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Emotions

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Synthesis

How important is it?

Emotional competence (EC) is a developmental process that comprises three interrelated competencies: 1) emotion expression; 2) emotion knowledge; and 3) emotion regulation (i.e., being aware of one's emotions and modifying them when necessary). At a young age, children already display a range of emotions in social situations through non-verbal messages (e.g., giving a hug, sulking). Then, advances in cognitive development allow children to identify their own and others' emotions, and the circumstances that lead to their expression. This emotional understanding, in turn, allows children to monitor and to modify their emotions in order to cope with difficult situations.

Emotional development in infancy and early childhood is important for several interrelated skills. In comparison to children with deficits in emotional development, children with a developed EC are more likely: 1) to sustain learning; 2) to engage in empathic and prosocial behaviours; 3) to express appropriate emotions in various contexts; 4) to use adaptive strategies to deal with negative/upsetting emotions (e.g., anger); and 5) to reduce several risk factors associated with psychopathology. Taken together, these abilities predict children's early school success and positive interpersonal relationships with peers and family members.

What do we know?

Emotions do not all emerge at the same time. Primary emotions (e.g., fear, anger, sadness, interest, and joy) appear in the first year. Secondary emotions (e.g., embarrassment, guilt, and shame) are usually expressed by the end of the second year of life. Children's mental representation about the "self" is acquired around the age of two, and the standards, rules, and goals (SRGs) conveyed by their entourage set the stage for self-conscious emotions, such as embarrassment.

Development of emotional competence depends on the child's temperament and social-emotional experiences, such as caregiver responses and socialization. The culture in which children grow up will also influence the intensity and the type of emotions expressed, depending on different cultural models of socialization, family practices, and values. The occurrence, expression and

social regulation of emotions can therefore differ substantially between cultures. For example, in some non-Western cultures, emotional neutrality is the social norm.

Along with environmental factors, temperament and cognitive development, emotional competence is also influenced by the child's approach/withdrawal behaviours. Approach refers to behaviours and facial expressions that move a child towards stimuli. Withdrawal refers to behaviours that move a child away from stimuli. Approach emotions (i.e., interest, smiling, joy, and anger) are related to positive aspects of behaviours, such as sustained efforts when minor difficulties are encountered, and they predict emotional competence in children. In contrast, the expression of withdrawal emotions (i.e., sadness and fear) in face of negative events is associated with behavioural difficulties, poor emotion regulation, and helplessness. Withdrawal behaviours are also a risk factor for childhood depression.

Emotions play an important role in the onset of psychopathologies in childhood. Developmental challenges and early adverse experiences can affect the way in which a child's autonomic nervous system regulates emotional responses and behaviours. Children with a history of negative social experiences, such as maltreatment or insecurity attachment, have a tendency to be hyper vigilant for signs of threats. Accordingly, they display anxiety, aggressive and fear behaviours as a mean of self-protection. Their negative affectivity, poor emotion regulation, and imbalances within their emotional systems predict both internalizing and externalizing disorders (e.g., depression and aggression, respectively).

What can be done?

In order to promote emotional competence in children, parents are encouraged to model various emotional expressions. Given that the emotions displayed at home largely influence those expressed by children with their peers and in the larger school setting, positive parent-child interactions are valued. Specifically, parents are encouraged to engage in positive parenting practices and to play a supportive role when children encounter challenges. Early interventions aimed at improving emotional control and the goodness-of-fit between the parent's and child's emotional state are strongly encouraged. Examples of such programs include Parent-Child Interaction therapy and the Incredible Years program. For chronically defensive behaviours that result from early adverse experiences, therapeutic interventions that employ the calming influences of cues of safety may be a promising management tool.

There are emerging findings that teachers' modeling, reactions and teaching can contribute to children developing emotional competence. Policies should therefore encourage teacher awareness and training in EC-related programs, such as preschool PATHS, to be able to foster children's emotional understanding. Not only will children benefit from these skills across social and learning contexts, but teachers will likely enjoy more harmonious classroom environments.

Approach and Withdrawal in Early Emotional Development

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Introduction

The capacity to approach or withdraw from stimulation is a key aspect of emotional life. Approach and withdrawal have been studied since Darwin initially described them in 1872.[1] They are core systems of emotional behaviour and personality.[2-5] Individual differences in approach and withdrawal underlie children's emotional behaviour.[6-7] Adopting this system's model for emotional development allows findings in cognitive neuroscience, and psychophysiology to be integrated into our understanding of how emotional life develops. This view also does not equate specific facial expressions with discrete emotion states or brain centers but views emotions as neuro-biological processes that are integrated with cognition throughout development. This article describes approach and withdrawal emotion in infancy and the role of individual differences in these core aspects for young children's subsequent functioning.

Relevance

Approach behaviours and emotion can be observed in the first months of life and become more elaborated with development. Facial expressions, behaviours and underlying physiological changes that move the child toward stimuli index approach. Newborns will turn their eyes and head toward novel stimulation of moderate intensity. Interest and smiling are examples of approach emotion, as are anger expressions to blocked goals.[7-9] Anger, supported by increased heart rate, facilitates action toward regaining goals via persistent approach. Thus, anger, with the same directional valence as the positive emotion expressions of interest and enjoyment, is part of the approach system.[5] In contrast, low activity toward goals, increased cortisol response, expressions of sadness or fear, and behaviour promoting movement away from a stimulus index withdrawal.[10-11]

Approach and withdrawal differences may persist over time and thus have importance for understanding emotional risk and resilience.[12] Withdrawal is a risk factor for childhood depression.[13] Greater fear, sadness and behavioural inhibition to negative events have been linked to behavioural difficulties and poor emotion regulation.[13-15] Differences in withdrawal in novel stimulus contexts are thought to reflect temperament differences resulting from gene by environment interaction.[13,16] Less is known about early differences in approach, but “exuberance” or sociable temperaments have been proposed to reflect strong approach tendencies.[17-18] Individual differences in approach and withdrawal are clearly important features in young children’s emotional competence.

Problems

Developmental theorists have been slow to adopt a view of emotions as neuro-biological processes rather than feeling states. Rather than viewing anger and sad expressions as read-outs of discrete negative states or as assembled facial “attractor patterns,”[19-20] viewing them as approach or withdrawal responses offers a contextually sensitive and functional approach to early individual differences in emotion.

Past work on negative emotion in infancy also tended to focus on the specificity of emotions to eliciting contexts. It is clear by now that such specificity does not exist for most of the contexts studied.[21-22] Approach and withdrawal allows a functional categorization of contexts based on children’s action and physiological responses. Contexts that elicit positive emotions and orienting (interest and enjoyment) and anger to blocked goals are all classed as approach activating, while those eliciting fear, sadness and cortisol increases are classed as initiating withdrawal. The degree to which any context promotes approach or withdrawal can be examined empirically so research can now focus on describing specific contexts and the variation in the approach or withdrawal behaviour, including facial and vocal expression as well as correlated physiological patterns observable within them.

Research Context

The study of approach and withdrawal to goal blockage has revealed the early onset of these emotions as well as individual differences. When goals are blocked, most babies act to regain what was lost, and appear angry. Others become passive and appear sad. Observable in 2- to 6-month-olds, these individual differences are stable across the first year of life.[9] Infants learn to

expect an event (goal) followed by briefly blocked access: they activate a musical slide show by pulling a ribbon attached to the wrist. A baseline of two minutes allows infants to acclimate to the standard setting. During learning, pulling triggers the brief slideshow. Infants must tug repeatedly to regain access. Infants learn this contingency within 6 minutes, the majority within one session. Approach emotions of interest and enjoyment occur during this period and set the stage for assessment of response to goal blockage when the slideshow is unexpectedly turned off.

Among babies who learn, reactivity to goal loss is either approach or withdrawal.[11] Babies who appear angry actively try to get the slideshow back. These characteristic responses characterize to goal loss and do not occur in “baby bot” machine simulations of infant learning since machines do not experience “wanting” or “loss”.[23,24] Infants’ heart rates increase, but despite being aroused, they are not distressed. Cortisol, a stress hormone measured in saliva remains stable. They remain interested in obtaining the goal and smoothly re-engage when access is returned to them.[25] A smaller group of babies show sad facial expressions and decreased heart rate. These babies tend to slow their pulling and show increased cortisol response, suggesting that they are more stressed by goal blockage.[11] They appear to give up easily and when access is restored, they show less interest and enjoyment.[25]

Key Questions

Does maternal caregiving influence the emergence of individual differences in early goal blockage responses? Sensitive maternal behaviour between birth and 4 months attunes infants to social contingencies and promotes a generalized expectancy of a responsive world and should therefore also promote greater approach emotions.[26-27]

How are approach and withdrawal related to subsequent adaptive and dysregulated behaviour? Vulnerability to behavioural inhibition is only one axis along which emotional difficulties may develop. Helplessness or hostility in response to challenges are problem behaviours likely to be linked to difficulty in regulating approach and withdrawal emotions. Approach emotion, including anger, should be related to positive aspects of behaviour including sustained effort when minor difficulties are encountered, but be unrelated to uncontrolled bouts of negative emotion, such as tantrums and other forms of dysregulated behaviour. Sadness, if adaptive, might be related to greater help- or comfort-seeking, although it may be associated with greater helplessness and passivity.[28]

Recent Results

Studies considering both the biological and experiential contributions to individual differences in approach and withdrawal are, as yet, few but thus far support that early individual differences in anger/approach are unrelated to dysregulated behaviour. Evidence suggests that tantrums starting in the second year through preschool age are sequential displays of anger and sadness with the secondary, sad component being the prolonged, more slowly dissipating emotional reaction while anger dissipates more quickly.[29]

In one study, the time that it took the toddlers to stop playing, the degree of protest shown, and the rapidity with which toddlers calmly re-engaged in play with the toys were reliable indices of persistent motivation to play. More anger to goal blockage in infancy was related to toddler's persistence in playing, indicating consistency of approach emotion from 4 to 20 months. While earlier maternal sensitivity was related to showing less negative emotion by 4 months in general, early maternal sensitivity did not affect anger and sadness differentially and was unrelated to toddlers' persistence or to protest.[30]

Approach and withdrawal emotions at 5 months and maternal reports of infant negative temperament are not related in a simple or direct fashion.[31-32] Some relations have been found between sadness/withdrawal and maternal reports, but not anger. Sadness was related 1) to low activity, suggesting that infants who are low in approach are more passive, and 2) to composite ratings of negative temperament, but not to distress to novelty or limits dimensions individually.[31-32]

Maternal reports of tantrum onset and a composite score of their severity at 12 and 20 months were unrelated to the infants' anger to goal blockage.[32] Supporting this view, anger predicts emotional competence in older children and is related to the persistence of instrumental responses during repeated goal blockage in young infants.[31,33] Increased anger was observed only among children whose mothers reported that they themselves were angry, supporting a hypothesized transactional model of coercive parental-child interactions.[34,35]

Gaps in Knowledge

Work on approach and withdrawal in infancy and later consequences is still limited. The stability of individual differences in goal blockage emotions has been established, but the cross-contextual consistency of approach and withdrawal emotions should be examined. Withdrawal responses to

goal blockage and behavioural inhibition appear to be different emotion styles, based on maternal reports, but direct behavioural study is needed. Excessive inhibition and greater passivity/low approach reflect different axes of emotional risk, so it is important to determine to what extent these represent distinct vulnerabilities in children.

