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Emerging Child Competencies and Personality Pathology: Toward a Developmental Cascade Model of BPD

Karlen Lyons-Ruth[1], **Laura E. Brumariu**[2]

[1]Department of Psychiatry, Harvard Medical School

[2]Gordon F. Derner School of Psychology, Adelphi University

Abstract

The guiding principle of this synthesis is to organize research on predictors of BPD features within a developmentally specific framework (e.g. infancy, preschool, middle childhood, adolescence). In addition, studies are prioritized that have longitudinal and observational components. Based on current literature, a Developmental Cascade Model of BPD is offered in which specific difficulties during one developmental period contribute to specific difficulties in a succeeding period, resulting in increasingly broad areas of dysregulation over time. Furthermore, to address specificity, we contrast trajectories toward BPD with trajectories toward antisocial behavior, noting shared and divergent predictors. The review highlights the importance of locating research findings in relation to the competencies and challenges of particular developmental periods when modelling developmental trajectories toward BPD.

Keywords

borderline personality disorder; development; infancy; preschool; middle childhood

Theories of BPD have long conceptualized its etiology as partially rooted in family processes that affect early social-emotional regulation, rather than emerging in adolescence in response to new developmental stressors [1, 2]. Here, we will lay out a view of the tasks of each developmental period that need to be addressed in a developmentally grounded theory of BPD. Then we review and synthesize existing work within each developmental period, to build toward a Developmental Cascade Model for future work. Affirming the call by Musser et al. [3**], we emphasize research using prospective longitudinal designs and observational methods. We will not consider research on parental BPD because that literature does not yet identify which of the multiple risks associated with parental BPD might also be specific to the child's pathway toward BPD.

Corresponding author: Karlen Lyons-Ruth, klruth@hms.harvard.edu.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

1. A Developmental Psychopathology Perspective

The effective environment of an infant is vastly different from the effective environment of the same child even a few years later. To date, etiological theories of BPD have featured general factors posited to be critical to BPD across developmental periods, e.g. mentalization, invalidation, attachment, etc. However, a developmental psychopathology perspective would call for identifying the developmental transactions relevant to BPD that are being negotiated during each developmental period, as well as the period-specific deviations that might put the child on a pathway toward BPD [4]. To take account of the particular ecology of development in a given period. we will need different lenses and different methods of assessment for each period.

2. An Attachment Perspective

Given that most theories of BPD posit early deviations in the parent-child relationship as one contributor to BPD (e.g. Biosocial Developmental Model; Mentalization Model; Emotional Cascades Model; [2], observing changes in the parent-child relationship over time should play a pivotal role in our understanding of BPD. Through 40 years of observational studies, attachment research has codified risk-related profiles of parent-child interaction in the form of disorganized and controlling attachment behavior [5, 6, 7, 8]. Assessment of attachment relationships has now progressed well beyond infancy, so that changes in the quality of attachment can be tracked from infancy into early adulthood (e.g. [9, 10, 11*]).

3. Addressing Diagnostic Specificity

Stepp et al. [12] noted that “We are missing critical elements required to explain divergent trajectories for unique disorder outcomes (p. 320)”. Pathways to conduct problems and antisocial behavior have been well characterized in developmental research and include male gender, impulsivity, disorganized attachment in infancy, maltreatment, rejecting parenting, coercive parent-child interactions, negative attributions of mental states, low verbal skills, aggressive conduct problems, and increased association with antisocial peers (e.g. [13]. Thus, one useful target for specificity is to differentiate trajectories toward BPD from the already well-researched trajectories toward antisocial behavior.

4. Developmental Periods: Emerging Competencies and Deviations Predicting BPD Features

4.1 Infancy.

The overarching developmental achievement in infancy is effective emotion regulation within a secure relationship. Emotion regulation emerges when central caregivers respond sensitively and promptly to the infant’s emotional communications. A secure relationship in turn gives rise to epistemic trust in the caregiver. This early negotiation of the quality of trust and security possible in the relationship is thought to affect the infant at both behavioral and neurobiological levels, in part thorough epigenetic tuning in which the quality of care affects gene expression in the stress response pathways [14]. Disorganized attachment arises when

the caregiver cannot provide minimal comfort and arousal regulation to the infant at times of stress [15].

Three prospective longitudinal studies have assessed prediction from aspects of the parent-infant relationship to BPD features in adolescence or young adulthood [16**, 17*, 18*]. All studies found some evidence of prediction from infant disorganization to later BPD features. Notably, infants who were disorganized but continued to approach the mother for care were particularly at risk for later suicidality [18*]. This specificity suggests that the infants most susceptible to later BPD may be those who have a greater need for relational soothing.

