



Universiteit  
Leiden  
The Netherlands

## **Emotion regulation in children with autism spectrum disorder : the link with social functioning and psychopathology**

Pouw, L.

### **Citation**

Pouw, L. (2014, January 14). *Emotion regulation in children with autism spectrum disorder : the link with social functioning and psychopathology*. Retrieved from <https://hdl.handle.net/1887/22989>

Version: Corrected Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/22989>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden

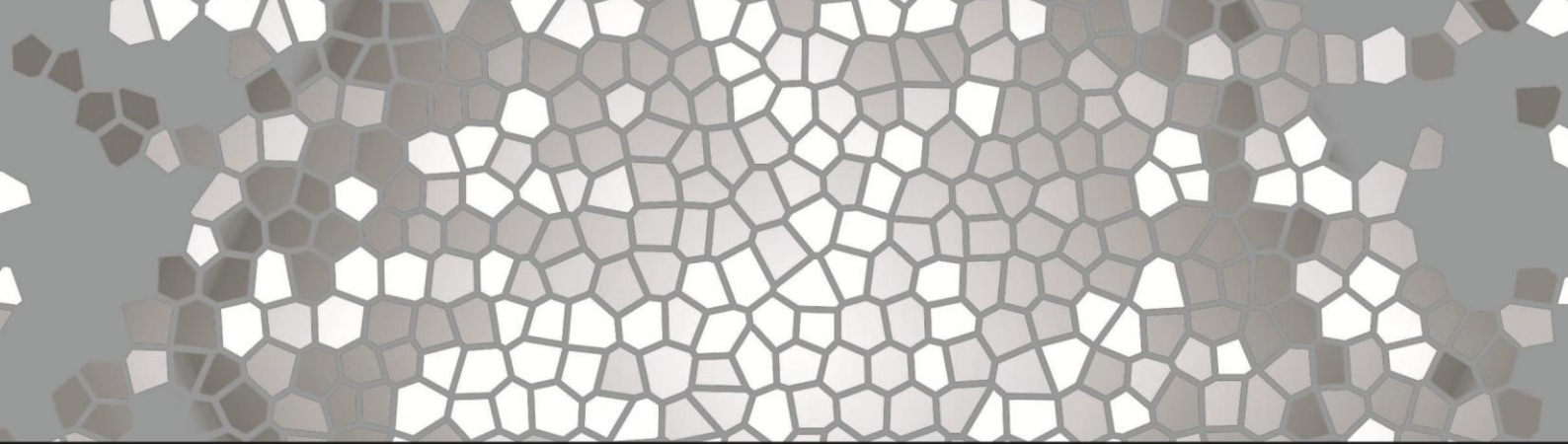


The handle <http://hdl.handle.net/1887/22989> holds various files of this Leiden University dissertation

**Author:** Pouw, Lucinda

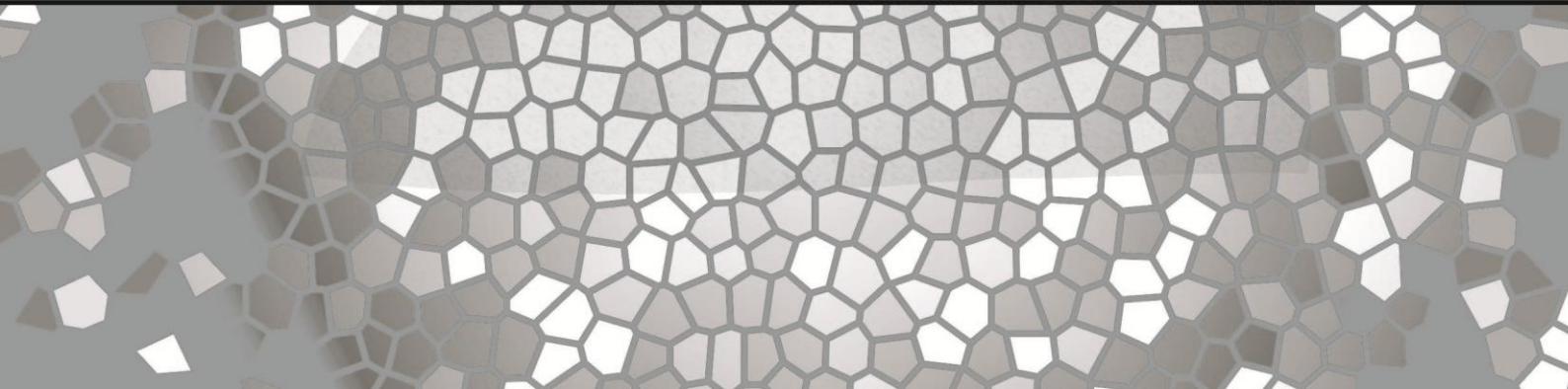
**Title:** Emotion regulation in children with Autism Spectrum Disorder : the link with social functioning and psychopathology