Continued study of early sensitive maternal caregiving in relation to early approach and withdrawal emotion is needed. To examine how experience effects approach and withdrawal both dyadic in-home interactions, and global ratings assessments of caregiving should be examined. If results continue to support approach and withdrawal emotions are relatively independent of maternal influence before 6 months, we must examine whether later maternal responses moderate initial approach and withdrawal tendencies. Mothers may not entrain early differences but may subsequently support approach or withdrawal responses directly as they respond to their children, or indirectly through their structuring of infants' play and learning experiences. Such studies will allow us to examine how approach and withdrawal styles become consolidated as well as how they are linked to experience, remembered, and eventually form the basis of the child's emotion concepts and emotional scripts.

Finally, once anger and sad responses are elicited, individual differences in how they are regulated are of considerable interest. This will require continued study of the interface of approach and withdrawal emotions in relation to physiological responses, developmental changes in attention and cognition, as well as maternal behaviour.

Conclusions

Study of early individual differences approach and withdrawal emotion promises to expand our knowledge of the development, regulation and socialization of emotional competence. Understanding how experience contributes to the adaptive, appropriate expression and regulation of approach and withdrawal emotion is important in developing models of early development. Examination of contextual differences between withdrawal emotion to novelty, and withdrawal emotion in goal blockage contexts, currently thought to reflect low approach and/or passivity, will help to identify those children who may show greater emotional vulnerability.

Implications

Individual differences in approach and withdrawal emotions and their developmental trajectories will become increasingly apparent as young children expand their horizons in the preschool

period. As the number of children entering group care settings during infancy and preschool is likely to increase, understanding the developmental trajectories emotions that promote appropriate emotional development is necessary to help identify and support children who may have emotional vulnerabilities.

References

1. Darwin C. *The expression of emotion in man and animals.* Chicago: University of Chicago Press; 1965.
2. Carver CS, Sutton SK, Scheier MF. Action, emotion, and personality: Emerging conceptual integration. *Personality & Social Psychology Bulletin* 2000;26(6):741-751.
3. Gray JA. Neural systems, emotion and personality. In: Maden J, IV, ed. *Neurobiology of learning, emotion and affect.* New York: Raven Press; 1991:273-306.
4. Schneirla TC. An evolutionary and developmental theory of biphasic processes underlying approach and withdrawal. In: Jones MR, ed. *Nebraska Symposium on Motivation.* Vol 7. Lincoln: University of Nebraska Press; 1959:1-42.
5. Panksepp J. Neurologizing the psychology of affects: How appraisal-based constructivism and basic emotion theory can coexist. *Psychological Science* 2007;2(3):281-296.
6. Buss KA, Kiel EJ. Comparison of sadness, anger, and fear facial expressions when toddlers look at their mothers. *Child Development* 2004;75(6):1761-1773.
7. Harmon-Jones E, Lueck L, Fearn M, Harmon-Jones C. The effect of personal relevance and approach-related action expectation on relative left frontal cortical activity. *Psychological Science* 2006;17(5):434-440.
8. Harmon-Jones E. Clarifying the emotive functions of asymmetrical frontal cortical activity. *Psychophysiology* 2003;40(6):838-848.
9. Lewis M, Alessandri SM, Sullivan MW. Violation of expectancy, loss of control, and anger expressions in young infants. *Developmental Psychology* 1990;26(5):745-751.
10. Buss KA, Schumacher JRM, Dolski I, Kalin NH, Goldsmith HH, Davidson RJ. Right frontal brain activity, cortisol, and withdrawal behavior in 6-month-old infants. *Behavioral Neuroscience* 2003;117(1):11-20.

11. Lewis M, Ramsay D, Sullivan MW. The relation of ANS and HPA Activation to infant anger and sadness response to goal-blockage. *Developmental Psychobiology* 2006; 48:397-455.
12. Davidson R. Affective style and affective disorders: Perspectives from neuroscience. *Cognition and Emotion* 1998;12:307-330.
13. Fox N, Calkins SD. Pathways to aggression and social withdrawal: Interactions among temperament, attachment, and regulation. In: Rubin KH, Asendorf J, eds. *Social withdrawal, shyness and inhibition in childhood*. Hillsdale, NJ: Lawrence Erlbaum; 1993:81-100.
14. Buss KA, Davidson RJ, Kalin NH, Goldsmith HH. Context-specific freezing and associated physiological reactivity as a dysregulated fear response. *Developmental Psychology* 2004;40(4):583-594.
15. Kochanska G, Tjebkes TL, Forman DR. Children's emerging regulation of conduct: Restraint, compliance, and internalization from infancy to the second year. *Child Development* 1998;69:1378-1389.
16. Fox N, Hane A, Pine D. Plasticity for affective neurocircuitry: How the environment affects gene expression. *Current Directions in Psychological Science* 2007;16:921-926.
17. Fox N, Henderson HA, Rubin KH, Calkins SD, Schmidt LA. Continuity and discontinuity of behavioral inhibition and exuberance: Psychophysiological and behavioral influences across the first four years of life. *Child Development* 2001;72:1-21.
18. Rothbart MK. Longitudinal observation of infant temperament. *Developmental Psychology* 1986;22:356-365.
19. Izard CE. Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science* 2007;2(3):260-280.
20. Camras L, Fatani SS. The development of facial expressions: Current perspectives on infant emotions. In: Lewis M, Haviland-Jones J, eds. *Handbook of emotions.* 3rd ed. The Guildford Press; 2008: 291-303.
21. Bennett DS, Bendersky M, Lewis M. On specifying specificity: Facial expressions at 4 months. *Infancy* 2004;6(3):425-429.
22. Camras L, Oster H, Bakeman R, Meng, Ujiie, Campos JJ. Do infants show distinct negative facial expressions for fear and anger? Emotional expressions in 11-month-old European American, Chinese, and Japanese infants. *Infancy* 2007;11:131-155.

23. Mascolo MF, Harkins D, Harakal T. The dynamic construction of emotion: Varieties in anger. In: Lewis M, Granic I. *Emotion, development, and self-organization: Dynamic systems approaches to emotional development*. New York, NY: Cambridge University Press; 2000:125-152.
24. Zaadnoordijk L, Otworowska M, Kwisthout J, Hunnius S. Can infants' sense of agency be found in their behavior? Insights from babybot simulations of the mobile-paradigm. *Cognition* 2018;181:58-64.
25. Lewis M, Sullivan MW, Ramsay D, Alessandri SM. Individual differences in anger and sad expressions during extinction: Antecedents and consequences. *Infant Behavior & Development* 1992;15(4):443-452.
26. Dunham P, Dunham F, Hurshman A, Alexander T. Social contingency effects on subsequent perceptual-cognitive Tasks in young infants. *Child Development* 1989;60(6):1486-1496.
27. Lewis M, Goldberg S. Perceptual-cognitive development in infancy: A generalized expectancy model as a function of mother-infant interaction. *Merrill-Palmer Quarterly* 1969;15:81-100.
28. Seligman MEP. *Learned optimism.* New York: Knopf; 1991.
29. Green JA, Whitney PG, Potegal M. Screaming, yelling, whining, and crying: Categorical and intensity differences in vocal expressions of anger and sadness in children's tantrums. *Emotion* 2011;11:1124-1133.
30. Lewis M, Sullivan MW, Mi-Sung Kim H. Infant approach and withdrawal in response to a goal blockage: Its antecedent causes and its effect on toddler persistence. *Developmental Psychology* 2015;51(11):1553-1563.
31. Crossman AM, Sullivan MW, Hitchcock DM, Lewis M. When frustration is repeated: behavioral and emotion responses during extinction over time. *Emotion* 2009;9(1):92-100.
32. Sullivan MW, Lewis M. Relations of early goal blockage response and gender to subsequent tantrum behavior. *Infancy* 2012;17(2):159-178.
33. Dix T, Stewart AD, Gershoff ET, Day WH. Autonomy and children's reactions to being controlled: Evidence that both compliance and defiance may be positive markers in early development. *Child Development* 2007;78:1204-1221.
34. Lorber MF, Egeland B. Parenting and infant difficulty: Testing a mutual exacerbation hypothesis to predict early onset conduct problems. *Child Development* 2011;82(6):2006-

2020.

35. Sullivan MW & Carmody DP. Approach-related emotion, toddlers' persistence, and negative reactions to failure. *Social Development* 2018;27(3):586-600.

The Self-Conscious Emotions

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Introduction

Until recently, the self-conscious emotions have been poorly studied.[1] Little research on their meaning, how they develop, and how individual differences arises have been conducted, even though Charles Darwin discussed them in some detail as far back as his book, The Expression of the Emotions in Man and Animals.[2] Darwin's observations were not followed up by neither psychoanalysis nor developmental psychopathology until about 40 years ago. In part, this was due to Freud's focus on guilt and on the confusion between such self-conscious emotions as embarrassment, guilt and shame. In fact, Darwin's observations and theorizing were not able to differentiate these different self-conscious emotions, in large part due to his measurement of the self-conscious emotions, where he used blushing behaviour. While blushing is a useful behaviour to measure, many people do not blush. Moreover, blushing is a measure of self reflection in the presence of other people, most noticeable embarrassment, but is not a measure of all the other self-conscious emotions such as shame, guilt or pride. While Darwin recognized the role of a person's thoughts, especially around the emotion of embarrassment, he did not use cognitive capacities as a way to differentiate between them.

Subject

Michael Lewis, in his studies of the origins of the self-conscious emotions, makes the point that to understand the ontogenesis of these emotions in children, it is necessary to consider the cognitive development of the child which likely give rise to them.[3,4,5] Indeed, using the evolution of the cognitive capacity to represent the self, he has suggested that the emergence, both phylogenetically and ontogenically, of the mental representation of "me" or self-reflected awareness, provides the capacities most necessary for the emergence of these self-conscious emotions.[4] It is the capacity to think about the self (self reflection or awareness) along with other emerging cognitive capacities that provides the basis for these emotions starting at the end of the

second year of life. Thus, while early action patterns such as fear, anger and joy emerge in the first year of life, some even in the early months of life, it is not until self reflection/awareness – or what Lewis has called “consciousness,” the mental representation of “me,” – emerges in the second half of the second year of life that we see the earliest of these self-conscious emotions.[5,6]

Problem

What are the Self-Conscious Emotions?

The set of the self-conscious emotions include embarrassment, jealousy, empathy as well as shame, guilt, hubris and pride. I have called the first group the exposed self-conscious emotions since they require the cognitive ability to reflect on the self but do not require elaborate cognitive capacities such as the understanding of rules and standards. These first self-conscious emotions appear in the second half of the second year of life when the emergence of self awareness gives rise to such emotions as embarrassment, empathy and jealousy.

Embarrassment is a complex emotion that first emerges when self awareness allows for the idea of “me.” At this point the child comes to understand that “she/he” is the object of another’s attention. The attention of others acts as an elicitor of embarrassment. So, for example, complimenting a toddler may cause the child embarrassment; even pointing to the child and saying his/her name can produce this effect. Empathy also emerges at this time since the child can now place himself/herself in the role of the other.[7] Finally, jealousy also appears since, again, the child is capable of knowing that another has what she/he wants. These early self-conscious emotions appear during at age 15-24 months. They are not the consequence of the child’s knowledge of the standards, rules and goals (SRGs) of the people around him/her, they are the direct consequence of children’s ability to consider themselves in their interactions with others.

In the third year of life, children begin to incorporate the SRGs of their family and peers. This new capacity gives rise to a new set of emotions, one which I have called self-conscious evaluative emotions.[5,8] They include a new form of embarrassment as well as guilt, shame, pride and hubris. Embarrassment now occurs as a less intense form of shame. The child experiences embarrassment when in the company of others it violates the SRG of the culture. At this point, the child’s embarrassment can occur both as a function of being the object of another’s attention in and of himself/herself, and also because of being the object of other’s attention because of a

failure of some SRG.