However, in all studies, parenting variables proved more predictive of BPD features than infant attachment [16**, 17*, 18*]. In infancy, maternal withdrawal was the only aspect of maternal behavior predictive of later BPD features and suicidality, while maternal negative-intrusiveness made no contribution to prediction [18*]. Notably, maternal withdrawal was predictive even after controlling for childhood maltreatment and for attachment disorganization in middle childhood [18*]. Further, the association between early maternal withdrawal and later suicidality was mediated by left hippocampal volume in adulthood [19*].

4.2 Preschool.

Crucial capacities relevant to BPD take shape during the preschool years. First, the capacity to mentalize unfolds over the years from two to six. By age three the child is aware that others' feelings and desires differ from his/her own [20, 21], and by age five the child understands that others have potentially different thoughts and reasons supporting their different feelings [21, 22]. Social pretend play with peers also emerges and constitutes a particularly rich crucible for negotiating the differing perspectives of self and other in collaborative play [23]. In addition, with language emerges the capacity to attach attributes to the self, which constitutes one early foundation for a sense of personal identity [24]. Thus, the preschool period has implications for early deviations in mentalization, in emerging sense of self-identity, in attribution of negative motives to self and others, and in deficits in quality of negotiation with peers.

The parent's sensitivity and emotional availability continue to be important, but now the parent must balance responsiveness to the child's concerns with parental structure and limit-setting around the rights and needs of others. Parents who are more passive and withdrawn may abdicate the responsibility for structuring and guiding the child, while those who are more intrusive may interfere with the child's developing autonomy and self-control. Given greater mentalizing capacities, some disorganized children attempt to exert control over the parent's attention through either controlling-caregiving or controlling-punitive behavior or both [25], [26]. Abdication of a parental role is specifically predictive of the child's attempting to maintain parental engagement through controlling-caregiving behavior [9]. Further, both maternal hostility and maternal boundary dissolution (parental abdication of a parental role) at 3 ½ were predictive of the child's BPD features in adulthood [17*].

In path modelling using the large-sample Study of Early Child Care and Youth Development, insensitive parenting and parental depressive symptoms during the infancy/

preschool period significantly predicted BPD features at age 15. However, based on a latent class analysis at age 4 ½, only the withdrawn parenting class, but not the hostile parenting class, significantly predicted BPD features. Controlling behavior at 3 ½ contributed to social/emotional dysregulation in middle childhood [16**].

4.3 Middle Childhood:

In middle childhood, children prefer peers to parents as companions [27]. Children are sensitive to being liked by others and are aware of their peers' relative popularity [28]. They also have a number of strategies for negotiating peer conflict without resorting to aggression [23, 29]. Children in middle childhood are also aware of group and societal norms and strive to behave in accord with those norms [29]. In relation to mentalizing and emotion regulation, children are aware of multiple emotions toward the same event or person, prefer problem-solving as a coping strategy, and use volitional emotion regulation, purposefully modifying emotions using amplification, minimization, and other strategies [30, 31].

While parents are still primary sources of comfort, the attachment relationship becomes a collaborative alliance in which the child is using the parent as a resource rather than relying on the parent to solve his difficulties [27]. Parents now work with the child to solve the child's problems, preparing the child to cope more independently in adolescence [27]. Disorganized and controlling attachment patterns continue to be salient in middle childhood, with mixed disorganized/controlling attachment behavior predictive of adult BPD features [18*]. Consistent with previous work on relational aggression [32], deviations in peer relationships in the form of bully-victimization were precursors to BPD features at age 11 and to self-harm by age 17 [33], [34]. In contrast, self-reported maternal hitting and punishing was not related to BPD features at age 11 [35*]. Similarly, relational aggression by boys and both physical and relational aggression by girls were related to BPD features at age 14 [36]. In a third sample, BPD features at 12 years were associated with lower IQs, less developed theory of mind, lack of self-control, and higher levels of impulsivity and externalizing and internalizing problems at age 5 [37]. Exposure to harsh treatment in the family through age 10 also predicted BPD features, but only when there was a family psychiatric history [37]. Also in relation to parenting, 10- to-12-year-olds were lowest in BPD features when parents were high in self-reported supportive socialization and/or low in non-supportive reactions *and* the child was low in emotional vulnerability [38*].

