significant associations were observed for paternal affectionless control ($p<0.001$) and high anxiety ($p=0.005$). Maternal affectionless control was not significantly associated with the EMS domain score.

For the Impaired Autonomy and Performance EMS domain, only high anxiety was significantly and independently associated with the domain ($p=0.011$) in the adolescent psychiatry sample (Table 4). Also, in the pediatric sample, maternal or paternal affectionless control was not significantly associated with the domain score in the multivariate analyses.

Table 3 Multivariate associations of parental affectionless control and confounding variables with Early Maladaptive Schema domain Disconnection and Rejection separately for adolescent psychiatry and pediatric samples

	Disconnection and Rejection					
	Adolescent Psychiatry sample			Pediatric sample		
	F	df	p[d]	F	df	*p*[d]
Maternal affectionless control (MAC)[a]	3.743	3	0.012	1.817	3	0.152
Paternal affectionless control (PAC)[b]				7.198	3	<0.001
Gender	0.764	1	0.383	3.541	1	0.064
High anxiety[c]	9.253	1	0.003	8.528	1	0.005
MAC[a]*PAC[b]				0.545	4	0.703
MAC[a]*Gender	1.195	3	0.314			
MAC[a]*High anxiety[c]	0.758	3	0.520	3.066	1	0.084
MAC[a]*Gender*High anxiety[c]	1.605	3	0.191			
PAC[b]*Gender				3.747	2	0.028
PAC[b]*High anxiety[c]				0.205	2	0.815
Gender*High anxiety[c]	0.006	1	0.938	2.523	1	0.117
Adjusted R^2	0.266			0.456		

[a]In the adolescent psychiatry sample, Parental Bonding Instrument scores for maternal care ≤22.0 and maternal overprotection ≥16.0, and in the pediatric sample, maternal care ≤25.0 and maternal Overprotection ≥18.0

[b]In the adolescent psychiatry sample, Parental Bonding Instrument scores for paternal care ≤17.0 and maternal overprotection ≥14.0, and in the pediatric sample, paternal care ≤20.0 and maternal Overprotection ≥14.0

[c]Overall Anxiety Severity and Impairment Scale score in the highest quartile: cut-off score ≥13.0 for the adolescent psychiatry sample and ≥8.0 for the pediatric sample

[d]General linear model

Only interactions with results for either sample are shown

Table 4 Multivariate associations of parental affectionless control and confounding variables with Early Maladaptive Schema domain Impaired Autonomy and Performance separately for adolescent psychiatry and pediatric samples

	Impaired Autonomy and Performance					
	Adolescent Psychiatry sample			Pediatric sample		
	F	df	p[d]	F	df	p[d]
Maternal affectionless control (MAC)[a]	1.886	3	0.134	1.796	3	0.155
Paternal affectionless control (PAC)[b]				2.148	3	0.101
Gender	1.092	1	0.298	0.840	1	0.363
High anxiety[c]	6.706	1	0.011	20.991	1	<0.001
MAC[a]*PAC[b]				2.887	4	0.028
MAC[a]*Gender	1.079	3	0.360			
MAC[a]*High anxiety[c]	2.525	3	0.060	2.546	2	0.085
MAC[a]*Gender*High anxiety[c]	1.867	3	0.138			
PAC[b]*Gender				0.530	2	0.591
PAC[b]*High anxiety[c]				2.282	2	0.109
Gender*High anxiety[c]	3.435	1	0.066	0.875	1	0.353
Adjusted R^2	0.339			0.484		

[a]In the adolescent psychiatry sample, Parental Bonding Instrument scores for maternal care ≤22.0 and maternal overprotection ≥16.0, and in the pediatric sample, maternal care ≤25.0 and maternal Overprotection ≥18.0

[b]In the adolescent psychiatry sample, Parental Bonding Instrument scores for paternal care ≤17.0 and maternal overprotection ≥14.0, and in the pediatric sample, paternal care ≤20.0 and maternal Overprotection ≥14.0

[c]Overall Anxiety Severity and Impairment Scale score in the highest quartile: cut-off score ≥13.0 for the adolescent psychiatry sample and ≥8.0 for the pediatric sample

[d]General linear model

Only interactions with results for either sample are shown

Since parental affectionless control was not significantly associated with the Impaired Limits EMS domain in the pediatric sample, the GLM analysis was conducted only for the adolescent psychiatry sample. In the analysis, only high anxiety ($p=0.013$) was significantly associated with the EMS domain score (Table 5).