Shame is the product of a complex set of cognitive activities: the evaluation of individual's actions in regard to their SRGs and their global evaluation of the self. The phenomenological experience of the person having shame is that of a wish to hide, disappear or die.[1,9] It is a highly negative and painful state which also results in the disruption of ongoing behaviour, confusion in thought and an inability to speak. There are specific actions people employ when shamed[1] such as reinterpreting the causes of the shame, self-splitting (multiple personalities), or forgetting (repression). Shame is not produced by any specific situation but rather by the individual's interpretation of the event.

The emotion of guilt or regret is produced when individuals evaluate their behaviour as failure but focus on the specific features of the self, or on the self's action which led to the failure. Unlike shame, where the focus is on the global self, here the individual focuses on the self's actions and behaviours which are likely to repair the failure. Because the cognitive attributional process focuses on the action of the self rather than on the totality of self, the feeling that is produced – guilt – is not as intensely negative as shame and does not lead to confusion and to the loss of action, but is associated with it a corrective action which the individual can do to repair the failure.

Because in guilt the focus is on a specific attribution, individuals are capable of ridding themselves of this emotional state through action. The corrective action can be directed toward the self as well as toward the other; thus, unlike shame which is a melding of the self as subject and object, in guilt the self is differentiated from the object. As such, the emotion is less intense and more capable of dissipation.

Hubris is defined as exaggerated pride or self-confidence often resulting in retribution. It is an example of pridefulness, something dislikeable and to be avoided. Hubris is a consequence of an evaluation of success of one's standards, rules and goals where the focus is on the global self. In this emotion, the individual focuses on the total self as successful. It is associated with such descriptions as "puffed up." In extreme cases, it is associated with grandiosity or with narcissism.[10] Mueller and Dweck[11] have shown that too much praise of children may result in negative performance, the assumed mechanism may be in the enhancement of hubris in the children so treated. In fact, hubristic is defined as to be insolent or contemptuous.

From the outside, other people view the individual having hubris with some disdain. Prideful people have difficulty in their interpersonal relations since their own hubris is likely to interfere with the wishes, needs and desires of others, in which case there is likely to be interpersonal conflict. Moreover, given the contemptuousness associated with hubris, the “other” is likely to be shamed by the nature of the actions of the person having this emotion. At least three problems are associated with the prideful person: (1) it is a transient but addictive emotion; (2) it is not related to a specific action and, therefore, requires altering patterns of goal-setting or evaluation around what constitutes success; and (3) it interferes with interpersonal relationships because of its contemptuous and insolent nature.

Pride is the consequence of a successful evaluation of a specific action. The phenomenological experience is “joy over an action, thought or feeling well done.” Here, again, the focus of pleasure is specific and related to a particular behaviour. In pride, the self and object are separated as in guilt. Unlike shame and hubris, where subject and object are fused, pride focuses the organism on its specific action. The organism is engrossed in a specific action which gives it pride. Because this positive state is associated with a particular action, individuals have available to themselves the means by which they can reproduce the state. Notice that, unlike hubris, pride’s specific focus allows for action. Because of the general use of the term “pride” to refer to “hubris,” “efficacy,” and “satisfaction,” the study of pride as hubris has received relatively little attention. Dweck and Leggett[12] similarly have approached this problem through the use of individuals’ implicit theories about the self which are cognitive attributions that serve as the stimuli for the elicitation of the self-conscious emotion of mastery.

Implications

All of emotional life takes place in a social environment. From the beginning of life the early emotional expressions such as joy, sadness, fear, anger, disgust and interest, are affected by the social world. The situations that illicit these emotions and their expressions are affected by the rules of their parents, siblings and peers. Thus, it is safe to conclude that even these early emotional expressions are socialized. Even so, there is some reason to believe that these early emotional expressions themselves are not learned but have an evolutionary adaptive significance for the species.[13]

What is clear is that as we move from these early emotional action patterns to self-conscious emotions, socialization plays an increasing role in determining what situation elicit what emotions,

as well as how they are expressed. One might think of development of emotional life as requiring an ever increasing socialization influence.

In our cognitive-attributional model of the development of the self-conscious emotions, we see that the SRGs the child incorporates as part of its socialization. Standards, rules and goals have to be learned by the child, both through direct learning or through indirect observation.[14] The SRGs constitute the information the child acquires through culturalization to a particular society and family. How the child evaluates his/her actions, thoughts and feelings is learned. In one family the child's action, for example, in getting a "B" on an exam, is considered a success while in another, a failure. Evaluations are culturally determined, success and failure are cultural artifacts. Moreover, how the child evaluates himself/herself or his/her self attribution, whether he/she sees himself/herself in a global fashion or in a specific fashion is also learned. Global attributions give rise to shame and hubris while specific attribution give rise to guilt and pride.

Our discussion of self-conscious emotions requires us to note that in order to understand them we must keep in mind that the biology of the species, and the cultural rules that surround the child, along with the child's specific dispositional functions like temperament, are all necessary for the understanding of their development. The emergence of the self-conscious evaluative emotions, also called the moral emotions, truly marks the human condition and which sets us apart from the rest of the animal world.

References

1. Lewis M. *Shame: The exposed self.* New York: The Free Press; 1992a.

2. Darwin CR. *The expression of the emotions in man and animals*. Chicago: University of Chicago Press; 1965 (Original edition, 1872).

3. Lewis M. The self in self-conscious emotions. In: Stipek D, Recchia S, McClintic S, eds. *Self-evaluation in young children. Monographs of the Society for Research in Child Development* 1992b;57(1, Serial No. 226).

4. Lewis M. The emergence of consciousness and its role in human development. In: LeDoux J, Debiec, Moss H, eds. *The Self: From Soul to Brain* (Vol. 1001, 1-29). New York: Annals of the New York Academy of Sciences; 2003.

5. Lewis M. *The rise of consciousness and the development of emotional life*. New York: Guilford Press; 2014.

6. Lewis M, Brooks-Gunn J. Toward a theory of social cognition: The development of self. In: Uzgiris I, ed. *New directions in child development: Social interaction and communication during infancy*. San Francisco, CA: Jossey-Bass; 1979:1-20

7. Bischof-Kohler A. The development of empathy in infants. In M. E. Lamb & H. Keller (Eds.), *Development: Perspectives from German-speaking countries.* Hillsdale, NJ: Lawrence Erlbaum; 1991:245-273

8. Lewis M. Self-conscious emotions: Embarrassment, pride, shame, and guilt. In: Lewis M, Haviland-Jones J, Feldman Barrett L, eds. *Handbook of emotions.* 3rd ed. New York: Guilford Press; 2008:742-756

9. Lewis HB. *Shame and guilt in neurosis.* New York: International Universities Press; 1971.

10. Morrison AP. *Shame: The underside of narcissism*. Hillsdale, NJ: Analytic Press; 1989.

11. Mueller CM, Dweck CS. Praise for intelligence can undermine children's motivation and performance. *Journal of Personality & Social Psychology* 1998;75:33-52.

12. Dweck CS, Leggett EL. A social-cognitive approach to motivation and personality. *Psychological Review* 1988;95:256-273.

13. Izard CE. *Human emotions*. New York: Plenum Press; 1977.

14. Lewis M, Feiring C. Direct and indirect interactions in social relationships. In: Lipsitt L, ed. *Advances in infancy research,* Vol. 1. New York: Ablex; 1981:129-161.

Emotions and Psychopathology in the First 5 Years of Life

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Introduction

From the cradle to the grave, emotions are central to human functioning, saturating our thoughts behaviour and experience in a manner so pervasive that we often forget. They motivate our most important decisions, lie at the heart of social relatedness and are central to socialization and cultural processes. Core aspects of emotions appear pre-wired1 and universal,[2] with aspects of expressive signalling, experience, and recognition appearing on a consistent developmental schedule.[1] In early life, emotions may act as a "readout" of internal states,[3] with precursor emotions evident within a few months and increasing differentiation seeing a near-adult level expressive repertoire within three years.[1] Developments in emotion regulation are somewhat slower and appear more closely tied to cognitive and social development.

Although debate remains,[4] Current thinking regarding emotions emphasizes their functionality; they represent adaptations shaped by natural selection to facilitate responding to recurrent situational types,[3] promoting coordinated and historically adaptive changes in cognition,[5] physiology,[6] expressive signals,[2] experience/motivation,[3] and behaviour.[7] Evolution has likely designed emotions to "fit" early life challenges[8] and the means by which they facilitate adaptation is constrained by the capacities of the developing child.[9] Importantly, emotions and emotion regulation sometimes [mal]function.

The focus of this chapter is on the role of emotion in psychopathology from birth to five years, a period in which behavioural, cognitive, and emotion regulatory skills interactively develop to influence child functioning. Developmentally, these years are focused on the acquisition of basic physical, cognitive, and emotional skills and on ensuring the environment meets basic needs. Early life development is inherently social. Styles of relating (attachment) becomes increasingly evident during this time, and core relationships come to serve as the foundation for the

development of more advanced skills such as emotion regulation.[10]

Subject

Given their ubiquity in developmental processes, it is unsurprising that imbalances or dysregulations within emotion systems are central to psychopathology[11] among children[12] and adults.[13] Disturbances in emotional processes include issues with both positive and negative emotions, the excess and absence of emotions, regulatory issues, and disconnections among emotion sub-systems. Indeed, problems rooted in emotions are so pervasive that several writers have suggested the field should group disorders by emotional symptomatology.[14,15]

Emotions are central to the development and maintenance of psychopathology in early life. Research among children concentrates on links between temperament – a constellation of affective dispositions – and outcome,[16] particularly the roles of negative affectivity (NA)[17] and emotion regulation16. NA, a global measure of negative emotionality, incorporates experiences and expressions of sadness, fear, anger/frustration with high intensity[18] and predicts both internalizing and externalizing disorders.[19] Discrimination is somewhat better with emotion regulation; under-regulation manifests in externalizing disorders (e.g., hyperactivity, defiance, and aggression) and over-regulation predicts internalizing disorders (e.g., anxiety and depression.[20]

Problems

Progress has been made in the conceptualization and measurement of mental disorders among children in recent years.[21] Rates of disorders among children aged 2-5 years are similar to those among older children, at 16.2% overall, 9% for externalizing/behavioural disorders, and 10.5% for internalizing/emotional disorders [see 16 for a review]. However, despite improvements in the conceptualisation of the psychopathological subtypes, the specificity with which early risk factors link to outcomes remains poorly understood.[22]

In general, researchers conceptualize child psychopathology as having two broad classes of contributor – child temperament and environmental events/contexts. Pre-natal factors may influence the development of temperament and/or as an additional environmental influence.[23] The two extremes of temperamental emotionality – behavioural inhibition (over-regulation) and disinhibition (under-regulation) have been linked to different patterns of biological arousal and reactivity and show some ability to discriminate mental health outcomes. Work examining environmental factors reveals a similarly mixed bag of global and specific indicators.[24] Poor

supervision, sexual abuse, and peer problems predict externalising disorders while neglect may be a specific predictor for Oppositional Defiant Disorder (ODD). Exposure to violence and being friendless are both globally predictive of internalizing disorder development while being raised in a single parent family or foster care specifically predicts Depression. In this study, harsh discipline was specific to Generalised Anxiety Disorder (GAD) and parental drug abuse and dangerous environments were associated with combined anxiety disorders indicators.[24]
In general then, both temperament and environmental contexts predict risk *in general*. Specificity is low, however, and how the two interact to influence goodness-of-it and the development of psychopathology is yet to be clearly determined.