Importantly, however, social-emotional dysregulation in middle childhood (suicidality, peer conflict, bully-victim relations, intense anger) mediated the effects of earlier and concurrent insensitive parenting on BPD-related features at age 15 [16**]. In addition, self-representation at the age of 12 mediated the relation between attachment disorganization in infancy and adult BPD features [17*]. Both reports underscore the importance of middle childhood disturbance in mediating effects of earlier predictors.

4.4 Adolescence:

In adolescence, an enhanced focus on finding one's place in relation to peers decreases the influence of parents [39]. Hormonal changes enhance interest in romantic relationships [40] and explorations of sexual and gender identity. Adolescents are also able to engage in

enhanced levels of mentalizing, leading to increased self-consciousness [41, 42]. In addition, adolescents can generate increasingly differentiated strategies for regulating emotions [30], but emotion dysregulation in individuals experiencing BPD worsens in adolescence [43*]. Parenting strategies shift toward encouraging open communication with the adolescent to provide guidance, while supporting increased adolescent self-regulation and autonomy [31]. Parental emotional flexibility may be particularly relevant to managing the increased potential for parent-child conflict.

Adolescents with elevated BPD features may pose particular challenges for parents. In one noted study, time-specific elevations in BPD features predicted subsequent elevations in perceived parental harsh punishment or low warmth [44]. In addition, observed maternal psychological control was related to BPD features in adolescence (affective instability, negative relationships, and self-harm) [45]. Notably, there were no significant differences in validation or invalidation between mothers of daughters who engaged in self-injury relative to controls. However, maternal invalidation *was* associated with adolescent BPD features when adolescents also perceived their mothers as low in validation [46**]. Finally, both maternal insensitivity and maternal depressive symptoms at age 15 made significant contributions to age 15 BPD features, beyond the contributions of the same variables at earlier ages [16**].

Adolescents with BPD features exhibited more role confusion, hostility and disorientation during a conflict discussion with their mothers than did other adolescents [47]. Notably, hostility and disorientation, but not role-confusion, were also related to the severity of the adolescent's childhood maltreatment [47]. In a second study, maternal boundary dissolution at age 13 also predicted BPD in adulthood [17*]. Finally, in young adulthood, women with a diagnosis of BPD were more likely to show disorganized attachment interactions with mothers compared to those with anxiety/depression or no diagnosis (OR = 7.80) [11**]. Regarding mentalizing, hypomentalizing in caregivers was related to adolescent BPD pathology via an effect on adolescent hypermentalizing, assessed by participants' inferences about movie characters [48**]. Further, adolescents with BPD reported lower reflective functioning when compared to healthy adolescents [49]. Finally, identity diffusion was associated with BPD features among a sample of inpatient adolescents [50*].

5. Integration and Future Directions

5.1 Toward a Developmental Cascade Model of Pathways to BPD.

As reviewed above, developmental trajectories toward BPD are likely to involve a cascade of successive developmental deviations from infancy through adolescence. Potential contributors from each period are shown in Figure 1. Clearly, any such model remains tentative due to the sparse longitudinal data available. However, a more clearly specified period-specific developmental model can catalyze needed research to address gaps in our understanding.

5.2 BPD Trajectories Compared to Antisocial Pathways.

Relationship seeking and relationship reactivity are notable features of borderline psychopathology. In contrast, pathways to antisocial behavior feature impulsivity, disorganized attachment in infancy, maltreatment, rejecting parenting, coercive parent-child interactions, negative attributions of mental states, low verbal skills, aggressive conduct problems, and increased association with antisocial peers (e.g. [13]). The proposed developmental model for BPD differs in several ways that point to a more relationship-seeking stance across development. Early caregivers are likely to be more unavailable than hostile, and the infant more relationship-seeking than other disorganized infants. Early threats of abandonment (e.g. early caregiver withdrawal) may increase relationship-seeking to the caregiver (seek or squeak responses), while threats of attack (abuse) during later developmental periods may increase fight, flight, or freeze responses, possibly based on differential involvement of left versus right limbic structures [19*, 51, 52]. Thus, the balance of caregiver withdrawal versus hostility in early life may contribute to the child's balance of continued care-seeking versus hostility and avoidance.

By preschool age, the caregiver may become increasingly hostile to the child's developing autonomy but is also needy (boundary violating), in ways that may inhibit early coercive cycles with parents and draw the child into hypervigilance and attempts to care for the parent. By middle childhood, the tendency to become involved in controlling forms of relationship that are submissive or dominating now includes both parents (controlling-caregiving or controlling-punitive relationships) and peers (bully-victim relationships). These disorganized/controlling relationships with parents may also contribute to hypermentalizing (i.e. hypervigilance to the needs of the parent). Notably, child punitive control alone was not predictive of BPD [16**, 18*]. Thus, by middle childhood, those who will develop BPD may differ from those on pathways to antisocial behavior marked by coercive cycles with parents. Emotional dysregulation in the form of intense anger and suicidality also becomes more evident in middle childhood and may be reactive to peer relational conflicts.