Discussion

To summarize the main findings, significant differences existed in the endorsement of Early Maladaptive Schemas (EMS) and EMS domains between the adolescent psychiatry and pediatric samples. The EMS and EMS domain scores were almost invariably stronger in the adolescent psychiatry sample. In both samples, the most endorsed EMSs were Self-Sacrifice, Unrelenting Standards, Approval-Seeking, Negativity/Pessimism, and Punitiveness. Regarding the EMS domains, both samples had the highest scores in the Excessive Responsibility and Standards EMS domains. Significant associations were found between parental affectionless control and the EMS domain scores, but after adjusting for the confounding variables, only the associations with the Disconnection and Rejection EMS domain remained significant.

Table 5 Multivariate associations of maternal affectionless control and confounding variables with Early Maladaptive Schema domain Impaired Limits in the adolescent psychiatry sample

	Impaired Limits		
	F	df	*p*[c]
Maternal affectionless control (MAC)[a]	1.046	3	0.374
Age	2.039	1	0.155
High anxiety[b]	6.278	1	0.013
MAC[a]*High anxiety[b]	0.235	3	0.872
Adjusted R^2	0.100		

[a]In the adolescent psychiatry sample, Parental Bonding Instrument scores for maternal care ≤22.0 and maternal overprotection ≥16.0, and in the pediatric sample, maternal care ≤25.0 and maternal Overprotection ≥18.0

[b]Overall Anxiety Severity and Impairment Scale score in the highest quartile: cut-off score ≥13.0 for the adolescent psychiatry sample and ≥8.0 for the pediatric sample

[c]General linear model

Only interactions with results are shown

Interestingly, in the adolescent psychiatry sample, this association related to maternal affectionless control, and in the pediatric sample, to paternal affectionless control.

The present finding that the EMSs and EMS domains had stronger endorsements in the adolescent psychiatry sample is understandable and aligns with previous studies that have linked EMSs and EMS domains with various mental health issues (Calvete et al., 2015; Frías et al., 2018; Yiğit et al., 2021). Also aligning with previous research are the findings that EMSs and EMS domains may manifest in various types of adolescent populations (Santos et al., 2018; Schilder et al., 2021; Shorey et al., 2014). Although the EMS scores were rather low in the pediatric sample, it is noteworthy that the EMSs also manifested in this sample. Thus, based on present results and by reflecting on previous literature (Bach et al., 2018; Young et al., 2018), EMSs may be hypothesized as somewhat common—not only in adults but adolescents—and rather universally humane.

Nevertheless, the present results provide support for the relevance of EMSs and EMS domains in adolescence and increase the understanding relating them to mental health problems. The strength of the EMSs and EMS domains might be especially relevant; the stronger the EMSs and EMS domains, the more elevated the risk for mental health issues may be. The intensity of the EMSs might also have significance for adolescents' psychological development, as the intensity might indicate whether the adolescent's development and adjustment may be hampered by the EMSs (Kroger, 2008; Waterman, 2015; Rosenblum & Lewis, 2008). In other words, the more maladaptively distorted the emotional-cognitive processing of an adolescent becomes, the more heightened the risk of maladaptive development and adjustment may be.

The present findings align with previous research, supporting the observations that attachment and parental-related factors are strongly associated with the EMSs and EMS domains (Bach et al., 2018; Gibson et al., 2019; Simard et al., 2011). The Disconnection and Rejection EMS domain may be the most essential regarding these connections. In the present study, the experience of parenting with features of affectionless control had several associations with the EMS domains in the univariate analyses, but after adjusting for confounding variables, the association remained sta-

tistically significant only for the Disconnection and Rejection domain. Reflecting on previous literature, this domain is associated with the core emotional experiences most closely related to factors regarding experienced parenting and attachment (Bach et al., 2018; Young et al., 2018). Indeed, this domain may capture the essence of adolescents' experiences about their perceived parenting. Thus, this can be a crucial aspect to consider in, for example, treating adolescents with the most profound adverse experiences regarding parenting. However, considering the focus on particularly affectionless control, with a wider standpoint on parenting, stronger associations with the other EMS domains may have also been observed.

Although the association of affectionless control was most strongly associated with the Disconnection and Rejection EMS domain in both samples, intriguingly, the samples differed regarding which parent's parenting the association was related to. The adolescent psychiatry sample was related to experienced maternal affectionless control, whereas the pediatric sample was related to paternal affectionless control. Also noteworthy is that in the pediatric sample, the interaction between gender and paternal affectionless control was significantly associated with the domain score, although gender alone was not. Although perceived parenting was not significantly associated with Impaired Autonomy and Performance domain after the confounding variables were included in the analyses, maternal and paternal affectionless control were associated with the domain in the pediatric sample in the univariate analyses. However, the pediatric sample was significantly younger than the adolescent psychiatric sample. Thus, the participants' ages and developmental phases may be particularly reflected in the themes included in this domain, such as how the participants view their independence and individual capabilities. Overall, the finding that Impaired Autonomy and Performance was unassociated with perceived parenting is puzzling. Perhaps the parenting aspects assessed in this study grasp more closely the experiences linked with, for example, emotional neglect and feeling abandoned by parents rather than the experiences related to whether autonomy and capabilities were supported. However, strong conclusions based on our results are unwarranted; future studies should explore this matter more thoroughly.