Research Context

As noted, developmental work examining the predictors of child psychopathology has emphasized the role of broad risk characteristics in either the child or the caregiving environment. Both internalizing and externalizing problems have been linked with the temperamental trait of negative emotionality,[18] while any disruption in the development of attachment or self-regulatory ability (including behavioural, cognitive, and emotional) seems to predict increased risk.[25] "Goodness-of-fit" between child dispositions and parental characteristics are critical to the development of attachment and regulatory processes which, in turn, predict psychopathology.[26,27]

Key Research Questions

The most pressing questions regarding the links between emotions and early psychopathology regard the specificity of the links between temperament, environmental events, and outcomes. The particular aspects of child temperament that predict specific outcomes need to be illuminated; it may be that to understand temperament's links to child mental health outcomes, we need to develop a more sophisticated characterisation of temperament and why we variation of this kind exists. One approach that might extend understanding is to explicitly examine temperament-linked dysfunctions as they occur within the experiential versus expressive aspects of the emotions systems. Although the visible aspects of emotions may index internal states,[3] emotion signals may or may not correspond to them in all instances and have their own distinct functions.[28] Similarly, work addressing the specificity of the links between environmental characteristics and child outcomes is urgently needed.

Recent Research Results

Some recent work attempting to “deconstruct” the general negative affect risk factor has been conducted. In one attempt, while both internalizing and externalizing children were rated higher on the emotions of anger, fear, and sadness than controls, there were few differences between the two groups, with internalizers slightly sadder and marginally less angry than externalizers.[29] Similarly, a meta-analysis looking at temperament as a prospective predictor of psychopathology and neurodiversity found that high negative emotionality and lower self-regulation predicted greater psychopathology in general.[30] Such findings suggest we have some way to go in seeking to understand how risk characteristics result in children being differentially “shunted” down externalizing versus internalizing pathways.

Research Gaps

Although progress has been made in the last few decades of research, gaps remain. First, despite an increase in the specificity with which environmental[24] and temperamental[31] characteristics are being measured as predictive of specific childhood disorders,[24] the search for specificity in the links between affective risk factors and outcomes has some way to go. Second, given the ubiquity of emotional processes to child psychopathology, it is surprising that the literature has yet to systematically examine the possible utility of a *transdiagnostic approach* (classification by common process rather than phenomenology or, in children, by behavioural manifestation).

Conclusions

This chapter highlights the centrality of emotions to human functioning and how disruptions or imbalances in the development of emotion and emotion regulation increase the risk of psychopathology. While links between early global aspects of temperament (i.e., negative affectivity) and subsequent psychopathology are established, the specificity of the relations seen thus far is marginal and further investigation is required. Additionally, while child temperament and environmental characteristics impact risk (both alone and in interaction), research examining the “fit” between disposition and environmental factors is scanty and further work examining how factors such as caregiver characteristics, socioeconomic class, trauma, and societal context interact with child temperament is sorely needed.

Implications for parents, services, and policy

Although there are gaps, the centrality of emotion and emotion regulatory processes in the development and maintenance of psychopathology is clear – inborn temperament sets the stage

for the individual's emotional profile and thus influences how environments interact with them. Data regarding these two key characteristics underscore the importance of the "fit" between child and environmental factors and provide some guidance regarding possible interventions. Work regarding hyperactive preschoolers, for example, highlights the protective role that positive parenting and parent-child synchrony may have among at-risk children.[26,27] Such work suggests that early interventions should focus on programmes that improve parent-child emotional synchrony and foster effective emotional control. Examples of such work includes Parent-Child Interaction Therapy[32] and the Incredible Years programme.[33]

References

1. Lewis M. The emergence of human emotions. In: Lewis M, Haviland-Jones J, Feldman-Barrett L, eds. *Handbook of emotions*. Guilford: New York: 2008:304-319.
2. Elfenbein HA, Ambady N. On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin* 2002;128(2):203-235.
3. Izard CE. *The psychology of emotions*. New York: Plenum Press; 1991.
4. Feldman-Barrett L. Are emotions natural kinds? *Perspectives on Psychological Science* 2013;1(1):28-58.
5. Keltner D, Ellsworth PCE, Edwards K. Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality & Social Psychology* 1993;64(5):740-752.
6. Larsen JT, Berntson GG, Poehlmann KM, Ito TA, Cacioppo JT. The psychophysiology of emotion. In: Lewis M, Haviland-Jones J, Feldman-Barrett L (eds). *The handbook of emotions.* 3rd ed. New York: Guilford, 2008:180-195.
7. Consedine NS, Strongman KT, Magai C. Emotions and behavior: Data from a cross-cultural recognition study. *Cognition and Emotion* 2003;17(6):881-902.
8. Consedine NS, Magai C. Emotion development in adulthood: A developmental functionalist review and critique. In: Hoare C, ed. *The Oxford handbook of adult development and learning.* Oxford University Press: New York; 2006:209-244.
9. Consedine NS. Capacities, targets, and tactics: Lifespan emotion regulation viewed from developmental functionalism. In: Nyclicek I, Vingerhoets A, Zeelenberg M, eds. *Emotion regulation and wellbeing.* New York: Springer; 2011:13-29.

10. Kerig PK, Wenar C. *Developmental psychopathology: from infancy through adolescence*. 5th ed. New York: McGraw-Hill; 2006.
11. Beauchaine TP, Cicchetti D. Emotion dysregulation and emerging psychopathology: A transdiagnostic, transdisciplinary perspective. *Development & Psychopathology* 2019;31(3):799-804.
12. Bradley SJ. *Affect regulation and the development of psychopathology.* New York: Guilford; 2000.
13. Kring AM. Emotional disturbances as transdiagnostic processes. In: Lewis M, Haviland-Jones J, Feldman-Barrett L, eds. *The handbook of emotions*. Guilford: New York; 2008:691-705.
14. Berenbaum H, Raghavan C, Le H-N, Vernon LL, Gomez JJ. A taxonomy of emotional disturbances. *Clinical Psychology: Science and Practice* 2003;10:206-226.
15. Watson D. Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. *Journal of Abnormal Psychology*. 2005;114(4):522-536.
16. Egger HL, Angold A. Common emotional and behavioural disorders in preschool children: presentation, nosology, and epidemiology. Journal of Child Psychology and Psychiatry 2006;47(3-4):313-337.
17. Rothbart MK, Ahadi SA, Hershey KL, Fisher P. Investigations of temperament at three to seven years: The children's behavior questionnaire. *Child Development* 2001;72(5):1394-1408.
18. Lengua LJ, West SG, Sandler IN. Temperament as a predictor of symptomatology in children: Addressing contamination of measures. *Child Development* 1998;69(1):164-181.
19. Leaberry KD, Rosen PJ, Slaughter KE, Reese J, Fogleman ND. Temperamental negative affect, emotion-specific regulation, and concurrent internalizing and externalizing pathology among children with ADHD. *Attention Deficit and Hyperactivity Disorders* 2019;11(3):311-332.
20. Cole PM, Michel MK, Teti LO. The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development* 1994;59(2-3):73-102.
21. Carter AS, Briggs-Gowan MJ, Davis NO. Assessment of young children's social-emotional development and psychopathology: Recent advances and recommendations for practice *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2004;45(1):109-134.

22. Copeland W, Shanahan L, Costello EJ, Angold A. Configurations of common childhood psychosocial risk factors. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2009;50(4):451-459.

23. Tien J, Lewis GD, Liu J. Prenatal risk factors for internalizing and externalizing problems in childhood. *World Journal of Pediatrics* 2020;16(4):341-355.

24. Shanahan L, Copeland W, Costello EJ, Angold A. Specificity of putative psychosocial risk factors for psychiatric disorders in children and adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2008;49(1):34-42.

25. Muris P, Ollendick TH. The role of temperament in the etiology of child psychopathology. Clinical Child and Family Review 2005;8(4):271-289.

26. Healey DM, Flory JD, Miller CJ, Halperin JM. Maternal positive parenting style is associated with better functioning in hyperactive/inattentive preschool children. Infant and Child Development 2011;20(2):148-161.

27. Healey DM, Gopin CB, Grossman BR, Campbell SB, Halperin JM. Mother-child dyadic synchrony is associated with better functioning in hyperactive/inattentive preschoolers. *Journal of Child Psychology and Psychiatry* 2010;51(9):1058-1066.

28. Brown WM, Consedine NS. Just how happy is the happy puppet? An emotion signaling and kinship theory perspective on the behavioral phenotype of Angelman Syndrome children. *Medical Hypotheses* 2004;63(3):377-385.

29. Eisenberg N, Sadovsky A, Spinrad TL, Fabes RA, Losoya SH, Valiente C, Reiser M, Cumberland A, Shepard SA. The relations of problem behavior status to children's negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. Developmental Psychology 2005;41(1):193-211.

30. Kostyrka-Allchorne K, Wass SV, Sonuga-Barke EJS. Research Review: Do parent ratings of infant negative emotionality and self-regulation predict psychopathology in childhood and adolescence? A systematic review and meta-analysis of prospective longitudinal studies. *Journal of Child Psychology and Psychiatry* 2019;61(4):401-416.

31. Eisenberg N, Sadovsky A, Spinrad TL. Associations of emotion-related regulation with language skills, emotion knowledge and academic outcomes. *New Directions in Child and Adolescent Development* 2005;(109):109-118.

32. Eyberg SM, Matarazzo RG. Training parents as therapists: A comparison between individual parent–child interaction training and parent group didactic training. *Journal of Clinical Psychology* 1980;36(2):492-499.

33. Webster-Stratton C. Preventing conduct problems in head start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology* 1988;66(5):715-730.

Autonomic state: A neurophysiological platform for feelings, emotions, and social engagement

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Introduction and Subject

How does physiology influence mental processes and behaviour? I have asked this question as I studied children from birth including those with developmental challenges such as prematurity,[1] Fragile-X-Syndrome,[2] Autism Spectrum Disorders,[3] Selective Mutism,[4] Ehlers-Danlos Syndrome,[5] and Prader Willi Syndrome[6] with a common focus on identifying mechanisms that influence the regulation of behaviour and emotions. Based on my research, I developed the Polyvagal Theory,[7,8,9] which explores how neural circuits involved in the regulation of our bodily organs influence emotional responses and behaviours toward others and our environment.

There is now an abundance of research documenting that the regulation of behavioural and emotional state is mediated by the autonomic nervous system through neural pathways originating in the brainstem that communicate with organs in our body forming a bi-directional brain-body neural highway. When this system is functioning optimally, we can self-regulate and welcome others to co-regulate through social behaviour.

Problems

The parallel investigations of neurophysiology, emotion, and social behaviour during child development lead to questions of how these functional domains are inter-related. Basically, what physiological mechanisms enable or disrupt emotional regulation and sociality? How does knowledge of neuroanatomy, evolutionary biology, and autonomic state regulation inform us to better understand emotional regulation and sociality in the developing child?

Research Context

Polyvagal Theory emphasizes the evolutionary transition from ancient now extinct asocial reptiles to social mammals. Since we are mammals, we share with other mammals a virtually identical brainstem with neural structures that monitor and regulate our autonomic nervous system. The brainstem contains neural structures that regulate foundational survival mechanisms that maintain life support functions without requiring the more evolved higher brain structures required for conscious awareness and intentionality. The anatomy of the mammalian brainstem is very similar to a reptilian brainstem, which was repurposed and modified through evolution to support, in addition to defense, processes such as joyful play and intimacy.

