Emotional Regulation and Autism Spectrum Disorders

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Autism spectrum disorders (ASDs) have been conceived of as largely social disabilities, because social problems seem to be the most prominent common characteristic; various social and communicative skill interventions and many schools deliver specific social skills training. But emotional dysregulation is a key component in the difficulties both children and adults with ASDs experience in education, employment, and relationships, and it has not been as well addressed. This article will examine what we know about how emotional regulation typically develops, and how the process may be compromised for individuals on the spectrum.

Emotions are often thought to be only feeling states, but they are much more than that. Emotions also include physiological responses and expressions. They play a critical role in regulating important processes including memory, perception, attention, and physical response. Since the dawn of humankind they have played a crucial part in individual survival. So important to handling the social milieu, emotions shape interpersonal interactions, providing information to and about others, evoking emotional responses and reciprocity in others, and shaping others' behaviors toward us. So, emotions are not just our feelings about things, but also a highly important and integrated part of social interaction.

Emotional regulation includes the processes whereby we influence which emotions are have, when we have them, and how we experience and express them. This regulation may include decreasing, maintaining, increasing, or substituting an emotion and may occur before an emotional response is activated or during the experience. Involved is our cognitive appraisal of the situation, our physiologic reaction, our emotional expression (verbal or nonverbal), how we have been socialized, and our learned behavior from past experiences. The acquisition of all of these aspects of regulation results from the interplay between the development and unfolding of underlying brain mechanisms and the experiences we have from birth onward.

For those on the spectrum, the development of emotional regulation is often atypical. Biological differences in processing speed, incoordination of socially relevant motor actions (e.g. facial expressions), delayed perception abilities for faces and nonverbal cues, and sensory overwhelm are common. Many have inability to recognize emotions in themselves or in the displays of others, or are unable to differentiate among emotions. For example, they may

experience all negative emotions as fear. There are individual differences in arousal levels; those on the spectrum often experience highly variable or overly sensitive arousal states. The uneven development across skills may result in significantly discrepant maturity levels in the same person. Social and emotional maturity may severely lag, but one is expected to behave in a certain way based on age or intellect. So, while development generally marches forward in a more or less predictable manner, emotional regulation for those on the spectrum may be delayed or altered by countless subtle constitutional differences.

What's happening in the brain?
Physiologically, sensory information travels from the thalamus to either the amygdala or the frontal lobes. The amygdala lets loose the survival instinct of "fight or flight" and immediately activates the sympathetic nervous system to prepare the body to act. The frontal lobes, in contrast, bring experience and cognition to moderate the amygdale-driven responses. So while it might be advantageous to escape predators quickly through amygdale arousal, one would not want to be aroused to that level every time a noise, a sight, or a smell occurred. Developmentally, children learn to mediate their emotional arousal based on their experiences. As they reach adolescence, frontal lobes typically mediate most emotional responses as mature self control emerges. For individuals on the spectrum, the mediation process may be misdirected because of multiple neurobiological differences and the effect they may have on the experiential perception. For example, if a child too often experiences certain stimuli as overwhelming and the amygdala goes into action, this response may become neurologically entrenched and difficult to rewire. Subtle neurobiological differences may cause children to experience the world differently and lead to differently wired brains. The stress-memory circuit has been investigated in traumatized children. Stress increases cortisol to the memory apparatus in the hippocampus. When stress is too high, too much cortisol binds to each neuron in the hippocampus, increasing metabolism so much that the neurons overheat and die. This damage decreases the hippocampus' ability to place future stressful situations in a useful context so that the individual experiences unrelated sensory fragments. This phenomenon is common among soldiers and abused children, but can also occur in anyone who experiences life stresses as traumatic events. Given the situations of overwhelming sensory stimulation and the very real bullying that the majority of children with ASDs experience, the panicky, over-reactive behaviors others observe are more explainable.

Psychologically, a learning process is developing that defines and organizes experiences so that the individual can utilize patterns of response to address various emotion-laden situations. We develop certain schemata, which are prepared response modes to challenging situations, as shortcuts to longer mediated strategies. While this may be an efficient strategy for individuals who easily recognize when each pattern or schema should be deployed, for those on the spectrum who have difficulty both expressing themselves and recognizing cues in others, the over-utilization of a negative schema can be a hindrance in social interaction and self management. Schemata, as typically employed, serve to orient us. For individuals on the spectrum, who have frequent misperceptions, the deployment of faulty schemata become recurrent maladaptive thinking and regulating patterns that are difficult to change.