The Excessive Responsibility and Standards EMS domain was unassociated with experienced parental affectionless control in either sample. In addition to the narrow standpoint on parenting in the present study, the EMSs related to Excessive Responsibility and Standards could also be more strongly related to the adolescent developmental phase than experienced parenting. Per previous findings, EMSs are connected with various adjustment problems (Cecero et al., 2008; Thimm et al., 2010; Yoo et al., 2014). The EMSs in the Excessive Responsibility and Standards domain are often characterized by, for example, self-criticism and high demands toward oneself (Bach et al., 2018; Young et al., 2018;). Thus, it could be hypothesized that EMSs included in the Excessive Responsibility and Standards domain partly reflect how adolescents perceive themselves, especially regarding how self-critical and self-demanding they are toward themselves as they face the demands of adolescent development tasks. Although EMSs are maladaptive by nature, EMSs in the Excessive Responsibility and Standards domain may reflect some aspects of the maturation of information processing concerning self-reflection.

Although the present results are promising, there are limitations to be considered. Regarding EMSs and EMS domains, the extensive correlations and intercorrelations with the EMSs and EMS domains precluded the possibility of assessing these associations for the individual EMSs. However, it is noteworthy that in our analyses, the samples appeared to significantly differ regarding their EMS and EMS domain scores, and the associations for the EMS domains appeared markedly different. Another limitation is that the experienced parenting style was only assessed regarding affectionless control. This decision was based on the aim to study the presumably most significant parenting style regarding the EMSs. Due to the marked differences between the two samples, the categorization had to be made separately for the samples. Although previous studies do not support the categorization, it was implemented similarly for both samples to reflect parenting in relation to other participants. Another limitation of the questionnaires is that they were not previously validated in Finnish adolescents. The present study's samples consisted of adolescents entering specialized health care, and we did not have a community sample as a control group. Thus, we could not assess how endorsing EMSs would compare to adolescents from the general population.

This study highlights the significance of the EMSs already in adolescence. Adolescent patients entering specialized health care endorsed a variety of EMSs, but their endorsement was significantly stronger among adolescents with mental health problems. The finding that the EMSs were endorsed more strongly in the adolescent psychiatry sample adds to the existing literature that EMSs seemingly associate with psychological disorders in adolescents. In adolescent patients entering adolescent psychiatry and pediatric clinics, parental affectionless control was relevant regarding EMSs related to Disconnection and Rejection, emphasizing the profound nature of parenting regarding those EMSs. Among adults and adolescents alike, many likely endorse some milder EMSs, but that doesn't necessarily mean that adolescents develop marked adjustment or mental health problems associated with them. Reflecting on this study's observations, perhaps if the EMSs' endorsement is stronger, the risk of mental health problems becomes more apparent. This may be especially relevant in adolescence due to its specific nature as a psychological developmental phase; during adolescence, individuals develop many important emotional and social skills needed later in life. Hence, if maladaptive emotional-cognitive processing hampers this development, the individuals could be at higher risk for emotional and social maladjustment, which might further impede their progress.

Although assessing EMSs is not feasible to identify adolescents at risk for developing mental health problems, by remembering the evidence from adults, identifying EMSs may also have clinical relevance regarding the trajectories and treatment responses of mental disorders among adolescents. As EMSs are so prevalent in adolescents, they could be assessed and targeted during treatment to understand the information processing associated with adolescents' psychological suffering. This may help develop more effective treatment interventions for adolescents as the core psychological processing linked with symptoms could be understood more thoroughly. Based on present results, adolescents' views on the experienced parenting seem essential in treating their psychological symptoms, as they associate with their EMSs. Moreover, considering how imperative parental relationships are for the well-

being of adolescents, including parents more in adolescents' treatment when and if possible could be helpful.

Future studies should verify the present findings and longitudinal studies and assess the significance of EMSs and EMS domains for later mental health and treatment results. However, considering the current results, the assessment of EMSs and their consideration may benefit some patients. Studies conducted in adolescents are a step forward in studying certain factors, such as parenting, as well as EMSs closer to their emergence. Studies that consider the relevance of parenting styles from a wider aspect for developing EMSs would be fruitful. Further studies could explore the adolescent developmental aspects of the formation of EMSs.

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Declarations

Conflict of Interest The authors declare no competing interests.

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