Although mammalian, and especially humans, brains are well developed with a large cortex, their brain architecture differs from vertebrates that evolved prior to mammals. In mammals there is a great species variation in size of the cortex, as the intentional behaviours, learning, problem solving, and selective sociality increases, so does the size of the cortex. Reptiles have a very small cortex and the vertebrates that preceded reptiles such as amphibians and fish do not have a cortex.

We can conceptualize evolution as a very slow developmental process occurring over hundreds of millions of years during which there is a diversification of species or groups of organisms. During this process, although there have been major changes in the architecture of the brain, some parts of the brain appear relatively consistent across vertebrates, such as the brainstem. However, even with modifications, the foundational survival processes regulated by brainstem mechanisms continue, even in modern humans, to function outside our awareness. These survival mechanisms reflexively shift physiological state to support or disrupt homeostatic processes that support health, growth, and restoration. In response to threat, homeostasis is disrupted to support biobehavioural strategies of defense such as the metabolically costly fight/flight behaviours or metabolically conservative, but potentially lethal, death feigning reactions that are mediated by an ancient defense system shared with very ancient vertebrates and seen in humans as fainting during threat. This ancient system was adaptive for ancient vertebrates, who did not have a large cortex that would rapidly be damaged when oxygen blood saturation level drops. Small mammalian rodents have modified this ancient defense system to death feign by immobilizing for short periods to appear to be dead to an active predator. Similar responses have been reported by adults who survived severe abuse as children.

Functionally, when our autonomic nervous system is efficiently supporting homeostasis, signals from our organs travel through sensory nerves to our brainstem and then from the brainstem to

higher brain structures that support a conscious awareness that we interpret as feelings of safety. [10] When homeostasis is disrupted the signals from our bodily organs are now interpreted as feelings of threat. Feelings of threat trigger an array of emotions involving the limbic system defined by structures above the ancient brainstem and outside the cortical areas involved in consciousness. The process through which bodily states are consciously detected is called interoception.

Key Research Questions

Can we document that specific cues of safety reflexively calm the autonomic nervous system to optimize emotional regulation, sociality, learning, and health related homeostatic processes? Are autonomic states reliable indicators of feeling safe or threatened?

Recent Research Results

Polyvagal Theory proposes that autonomic state functions as an intervening variable that contributes to whether we experience positive emotions and socially engage, we defensively react with fight or flight behaviours, or we immobilize and dissociate mimicking the death feigning response of a mouse in the jaws of a cat. These examples illustrate the three functional autonomic circuits in mammals[9] described below:

1. The ventral vagal circuit regulating the calming branch of the vagus, a cranial nerve with a branch connecting the brainstem and the heart. This pathway has the capacity to slow heart rate and is linked to neural regulation of the striated muscles of the face and head to form a social engagement system enabling autonomic state to be broadcast through face and voice. In addition, this circuit can functionally manage the more primitive circuits keeping them out states of defense to support prosocial activities of play and intimacy.
2. A spinal sympathetic system supporting mobilization, which is shared with several vertebrate species that evolved prior to mammals. In mammals, if this metabolically costly system is overwhelmed it will shut down and disinhibit the ancient dorsal vagal system.
3. An ancient dorsal vagal system is shared with virtually all vertebrates. When recruited in defense conserves metabolic resources and functions to reduce oxygenated blood to reach the brain. In mammals, although adaptive for short periods of time, it is potentially lethal.

These circuits, by paralleling evolution, are hierarchically organized in which newer circuits inhibit older ones. Under threat, survival needs functionally result in a systematic disruption of this hierarchical organization in which the evolutionary older circuits are now sequentially disinhibited to optimize survival. This process was labeled ‘dissolution’ by John Hughlings Jackson,[11] a neurologist, who used the construct to describe the ‘de-evolution’ or evolution in reverse that he observed following brain damage due to disease or injury.

This hierarchy is bi-directional and through neuroception, cues of safety can dampen, and cues of danger can amplify threat reactions. The term, neuroception, is used to emphasize that the nervous system is doing the detection outside of brain areas involved in conscious intentional behaviour. Although higher brain structures may be involved in neuroception, the process is not related to conscious awareness, which would require decision making time to determine the source of the cues being detected. This decision is hardwired into a neuroception circuit to ensure that an adjustment is rapidly made to optimize survival. For example, if you hear a loud noise, you stop and then attempt to determine the origin and importance of the sound.

While virtually all evolutionarily antecedent all living organisms have a neuroception for threat, only mammals have a neuroception for safety that detects cues of safety and reflexively down regulates threat reactions. Watching a mother calm her crying baby by using a melodic (prosodic) voice, is a powerful example. The baby’s cry reflects a physiological state of threat that has resulted in a disruption of homeostasis. When the mother talks or sings to her baby, the baby calms. A calmness that is observable in behaviour, muscle tone, and even autonomically in heart rate.[12] Similar calming influences of prosodic voice are observed when we calm mammalian pets such as dogs, cats, and horses.

Research gaps

Polyvagal Theory provides a perspective to investigate how of autonomic state is involved in feelings, emotions, and sociality. It provides insights into measurements of autonomic metrics that would index features of sociality and feelings of safety. It would also lead to hypotheses relating autonomic regulation features as being important potential mediators of emotional dysregulation, social difficulties, and compromised mental processes. To test these hypotheses accurate and objective measures of homeostatic function, distress, and feelings of safety are required. Moreover, given the bidirectionality of the hierarchy of autonomic states, therapeutic strategies, and new methodologies of intervention in which autonomic state would be the portal of

intervention could be tested to improve both mental and physical health.

Conclusions and Implications

The human behavioural repertoire is greatly influenced by autonomic state. The neural regulation of autonomic state follows a developmental trajectory that can be disrupted by illness and early experiences including prematurity and difficult deliveries. In addition, adverse experiences during early development may functionally retuned the autonomic nervous system to be in a chronic state of threat. Polyvagal Theory provides an optimistic perspective that assumes that many of the defensive features that emerge spontaneously from an autonomic nervous system tuned to be chronically defensive are manageable through therapeutic interventions leveraging a neuroception of safety through the powerful calming influences of cues of safety.

Through evolution the brainstem area regulating the calming ventral vagus is also involved in the neural regulation of the striated muscles of the face and head. This enabled vocalization and facial expression to functionally broadcast autonomic state to conspecifics informing them that they were or were not safe to approach. This link between autonomic state and the structures that project emotion identifies neuroanatomical and neurophysiological mechanisms that support co-regulation and sociality. An understanding of this link is being embraced the therapists and educators, who are working with children chronically locked in an autonomic state of threat. This knowledge will lead to an appreciation that many disruptive behaviours are emergent properties of the autonomic nervous system being in a state of defense and not intentional nor available to be modified through punishments or rewards.

References

1. Porges SW, Davila MI, Lewis GF, Kolacz J, Okonmah-Obazee S, Hane AA, Kwon KY, Ludwig RJ, Myers MM, Welch MG. Autonomic regulation of preterm infants is enhanced by Family Nurture Intervention. *Developmental Psychobiology* 2019;61(6):942-952.

2. Kolacz J, Raspa M, Heilman KJ, Porges SW. Evaluating sensory processing in fragile X syndrome: Psychometric analysis of the brain body center sensory scales (BBCSS). *Journal of Autism and Developmental Disorders* 2018;48(6):2187-2202.

3. Porges SW, Bazhenova OV, Bal E, Carlson N, Sorokin Y, Heilman KJ, Cook EH, Lewis GF. Reducing auditory hypersensitivities in autistic spectrum disorder: preliminary findings evaluating the listening project protocol. *Frontiers in Pediatrics* 2014;2:80.

4. Heilman KJ, Connolly SD, Padilla WO, Wrzose, MI, Graczyk PA, Porges SW. Sluggish vagal brake reactivity to physical exercise challenge in children with selective mutism. *Development and Psychopathology* 2012;24(1):241-250.

5. Bulbena A, Baeza-Velasco C, Bulbena-Cabré A, Pailhez G, Critchley H, Chopra P, Mallorquí-Bagué N, Frank C, Porges S. Psychiatric and psychological aspects in the Ehlers–Danlos syndromes. *American Journal of Medical Genetics. Part C, Seminars in Medical Genetics* 2017;175(1):237-245.

6. Manning KE, Beresford-Webb JA, Aman LCS, Ring HA, Watson PC, Porges SW, Oliver C, Jennings SR, Holland AJ. Transcutaneous vagus nerve stimulation (t-VNS): a novel effective treatment for temper outbursts in adults with Prader-Willi syndrome indicated by results from a non-blind study. *PloS one* 2019;14(12):e0223750.

7. Porges SW. Orienting in a defensive world: Mammalian modifications of our evolutionary heritage. A polyvagal theory. *Psychophysiology* 1995;32(4):301-318.

8. Porges SW. *The polyvagal theory: neurophysiological foundations of emotions, attachment, communication, and self-regulation*. New York: WW Norton; 2011.

9. Porges SW. Polyvagal theory: a biobehavioral journey to sociality. *Comprehensive Psychoneuroendocrinology* 2021;7:100069.

10. Porges SW. Polyvagal theory: The science of safety. *Frontiers in Integrative Neuroscience* 2022;16: 871227.

11. Jackson JH. The Croonian lectures on evolution and dissolution of the nervous system. *British Medical Journal* 1884;1(1215):703-707.

12. Kolacz J, daSilva EB, Lewis GF, Bertenthal BI, Porges SW. Associations between acoustic features of maternal speech and infants' emotion regulation following a social stressor. *Infancy* 2022;27(1):135-158.

Emotional Development in Childhood

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Introduction and Subject

Theoretical Perspective

The theoretical perspective taken toward emotional development in childhood is a combination of functionalist theory and dynamical systems theory[1]: A child's encounters with an environment can be seen as dynamic transactions that involve multiple emotion-related components (e.g., expressive behaviour, physiological patterning, action tendencies, goals and motives, social and physical contexts, appraisals and experiential feeling) that change over time as the child matures and in response to changing environmental interactions. Emotional development reflects social experience, including the cultural context. Elsewhere I have argued that emotional development should be considered from a bio-ecological framework that regards human beings as dynamic systems embedded within a community context.[2] Table 1 summarizes noteworthy descriptive markers of emotional development in relation to social interaction.[3]

Table 1. Noteworthy Markers of Emotional Development in Relation to Social Interaction

Age Period	Regulation/Coping	Expressive Behavior	Relationship Building

Infancy: 0 - 12 mos.	Self-soothing and learning to modulate reactivity. Regulation of attention in service of coordinated action. Reliance on caregivers for supportive “scaffolding” during stressful circumstances.	Behavior synchrony with others in some expressive channels. Increasing discrimination of others’ expressions. Increasing expressive responsiveness to stimuli under contingent control. Increasing coordination of expressive behaviors with emotion-eliciting circumstances.	Social games and turn-taking (e.g., “peek-a-boo”). Social referencing. Socially instrumental signal use (e.g., “fake” crying to get attention).
Toddlerhood: 12 mos.-2½ years	Emergence of self-awareness and consciousness of own emotional response. Irritability due to constraints and limits imposed on expanding autonomy and exploration needs.	Self-evaluation and self-consciousness evident in expressive behavior accompanying shame, pride, coyness. Increasing verbal comprehension and production of words for expressive behavior and affective states.	Anticipation of different feelings toward different people. Increasing discrimination of others’ emotions and their meaningfulness. Early forms of empathy and prosocial action.