Critical periods occur during times of rapid brain growth when skills are most easily learned and retained. During infancy and early childhood there is immense development in the skills of perception of faces and emotional expression, recognition of individual emotional states, comprehension of social rules that govern social expression, emergence of the motivation to regulate emotional expression, and the understanding of the social context of emotions. These skills can be taught later in life, but the ease with which they are developed in early childhood can never be duplicated. We are just beginning to understand the critical period of brain growth

that occurs in adolescence. Myelination, the insulating of neurons crucial for fast nerve impulse, increases 100% during adolescence. Pathways are established by slashing unused synapses and branches, creating more efficient brain communication and control. The frontal lobes, which control executive function, are slashed some 12 to 20% during this time. Executive function, which includes planning, inhibitory control, working memory, and attentional flexibility, becomes an increasingly important factor in emotional regulation, with more deployment of cognitive control over emotional expression. During adolescence, social-emotional development is determined by the unfolding of critical brain functions, the experiences occurring at the time, and the interaction between the two.

Everyone has difficulty with regulating emotions from time to time, but individuals on the spectrum have additional challenges to the development of a smoothly functioning regulating system. These include neurological differences, fewer opportunities to engage in social give and take during critical times of brain growth, sensory and processing differences, and often negative experiences from continual teasing or rejection. Positive feelings restore emotional equilibrium, but what happens if you seldom have positive experiences and are overwhelmed by negative feelings? Good intentions to control behavior and emotional outbursts may disappear in the face of the day-to-day challenges these individuals encounter. When the energy to maintain oneself in emotional equilibrium becomes depleted, one's long term intention is overwhelmed by the short term goal of gaining relief from negative emotion. This may take the form of breaking a diet when we want to lose weight, procrastinating on a challenging task, or having a meltdown despite detailed plans to the contrary. Procrastination and aggression are common characteristics of children and adults on the spectrum that others have difficulty fully understanding. They can be better understood and more effectively addressed when viewed as failures in a depleted emotional regulation system.

Some individuals with ASDs learn how to suppress rather than manage negative feelings. This may help them appear more socially acceptable, but the internal effort required has the negative consequences of distracting from social interplay, increasing isolation, escalating physiological stress, and hindering the growth of relationships because the underlying negative emotions continue and grow. Others live in a state of constant anxiety fueled by their fears of losing control. They ruminate, which prolongs rather than regulates negative feeling states. Avoidance by others, who find the constant anxiety aversive, further alienates them from possible social interactions. If we understand all these behaviors as failures of regulation, rather than purposeful actions, we are on a better path for helping facilitate change.

Common wisdom suggests that talking about emotional stresses helps us cope and regulate. But what if we have difficulty with this kind of defined expression or have no one to listen? Research tells us that verbalizing itself is insufficient to support emotional regulation. There must be a willing partner who listens, supports, and reciprocates emotionally. As children mature to adolescence and adulthood, parents become less important in that role and peers and emotional partners gain preeminence. For teens and adults who have no important peer relationships, the support for emotional regulation is not there. The very skills which create these helpful relationships are often wanting in individuals with ASDs. Not only is feeling friendless and unsupported immensely painful, but the long term effects of social isolation have detrimental effects on the development of emotional regulation abilities. Families and teachers need to redouble their efforts to help children find meaningful social relationships, because of the consequences that growing up without such relationships can have on biological, psychological, and social maturation.

Emotional regulation is a critical part of all developmental processes, yet it has typically been given less attention than specific social skill development for this population. Because individuals with ASDs may have biological differences that affect emotional regulation development and have limited social opportunities that would give them the necessary experiences to develop emotional regulation, they are at tremendous risk for developing a pathological regulation system that may forever limit their inclusion and quality of life. To address this complex issue, it is necessary to consider how to intervene, particularly at critical periods of brain development. With this in mind, the following suggestions are made.

Specific training in the subskills of emotional regulation including

1. Physiological- controlled breathing, muscle relaxation, identification of physiologic states, and healthy habits in sleeping and eating
2. Practicing recognition of facial expression, emotional and social cues, and one's own emotional state
3. Practicing predicting one's own and others' behavior
4. Identifying emotional and sensory overwhelm and designing new schemata for behavior utilizing social stories and visual supports
5. Practicing self talk based on modifying negative schemata, such as in Social Stories

Efforts that support other important aspects of development

1. Creatively developing social partners for children and adolescents through mentorships, common interests, and support networks, particularly at critical periods of development
2. Development of positive rather than negative outlooks to bolster energy for emotional regulation
3. Cognitive therapy to help individuals identify dysfunctional negative feelings and practice more positive framing of emotional states
4. Minimization of negative environmental elements through anti-bullying programs and other such large scale social actions
5. Creative use of life coaching, mentorship, and other social supports for adults
6. Utilization of programs that address specific aspects of emotional regulation such as Mind Reading, SCERTS, and RDI. Mind Reading, the Interactive Guide to Emotions, is available on CD-ROM for use, and is under current study by Simon Baron-Cohen at the Autism Research Centre at University of Cambridge. RDI (Relationship Development Intervention) is readily available in book or video format, and the first preliminary research article will appear shortly in the Journal of Autism and Developmental Disabilities. SCERTS (Social Communication, Emotional Regulation and Transactional Support) is based on a multidisciplinary research-based model. The program manual will be available in September 2005. Various research reports are available which assess components of the model, but no empirical validation on the overall program is yet published.

References of Interest

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