In adolescence, the self-regulation deficits associated with early parental abdication of a regulating role become prominent due to the adolescent's increased responsibility for self-directed choices. In addition, the tendency to engage in self-damaging behavior, rather than other-damaging, behavior, can be viewed, in part, as an attempt to both protect and engage the parent. Thus, we propose that one productive approach to diagnostic specificity may be to examine where pathways to BPD and to antisocial behavior diverge in the course of development.

5.3. Future Directions.

Metaanalysis has resoundingly confirmed the association between childhood maltreatment and BPD, with emotional abuse and overall neglect particularly relevant [53*]. In addition, type and timing of maltreatment, although challenging to assess accurately, are likely to make developmentally specific contributions to BPD that need to be modelled in future work. Finally, developmental models have most often featured behavioral/psychological outcomes. However, difficulties in navigating a particular developmental period will also

have neurobiological effects, e.g. altered stress hormone regulation, altered immune function, alterations in brain white matter connectivity, grey matter volumes, synaptic pruning, etc., as captured most dramatically in current epigenetic work (e.g. [14]. Future work integrating neurobiological markers is needed to better model this complexity.

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[48**]. Quek J, Bennett C, Melvin GA, Saeedi N, Gordon MS, Newman LK. An investigation of the mentalization-based model of borderline pathology in adolescents. Compr Psychiatry. 2018;84:87–94. doi:10.1016/j.comppsych.2018.04.005. [PubMed: 29727808] Among a sample of adolescents with BPD and a sample of non-clinical adolescents (14 to 17 years), hypomentalizing in caregivers was related to adolescent borderline pathology via an effect on adolescent hypermentalizing. Mentalization was assessed by inferences of mental states of characters in a 15-minute film (the MASC).

[49]. Quek J, Melvin GA, Bennett C, Gordon MS, Saeedi N, Newman LK. Mentalization in adolescents with borderline personality disorder: a comparison with healthy controls. J Personal Disord. 2019;33(2):145–163. doi:10.1521/pedi_2018_32_336.

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[51]. Lyons-Ruth K, Pechtel P, Yoon SA, Anderson CM, Teicher MH. Disorganized attachment in infancy predicts greater amygdala volume in adulthood. Behav Brain Res. 2016;308:83–93. doi:10.1016/j.bbr.2016.03.050. [PubMed: 27060720]

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[53*]. Porter C, Palmier-Claus J, Branitsky A, Mansell W, Warwick H, Varese F. Childhood adversity and borderline personality disorder: a meta-analysis. Acta Psychiatr Scand. 2020;141(1):6–20. doi:10.1111/acps.13118. [PubMed: 31630389] This metaanalysis resoundingly confirmed an association between childhood adversity and BPD, with OR’s of 13.91 compared to non-clinical controls and of 3.15 in relation to other psychiatric groups, with emotional abuse and neglect particularly relevant to BPD.

Highlights

- We discuss the tasks of each developmental period that need to be addressed in a developmentally grounded theory of BPD.
- We synthesize existing longitudinal and observational work within each developmental period, to build toward a Developmental Cascade Model for future work.
- We contrast trajectories toward BPD with trajectories toward antisocial behavior, noting shared and divergent predictors, to address specificity.
- We note important future directions, including the need to assess type and timing of maltreatment and to integrate neurobiological markers in developmental models of BPD.