Preschool: 2-5 years	Symbolic access facilitates emotion regulation, but symbols can also provoke distress. Communication with others extends child's evaluation of and awareness of own feelings and of emotion-eliciting events.	Adoption of pretend expressive behavior in play and teasing. Pragmatic awareness that "false" facial expressions can mislead another about one's feelings.	Communication with others elaborates child's understanding of social transactions and expectations for comportment. Sympathetic and prosocial behavior toward peers. Increasing insight into others' emotions.
Early Elementary School: 5-7 years	Self-conscious emotions (e.g., embarrassment) are targeted for regulation. Seeking support from caregivers still prominent coping strategy, but increasing reliance on situational problem-solving evident.	Adoption of "cool emotional front" with peers.	Increasing coordination of social skills with one's own and others' emotions. Early understanding of consensually agreed upon emotion "scripts."
Middle Childhood: 7-10 years	Problem-solving preferred coping strategy if control is at least moderate. Distancing strategies used if control is appraised as minimal.	Appreciation of norms for expressive behavior, whether genuine or dissembled. Use of expressive behavior to modulate relationship dynamics (e.g., smiling while reproaching a friend).	Awareness of multiple emotions toward the same person. Use of multiple time frames and unique personal information about another as aids in the development of close friendships.

Preadolescence: 10-13 years	Increasing accuracy in appraisal of realistic control in stressful circumstances. Capable of generating multiple solutions and differentiated strategies for dealing with stress.	Distinction made between genuine emotional expression with close friends and managed displays with others.	Increasing social sensitivity and awareness of emotion "scripts" in conjunction with social roles.
Adolescence: 13+ years	Awareness of one's own emotion cycles (e.g., guilt about feeling angry) facilitates insightful coping. Increasing integration of moral character and personal philosophy in dealing with stress and subsequent decisions.	Skillful adoption of self-presentation strategies for impression management.	Awareness of mutual and reciprocal communication of emotions as affecting quality of relationship.

Note. From Saarni (2000, pp. 74-75). Copyright 2000 by Jossey-Bass. Reprinted by permission of the author.

Recent Research Results

Sources of Emotion Competence

There is a general consensus that the development of emotion competence depends upon both the child's temperament and social-emotional experiences.[4,5] Infants may differ in their behavioural dispositions (i.e., their temperaments).[6] For example, some infants may be more irritable than others. However, if parents are able to rise to the challenge and provide sensitive caregiving, a secure attachment relationship will develop. Sensitive caregiving is thought to principally involve being able to accurately discern the infant's communicative signals and respond by meeting his or her needs. Yet, it is important to acknowledge that even the most sensitive parents may not always be successful in alleviating their infant's distress. Perfect parenting is not required for a secure attachment relationship. Furthermore, even if the relationship between infant and caregiver is problematic, a secure attachment relationship may

develop later in childhood if parenting quality improves. Securely attached children show more positive and less negative affect than less secure (or insecure) and are better able to regulate their emotions.[7]

Emotion regulation is an important aspect of the child's emotional competence.[8] During infancy, emotion regulation lies chiefly in the hands of the infant's caregivers. Sensitive caregivers are able to discern early signs of distress on the part of the infant and act to mitigate such distress by removing its source and/or by providing comfort to the infant. For example, parents may simultaneously feed and gently rock a baby who is crying due to hunger. If the infant is crying due to overarousal (e.g., being taken to a noisy family gathering), parents may take the baby to a quiet room.

Socialization of Emotion Competence

For toddlers and younger children, several caregiver socialization strategies have been identified that promote the development of the child's ability to optimally cope with their emotional distress.[9] Several of these involve adults' contingent responses to the child's expression of emotion. Supportive responses include: (a) acknowledging the child's emotion and treating it as a legitimate reaction to a distressing event, (b) helping the child feel better (e.g., by providing comfort), and (c) helping the child actively cope with the source of their distress (e.g., learn how to rectify a distressing situation or avoid a stressor). For example, if a child shows fear when approached by a friendly but large and overly enthusiastic dog, a supportive parent might say "That dog does look scary but he's just excited to see you" and ask the dog's owner to hold the dog while the child and parent approach it together. Nonsupportive responses would include: (a) minimizing, dismissing, or devaluing the child's fear, (b) punishing or threatening punishment, and (c) immoderate distress by the parent. For example, a nonsupportive parent might react in the same scenario by saying "Don't be a baby," threaten to force the child to pet the dog, and/or become excessively distressed by the child's distress. These supportive and nonsupportive strategies may be employed by both parents and other caregivers. Supportive contingent responses have been linked to better social-emotional adjustment by younger children while nonsupportive responses have been linked to higher levels of problematic child behaviour. However, these generalizations must be qualified to acknowledge that the impact of caregiver socialization behaviours on the child may differ due to a variety of factors. These include the child's temperament and age. For example, highly inhibited children may be less responsive to parental suggestions about how to respond to potential threats (e.g., whether to approach a dog).

Parental behaviours that support emotion competence in younger children may backfire when applied to older children or generalized across a wider range of contexts.[10] For example, encouraging children to freely admit their distress may be desirable in the context of interactions between younger children and their parents but such open expression may be problematic in the context of social interactions between older children and their peers (e.g., may be perceived as "babyish" and lead to peer rejection).

Beyond their contingent responding to children's emotion, other caregiver behaviours have been identified that influence the development of greater or lesser emotion competence. These include observational learning on the part of the child and explicit instruction on the part of the caregiver.[11] By observing how adults respond to emotionally challenging situations, children may develop their own repertoire of responses. For example, children who observe adults in their environment to respond with anger to a wide range of potential anger elicitors may themselves develop such a tendency.[12] Furthermore, once children reach an appropriate level of cognitive and language development, caregivers may explicitly discuss appropriate and inappropriate ways of responding to interpersonal threat and other elicitors of negative emotions.

Conclusions

Strengths in the area of emotional competence may help children and adolescents cope effectively in particular circumstances, while also promoting characteristics associated with positive developmental outcomes, including feelings of self-efficacy, prosocial behaviour and supportive relationships with family and peers. Furthermore, emotional competence serves as a protective factor that diminishes the impact of a range of risk factors. Research has isolated individual attributes that may exert a protective influence, several of which reflect core elements of emotional competence, including skills related to reading interpersonal cues, solving problems, executing goal-oriented behaviour in interpersonal situations, and considering behavioural options from both an instrumental and an affective standpoint.

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Although Carolyn Saarni unfortunately passed away in 2015, the emotion competence perspective she developed during her lifetime continues to provide a valuable framework for thinking and research on emotional development. Thus, this entry retains the framework Saarni presented in the previous edition of this encyclopedia while adding a brief review of recent research relevant to

that framework.

References

1. Saarni C, Campos J, Camras L, & Witherington D. Principles of emotion and emotional competence. In: Damon W, Lerner R, eds. *Child and adolescent development: An advanced course.* Hoboken, NJ: Wiley; 2008:361-405
2. Saarni C. The interface of emotional development with social context. In: Lewis M, Haviland-Jones J, Feldman Barrett L, eds. *The handbook of emotions.* 3rd ed. New York: Guilford Press; 2008:332-347.
3. Saarni C. Emotion competence: A developmental perspective. In: Bar-On R, Parker J, eds. *The handbook of emotional intelligence.* San Francisco: Jossey-Bass; 2000:68-91.
4. Lewis M. *The rise of consciousness and the development of emotional life*. New York, NY: Guilford Press; 2014.
5. Pérez-Edgar K. Through the looking glass: Temperament and emotion as separate and interwoven constructs. In: LoBue V, Pérez-Edgar K, Buss K, eds. *Handbook of emotional development.* Switzerland: Springer; 2019:139-168.
6. Rothbart MK. *Becoming who we are: Temperament and personality in development*. New York, NY: Guilford Press; 2011.
7. Cooke JE, Kochendorfer LB, Stuart-Parrigon KL, Koehn AJ, Kerns KA. Parent–child attachment and children’s experience and regulation of emotion: A meta-analytic review. *Emotion* 2019;19(6):1103-1126.
8. Saarni C. *The development of emotional competence.* New York, NY: Guilford Press; 1999.
9. Fabes RA, Poulin RE, Eisenberg N, Madden-Derdich DA. The Coping with Children's Negative Emotions Scale (CCNES): Psychometric properties and relations with children's emotional competence. *Marriage & Family Review* 2002;34(3-4):285-310.
10. Castro VL, Nelson JA. Social development quartet: When is parental supportiveness a good thing? The dynamic value of parents' supportive emotion socialization across childhood. *Social Development* 2018;27(3):461-465.
11. Eisenberg N, Cumberland A, Spinrad TL. Parental socialization of emotion. *Psychological Inquiry* 1998;9(4):241-273.

12. Leerkes EM, Bailes LG. Emotional development within the family context. In: LoBue V, Pérez-Edgar K, Buss K, eds. *Handbook of emotional development*. Switzerland: Springer; 2019:627-661.

Cultural Differences in Emotional Development

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Introduction

Everybody seems to know what an emotion is, until being asked to define it.[1] Accordingly there is a myriad of definitions, some stressing more the biological roots, some more the cultural origins. Meanwhile there seems at least to be consensus that emotions are complex mental states which synthesize biological and cultural components, although the constituents and nature of this interaction is still unclear.[2,3] Emotions involve different dimensions, such as subjective experience, expressiveness, psychophysiological changes, and behaviour.

The biological base of emotions is regarded as expressed in the universal equipment with basic emotions, yet the presumed number differs between authors.[4,5,6] The founder of human ethology, Irenäus Eibl-Eibesfeldt extended the biological base to a universal grammar of human behaviour.[7] Nevertheless, the occurrence, the expression and the social regulation of emotions can differ substantially between cultures.

In this paper emotions are regarded as part of the human repertoire, yet embodying marked cultural differences in different domains.[3] Children participate from birth on in sociocultural encounters in which they co-construct their emotion system which is crucial for the definition of self and identity. Different cultural pathways of emotional development could be related to different conceptions of the self as grounded in wider cultural models. Cultural models are organized through particular definitions and combinations of autonomy and relatedness as two human basic needs as well as cultural constructs at the same time.

Subject

Understanding the cultural nature of emotions and their development is important for the unbiased understanding of children’s development on a global scale. Emotions are differently interwoven with cognition, motivation and behaviour in different cultures. Socio-emotional

development is centered around different lead emotions in different cultures, for example, positive emotionality in Western middle - class contexts[8] or shame in Chinese families.[9] Understanding these dynamics is crucial for meeting ethical standards of assessing and evaluating children's and caregiver's behaviours.

Problems

Research concerning children's development is still dominated by the WEIRD (Western, Educated, Industrialized, Rich, Democratic) world view. A tiny proportion of the world's population (estimations vary between 5 – 10%), who are basically different from other cultural groups, are regarded as representing humans globally.[10] The lack of cultural/cross-cultural studies is meanwhile recognized and admitted,[11,12,13] yet the reality of science and applications lags behind.

For example, classical attachment researchers accept as attachment research only studies applying procedures that have been developed by themselves, such as the Strange Situation Procedure in the original version.[14] The authors of these procedures all belong to WEIRD cultures. If adaptations are made, they are not far reaching enough, concerning, for example, only translations of observational protocols or interview questions. However, already the vocabulary may be different in different cultures, for example, there is no word for collaboration in Lamnso, the language of North West Cameroonian Nso people, where collaboration is not a social concept but a way of life (Melody Ngaidzeyuf Ndzenyuiy, PhD Candidate, personal communication, May 11, 2022).

Research Context

Most of the research on early emotional development consists of observational situations. A parent, mostly the mother, is asked to play with her child in a standardized (mainly laboratory) or semi standardized (mainly at home) situation often with the seemingly paradoxical instruction: play as you would normally do. The situation is mainly defined as parent plays with child using toys. These usually short, 2 to 30 minutes on the average, situations are videotaped and the behavioural exchange is later coded with different, more or less standardized schemes by coders who should not be informed about the research questions and the background of the participants. This is of course not always to realize because of apparent phenotypical differences. Emotional expression of infants (and mothers) is often classified as positive, negative or neutral. Interrater agreement by mainly WEIRD coders is trained to reach a statistically acceptable level.[15] Another

popular setting is confronting a child in a standardized laboratory arrangement with social or non-social stimuli which are supposed to trigger the expression of particular emotions. As an example, the still face paradigm instructs a mother to interrupt a face-to-face interaction with her baby by freezing any facial expression. Children's reactions are videotaped and coded.[16]

Key Research Questions

Research questions need to start with assessing the cultural conception of emotions in the particular community under study. This implies the local understanding of what emotions are, how they are embodied, how they are experienced and expressed and in which contextual conventions they are embedded. This knowledge must be the basis for studying cultural pathways of emotional development, which should ideally start with ethnographic longitudinal studies.

Recent Research Results

Early interactional situations following the WEIRD pattern of parent (mainly mother) – child communication mainly consist of cycles of exclusive dyadic face-to- face exchange with affectionate talking, smiling, increasing infant's arousal, and the use of toys (distal communication strategy). The expression of positive emotionality is crucial for co-regulation processes in this cultural context. This communication strategy is mostly absent in traditional rural cultures where proximate (body contact, body stimulation, rhythmical attunement) behavioural channels emphasize co-regulation, which is largely enacted non-verbally. Facial expressions are supposed to be neutral. Children grow up in multiple care networks where different caretakers may exert different caretaking functions or act interchangeably.[17] Children are often the main socialization agents in baby care. Gabriel Scheidecker, for example, observed in Madagascan villages that the peer group of 2 to 5 years of children were the dominant companions for children during the first three years of life from their second year on. Children in peer groups also show face to face contact and emotional expressions which in absent in the rare adult child encounters. Thus, these children acquire two social scripts at the same time.[18]

Emotional neutrality is also the social norm in this (and structurally similar) cultural context(s) when small children meet strangers for the first time. One-year-old Nso children reacted bodily welcoming (stretching their arms) to an approaching stranger with a neutral facial expression.[19] Children are socialized from early on to accept multiple people as part of the cooperative lifestyle.

Emotional development in early infancy can occur via multiple, culture-specific pathways as the comparative analysis of mother infant play situations during infants 4 to 12 weeks of age in Western middle-class families in Northern Italy, rural traditional Nso farmer families in Cameroon, and West African immigrant families in Northern Italy revealed. Longitudinal sequential analysis of maternal and infant behaviours showed that in Italian dyads mothers preferred the distal strategy, whereas the Cameroonian Nso mothers mainly used motor stimulation combined with rhythmic vocalizing, representing the proximate style. West African immigrant dyads showed a combination of both face-to-face and proximate co-regulated exchanges observed in their new and native cultures.[20] Another example concerns the definition of joint attention as infants looking to their mothers while jointly engaged with objects, accompanied by positive emotionality. Adopting a broader and more inclusive definition as coordinated joint engagement with any social partner involving social and non-social objects surrounded by any expression of emotionality (including neutrality) is helpful to avoid potential ethnocentric bias. Three human groups with one-year old focus children from urban families in the UK, Cameroonian Nso farmers and Aka foragers in the Central African Republic were observed in their natural surroundings (as well as three groups of chimpanzees living in diverse ecological settings). Joint attention (JA) with positive emotional tone was significantly more common in middle-class settings. Coordinated Joint Engagement (CJE) without specifying the emotional tone occurred frequently in all groups. Moreover, neither CJE or JA was found to be unique to humans.[21]

All together there is a growing body of evidence emphasizing that diverse eco-cultural experiences have significant impact on developmental outcomes of socio emotional as well as development in general. Developmental trajectories are embedded in broader cultural models that frame developmental goals in terms of culture specific conceptions of autonomy and relatedness.[8,22]

Research Gaps

The biggest research gap is certainly the lack of cultural conscious research. The study of emotions, as research in developmental and social sciences in general, is still dominated by WEIRD researchers, studying WEIRD subjects in WEIRD environments with WEIRD methods and protocols.[10,11,12,13] Although there is substantial evidence from cultural psychology and anthropology that all dimensions of emotions vary substantially across cultural contexts, systematic research is lacking on cultural conceptions of emotions, the development of emotional experiences and expressions, their interrelatedness with other developmental domains, as well as their

intracultural variation. This also implies the development of cultural conscious methodologies and infrastructures for enabling inclusive and participatory research programs.[23]

Conclusions

Cultural conscious research is crucial for overcoming the ethnocentric bias of mainstream theory and practice concerning emotions and emotional development. Only culture conscious research can contribute to a global developmental science. Acknowledging cultural differences is deeply interwoven with ethical issues since it necessitates abandoning the evaluation of diverse cultural practices with monocultural standards, mainly derived from a WEIRD understanding of human psychology. The narrative in different applied domains from education to family court decisions to early child care and education programs is, that what differs from the WEIRD way of life is a deficit.[24] The consequences of this perspective are devastating when, for example, children are placed in foster care because the educational agenda of their families/mothers deviates from a classical mainly attachment based understanding of responsiveness and child centeredness. Emotional expressiveness is crucial in this process.[8] Ghanaian psychologist Seth Oppong has convincingly outlined that "…how and why what is ethical in one culture becomes unethical in the Ghanaian context and what is unethical in the Ghanaian context becomes ethical in another culture.".[24]

Implications for Parents, Services and Policy

The next important step is a change of perspective from an evaluative framework to an inclusive one. There are different truths, different realities and different normative frameworks related to emotions and their development across cultures that cannot be classified along one standard of quality. The institutional early educational practice needs to distance itself from one definition of pedagogical quality and accept the educational visions and practices of families with different cultural models. Particularly the lack of emotional expressiveness, narrative brevity and avoidance of eye contact, representing the code of conduct in many cultural environments are often interpreted as psychiatric symptoms preventing proper and responsible care for children's well-being in family court decisions.

Global early childhood developmental programs aim at improving brain development of children in the global south with changing parenting practices without assessing the need and without taking local cultural socialization goals and practices into account.[25] Often science is contrasted

with culture, where science is understood in WEIRD terms and culture as promoting deficits.[8] Besides services and policy, educational curricula for professionals working in these different domains need to be reformulated.

References

1. Fehr B, Russell JA. Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General* 1984;113(3):464-486. https://doi.org/10.1037/0096-3445.113.3.464

2. Röttger-Rössler B, Scheidecker G, Funk L, Holodynski M. Learning (by) feeling. A cross cultural comparison of the development of emotions. *Ethos* 2015;43(2):187-220.

3. Keller H. The role of emotions in socialization processes across cultures. Implications for theory and practice. In: Matsumoto D, Hwang HC, eds. *The handbook of culture and psychology.* 2nd ed. New York: Oxford University Press; 2020:188-209.

4. Izard CE. *The psychology of emotions*. New York, NY: Plenum; 1991.

5. Ekman P. An argument for basic emotions. *Cognition and Emotion* 1992;6(3/4):169-200.

6. Plutchik R. A general psychoevolutionary theory of emotion. In: Plutchik R, Kellermann H, eds. *Emotion: Theory, research and experience. Vol.1: Theories of emotion*. New York, NY: Academic Press; 1980:3-33.

7. Eibl-Eibesfeldt I. *Die Biologie des menschlichen Verhaltens: Grundriss der Humanethologie.* 5th ed. Vierkirchen: Pasenbach: Blank Media; 2004.

8. Keller H. *The Myth of Attachment Theory*. New York, NY: Routledge; 2021.

9. Fung H. Becoming a moral child: the socialization of shame among young Chinese children. *Ethos* 1999; 27(2):180-209.

10. Henrich J, Heine S, Norenzayan A. The weirdest people in the world? *Behavioral and Brain Sciences* 2010;33;61-135.

11. Arnett JJ. The neglected 95%: why American psychology needs to become less American. *American Psychologist* 2008;63(7):602-614.

12. Nielsen M, Haun D, Kärtner J, Legare CH. The persistent sampling bias in developmental psychology: A call to action. *Journal of Experimental Child Psychology*. 2017;162:31-38.

13. Broesch T, Lew-Levy T, Kärtner J, Kanngiesser P, Kline M. A roadmap to doing culturally grounded developmental science. *Review of Philosophy and Psychology* 2022. https://doi.org/10.1007/s13164-022-00636-y

14. Mesman J, van IJzendoorn MH, Sagi-Schwartz A. Cross-cultural patterns of attachment: Universals and contextual dimensions. In: Cassidy J, Shaver P. eds *Handbook of Attachment.* 3rd ed. New York, NY: Guilford Press; 2016:790-815.

15. Keller H. *Cultures of Infancy.* New York, NY: Psychology Press and Routledge Classic Editions; 2022.

16. Mesman J, van IJzendoorn MH, Bakermans-Kranenburg MJ. Erratum to “The many faces of the still-face paradigm: A review and meta-analysis. *Developmental Review* 2009; 29(2):120-162

17. Keller H, Chaudhary N. Is the mother essential for attachment? Models of care in different cultures. In: Keller H, Bard KA, eds. *The cultural nature of attachment. Contextualizing relationships and development.* New York, NY: MIT Press; 2017: 109-138.

18. Scheidecker G. Caregivers, Parents, and peers: Patterns of Complementarity in the Social World of Children in Rural Madagascar. *Current Anthropology* 2022. In press.

19. Otto H. Don’t show your emotions! Emotion regulation and attachment in the Cameroonian Nso. In: Otto H, Keller H, eds. *Different faces of attachment.* Cambridge, UK: Cambridge University Press; 2017:215-229.

20. Lavelli M, Carra C, Rossi G, Keller H. Culture specific development of early mother – infant emotional co regulation: Italian, Cameroonian and West African immigrant dyads.

Developmental Psychology 2019;55(9):1850-1867.

21. Bard KA, Keller H, Ross K, Hewlett BS, Butler L, Boysen S, Matsuzawa T. Joint attention in human and chimpanzee infants in varied socio-ecological contexts. *Monographs of the Society for Research in Child Development* 2022;86(4):7-217.

22. Keller H, Kärtner J. Development – The culture–specific solution of universal developmental tasks. In: Gelfand ML, Chiu C-Y, Hong Y, eds. *Advances in culture and psychology Vol. 3*: New York, NY: Oxford University Press; 2013:63-116.

23. Burger O, Chen L, Erut A, Fong FTK, Rawlings B, Legare, CH. Developing Cross Cultural Data Infrastructures (CCDIs) for Research in Cognitive and Behavioral Sciences. *Review of Philosophy and Psychology* 2022. https://doi.org/10.1007/s13164-022-00635-z

24. Oppong S. When the ethical is unethical and the unethical is ethical: Cultural relativism in ethical decision making. *Polish Psychological Bulletin* 2019;50(1):18-28.

25. Scheidecker G, Chaudhary N, Keller H, Mezzenzana F, Lancy D. Poor brain development in the global south? Challenging the Evidence Base of Early Childhood Intervention. In review.