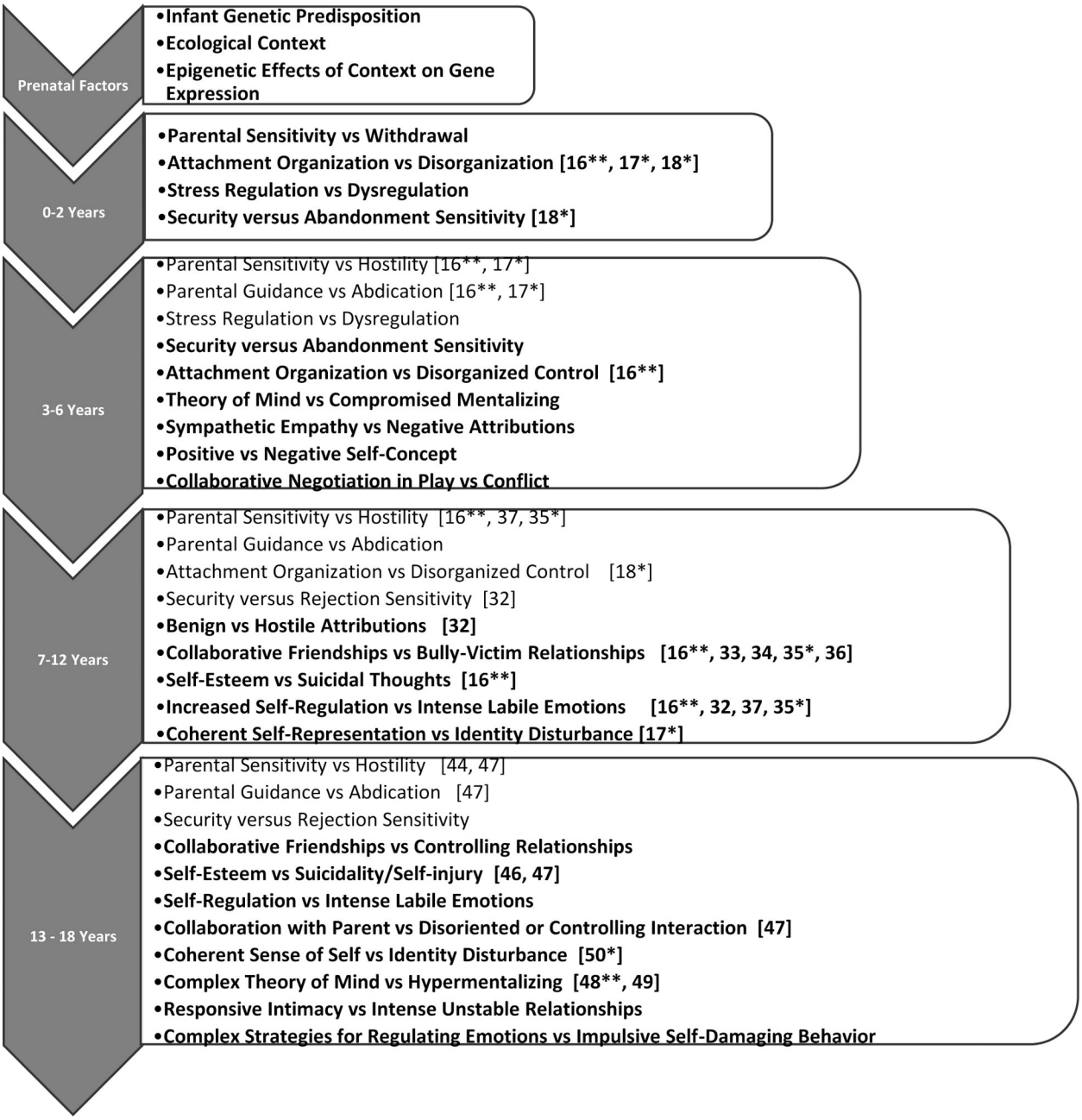

Figure 1. Developmental Cascade Model of Trajectories Toward Borderline Personality Pathology.

This tentative developmental cascade model summarizes the competencies and potential deviations being negotiated during particular developmental periods. As outlined above, early regulatory systems are set up in the first two years of life through transactions between the infant and the caregiving environment. Early dysregulations manifest in disorganized attachment relationships and prolonged cortisol elevations to stressors are likely to mediate the effects of prenatal factors on emerging competencies in the preschool period and compromise early mentalization, negotiation in peer play, and representations of self and others. By middle childhood, pervasive social-emotional dysregulation predicts later BPD

features and mediates the effects of developmental deviations during earlier periods. Disorganized/controlling behavior toward both parents and peers is one feature of this dysregulation. By adolescence, with increased responsibility for self-directed choices, self-regulation deficits become prominent in a variety of impulsive, self-damaging behaviors, as well as suicidality, unstable relationships, and intense and labile affects. Relationships remain marked by disorganization and controlling behaviors, as well as hypermentalization and fears of abandonment, with diffusion of self-identity as one potential aspect of continued hypervigilance to the state of the other. Bolded competencies indicate new forms of functioning for each period. Citations are provided for studies addressed in this review. Earlier literature has already described impulsive self-damaging features of BPD in adolescence. However, a number of critical developmental competencies in each period have yet to be studied in relation to BPD, pointing the way to needed work.