Emotional Intelligence in the First Five Years of Life

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Introduction

The construct of emotional intelligence (EI) refers to a distinct group of mental abilities, in which individuals 1) perceive, appraise and express emotions; 2) use emotions to facilitate thinking; 3) understand the antecedents and consequences of emotions; and 4) regulate emotions in self and others.[1] These abilities dovetail well with what has been termed, in the developmental psychology literature, as “emotional competence” (EC).[2] Because of the developmental emphasis in the EC literature, this is the term we use here. Young children’s EC – expression of useful emotions, knowledge of emotions of self and others, and regulation of their own and others’ emotional expressiveness and experience when necessary – contributes to their social and pre-academic adjustment, both concurrently and across time.[3-5]

Subject

Because of the link with social and pre-academic success, there is considerable interest in the topic of early childhood EC; its relevance to policymakers and service-providers in childcare, early childhood education and mental health is becoming clear. There are three main components of EC, with specific attainments during the early childhood period:[2]

Expression: Young children become able to use emotional communication to express clear nonverbal messages about social situations and relationships (e.g., stamping feet, giving a hug). They also develop empathic involvement in others’ emotions (e.g., patting a classmate in pain). Further, they display complex social and self-conscious emotions, such as guilt, pride, shame and contempt, in appropriate contexts.[6,7]

Knowledge: Young children’s abilities to accurately identify and label their own and others’ emotions, especially the discrete emotions of happiness, sadness, anger and fear, are emerging. Particularly via the use of methods embedded within play, they can identify the causes and

consequences of these emotions, and they show budding awareness of complex, individualized causes for emotions.[8]

Regulation: Young children begin to regulate emotions in productive ways – showing awareness of their feelings, monitoring them and modifying them when necessary, so that emotions aid, rather than impede, coping in varying situations. Although young children begin to understand which regulation strategies are most useful, they still often need adult assistance in these efforts.[6,7,9]

The interrelationships of these aspects of EC must be underscored. Emotion knowledge undoubtedly plays an important role in children's ability to regulate emotion; when a child knows, for example, that her playmate is delighted to heave her tricycle upright after a long struggle, she is no longer distressed herself, trying to discern what to do with an angry friend. Further, her emotion knowledge may assist her own adaptive, regulated emotion expression – if she understands what makes her (and others) sad, and with what intensity, she may be able to show sadness at falling off playground equipment in a way that elicits help without overwhelming her. Because of the intricate inter-workings of the components of EC, it is no surprise that preschool deficits in both emotion knowledge and under-regulated expression of anger predicted difficulties with teachers and peers in kindergarten.[5,8] For example, preschoolers with deficits in understanding emotions have been found to show aggression or peer problems, both concurrently and predictably.[8,9] Moreover, aspects of early childhood EC, separately and as an interrelated group, predict young children's early school success.[3-7,9]

Research Context

The context of research into EC varies throughout development. The study of infant emotion has relied predominantly on external signs of experienced emotions such as facial expressions, gestures and vocalizations. As children leave infancy, researchers use both naturalistic observations and direct assessment procedures in a variety of settings, to better capture children's expression and experience, understanding, and regulation of emotions. Procedures to assess children's EC sometimes use purposefully frustrating situations with and without adult scaffolding to understand children's regulation of emotions. Children's responses to direct questions, often within ecologically valid play procedures, show their understanding of self and others' feelings in differing situations, as well as causes and consequences of emotions. Observational and self-report methods are used to examine adults' socialization of children's EC.

Key Research Questions and Recent Findings

1. How is EC related to young children's successful negotiations of other important developmental tasks?

   a) EC is related to young children's success in relationships. Young children must learn to send and receive emotional messages using their knowledge about emotions and their abilities to regulate emotions, so that they may successfully negotiate interpersonal exchanges, form relationships and maintain curiosity about and enthusiasm for their world. When they do so, they have more satisfying, successful relationships with others, especially in the new peer arena.[4,7-9]

   b) EC is related to young children's early school success. Emotions are ubiquitous in the early childhood classroom; as young students learn alongside and in collaboration with teachers and peers, they must utilize their emotions to facilitate learning. Children's abilities to understand emotions of self and other, regulate emotion, and express healthy emotions, all work together to grease the cogs of a successful school experience.[3,5-7]

2. How do parents promote children's EC?

   By modeling various emotions, moderately expressive parents give children information about the nature of emotions – their expression, likely eliciting situations, and more personalized causes.[10,11] Living in a particular "affective climate" promotes children's experience, expression, and regulation of specific emotions.[10] Specifically, a positive affective climate promotes positive emotional outcomes in children.[12] Conversely, where families display more negative emotion, children fare worse with peers.[13] Parents' reactions to young children's emotions and their direct instruction about emotions are also important socialization tools that support the development of EC.[14]

3. What else can we do to promote children's EC?

   There are opportunities to promote young children's EC within childcare and early childhood education settings.[15] For example, the Preschool PATHS program teaches children about emotion expression, knowledge, and regulation.[16] Additional programs have been created specifically for use in Head Start classrooms to help young children use EC effectively.[17]

Parent programming also exists.[18]

Research Gaps

Much basic research work is left to be done, particularly in examining how the components of EC work together. Research also needs to situate EC abilities within the "whole child," viewing how EC interacts with other domains of development, both concurrently and predictably.

Further, despite accumulated findings on parental socialization, and early childhood research that shows that teachers are engaging in emotion socialization behaviours, we know little about how teachers (or, for that matter, peers or siblings[10]) socialize children's EC.[19] There are, however, emerging findings that teachers' modeling, reactions, and teaching do contribute to children's developing EC.[20-23] Research is also needed to discern possible indirect contributors to EC, such as parental psychopathology, divorce, poverty and child care quality.[2] Moreover, our state of knowledge is ripe for increased exploration of applied topics, such as evidence-based programming. Finally, even more excellent assessment tools are needed in order to track EC promotion in young children.[24]

Conclusion

In sum, emotional competence is a developmentally-evolving construct that encompasses children's abilities to appropriately express, interpret and regulate their emotions, as well as to understand the emotions of others. Understanding the interrelationships between these facets of EC, as well as how EC is socialized, is crucial in understanding the emotional experience of children, and why some preschoolers have more highly developed EC than others. Extant findings suggest that 1) EC is related to young children's success in relationships; 2) EC is related to young children's early success in school; 3) parents model emotional expression and regulation and structure environments that promote attaining EC; and 4) parent socialization of emotion is not the only mechanism by which children's EC is socialized. Understanding and promoting EC in the home is emerging as vital, but research has needs more fully to explore how teachers and the school context contribute to children's EC.

Implications for Parents, Services and Policy

Although researchers, early childhood educators and policy makers are increasingly understanding and valuing early childhood EC, gaps in such support still need to be bridged. To

provide the optimal learning environment for every student, for example, teachers should be trained in programming and assessment tools that promote EC. Parents should likewise be supported in their roles as socializers of EC.

Educational standards continue to be essential. Policy initiatives also can encourage teacher awareness of EC and help them to encourage it, thereby fostering harmonious classroom environments and promoting the EC foundation that children can use across many contexts. Legislative initiatives can help establish programs, allocate funds to create technical assistance and training centers, and provide grants to support evidence-based EC programming and its evaluation.[24]

References

1. Mayer JD, Roberts RD, Barsade SG. Human abilities: Emotional intelligence. *Annual Review of Psychology* 2008;59(1):507-536.

2. Denham SA. *Emotional development in young children*. 2nd ed. New York: Guilford Press. In press.

3. Denham SA, Brown C, Domitrovich CE. “Plays nice with others”: Social–emotional learning and academic success. *Early Education & Development* 2010;21(5):652-680.

4. Denham SA, Blair KA, DeMulder E, Levitas J, Sawyer K, Auerbach-Major S, Queenan P. Preschool emotional competence: Pathway to social competence. *Child development* 2003;74(1):238-256.

5. Denham SA, Bassett HH, Mincic MM, Kalb SC, Way E, Wyatt T, Segal, Y. Social-emotional learning profiles of preschoolers' early school success: A person-centered approach. *Learning and Individual Differences* 2012;22:178-189.

6. Hernández MM, Eisenberg N, Valiente C, VanSchyndel SK, Spinrad TL, Silva KM, Berger RH, Diaz A, Terrell N, Thompson MS, Southworth J. Emotional expression in school context, social relationships, and academic adjustment in kindergarten. *Emotion* 2016;16:553-566.

7. Herndon KJ, Bailey CS, Shewark EA, Denham SA, Bassett HH. Preschoolers' emotion expression and regulation: Relations with school adjustment. *Journal of Genetic Psychology* 2013;174:642-663.

8. Di Maggio R, Zappulla C, Pace U. The relationship between emotion knowledge, emotion regulation and adjustment in preschoolers: A mediation model. *Journal of Child and Family Studies* 2016;25:2626-2635.

9. Denham SA, Blair K, Schmidt M, DeMulder E. Compromised emotional competence: Seeds of violence sown early? *American Journal of Orthopsychiatry* 2002;72(1):70-82.

10. Denham SA, Bassett HH, Wyatt T. The socialization of emotional competence. In: Grusec J, Hastings P, eds. *The handbook of socialization. 2nd ed.* New York: Guilford Press; 2014:590-613.

11. Drummond J, Paul EF, Whitney EW, Hammond SI, Brownell CA. Here, there and everywhere: emotion and mental state talk in different social contexts predicts empathic helping in toddlers. *Frontiers in Psychology* 2014;5:361.

12. Davis M, Suveg C, Shaffer A. Maternal positive affect mediates the link between family risk and preschoolers' positive affect. *Child Psychiatry & Human Development* 2015;46:167-175.

13. Newland RP, Crnic KA. Mother–child affect and emotion socialization processes across the late preschool period: Predictions of emerging behaviour problems. *Infant and Child Development* 2011;20(6):371-388.

14. Luebbe AM, Kiel EJ, Buss KA. Toddlers' context-varying emotions, maternal responses to emotions, and internalizing behaviors. *Emotion* 2011;11:697-703.

15. Bierman KL, Motamedi M. SEL Social and emotional learning programs for preschool children. In: Durlak JA, Domitrovich CE, Weissberg RP, Gullotta TP, eds. *Handbook of social and emotional learning: Research and practice*. New York: Guilford Press; 2015:135-151

16. Hughes C, Cline T. An evaluation of the preschool PATHS curriculum on the development of preschool children. *Educational Psychology in Practice* 2015;31(1):73-85.

17. Izard CE, King KA, Trentacosta CJ, Morgan JK, Laurenceau JP, Krauthamer-Ewing ES, Finlon KJ. Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Development and Psychopathology* 2008;20(1):369-397.

18. Havighurst SS, Wilson KR, Harley AE, Prior MR, Kehoe C. Tuning in to kids: Improving emotion socialization practices in parents of preschool children–findings from a community trial. *Journal of Child Psychology and Psychiatry* 2010;51(12):1342-1350.

19. Denham SA, Bassett HH, Zinsser K. Early childhood teachers as socializers of young children's emotional competence. *Early Childhood Education Journal* 2012;40(3):137-143.

20. Ahn HJ, Stifter C. Child care teachers' response to children's emotional expression. *Early Education and Development* 2006;17(2):253-270.

21. Bassett HH, Denham SA, Fettig NB, Curby TW, Mohtasham M, Austin N. Temperament in the classroom: Children low in surgency are more sensitive to teachers' reactions to emotions. *International Journal of Behavioral Development* 2017;41(1):4-14.

22. Denham SA, Bassett HH. Early childhood teachers’ socialization of children’s emotional competence. *Journal of Research in Innovative Teaching and Learning* 2019;12(2):133-150.

23. Ornaghi V, Grazzani I, Cherubin E, Conte E, Pirall F. ‘Let's talk about emotions!’. The effect of conversational training on preschoolers' emotion comprehension and prosocial orientation. *Social Development* 2015;24(1):166-183.

24. Denham SA. Assessment of SEL in educational contexts. In: Durlak JA, Domitrovich CE, Weissberg RP, Gullotta TP, eds. *Handbook of social and emotional learning: Research and practice*. New York: Guilford Press: 2015:285-300.