**Issue Date:** 2014-01-14



## **Chapter 1**

### General Introduction





**“I feel too much. That's what's going on.' 'Do you think one can feel too much? Or just feel in the wrong ways?' 'My insides don't match up with my outsides.' 'Do anyone's insides and outsides match up?' 'I don't know. I'm only me.' 'Maybe that's what a person's personality is: the difference between the inside and outside.' 'But it's worse for me.' 'I wonder if everyone thinks it's worse for him.' 'Probably. But it really is worse for me.’”**

Jonathan Safran Foer, *Extremely Loud and Incredibly Close*

Autism spectrum disorders (ASD) are lifelong, neurobiological developmental disorders that are characterized by impairments in social interaction, communication, and by restricted and stereotypical behaviors. In this thesis, the term ASD will be used to refer to autistic disorder, Asperger syndrome, and Pervasive Developmental Disorder not Otherwise Specified (PDD-NOS). Prevalence estimates of ASD have been considered to be around 1% (Baird et al., 2006), but are rapidly increasing (Matson & Kozlowski, 2011). This increase in prevalence of ASD has been attributed to broader ASD diagnostic criteria, lower age at diagnosis, greater public awareness, and environmental components (e.g., toxic chemicals and gene mutations) (Fombonne, 2009; Matson & Kozlowski, 2011). In order to create a homogenous group this thesis is focused on a sample of high functioning children with ASD (HFASD). This should confine our insights to the consequences of this disorder on children's functioning without other confounding variables such as intelligence impacting on this relation.

Although not officially classified, emotional impairments are part of the characteristics of ASD (Begeer et al., 2008), which are presented in difficulties with coping with changes and new situations, and participating in social activities (Gomot & Wicker, 2012; Orsmond, Krauss, & Seltzer, 2004). More and more research shows that impaired emotion regulation is often the underlying cause for these difficulties (Laurent & Rubin, 2004). Emotion regulation refers to the processes that influence when we have certain emotions, how we experience emotions, and how we express these (Gross & Thompson, 2007).

In typical development (TD), emotion regulation is strongly linked to social functioning as well as to psychopathology (Cicchetti, Ackerman, & Izard, 1995; Gross, 2002). Although research indicates that children and adolescents with ASD experience difficulties in regulating their emotions (Laurent & Rubin, 2004), studies about the impact of impaired emotion regulation on social functioning and psychopathology in children with ASD are still scarce (Mazefski, Pelphrey, & Dahl, 2012). If we only look at group differences in emotion regulation, the common approach is to try to help children catch up with their TD peers. Yet, it could also be that these differences are adaptive for children with ASD. Only when we look at the whole picture, i.e., examine how their capacity for emotion regulation affects their daily functioning, can we begin to understand what we should or should not try to remediate in these children. **Therefore, in this thesis we examine how different aspects of emotion regulation are linked to social functioning and psychopathology in children and adolescents with ASD as compared to their Typically Developing (TD) peers.**

### Emotions

This thesis is embedded in a theoretical framework which is based on the notion that emotions have a communicative and a functional value. The experience of an emotion signals to the individual that (1) a concern is at stake, and (2) a reaction is needed (action readiness). A concern could be personal (e.g., getting a bad grade), or relational (e.g., having an argument a significant other). In the situation in which a child or adolescent has an argument about who's turn it is on the computer, feelings of anger could arise. The emotion anger is functional such that it enables you to communicate your boundaries and attain your goals. A simplified model of the process occurring within an emotion is provided by Gross and Thompson (2007) and is illustrated by Figure 1.

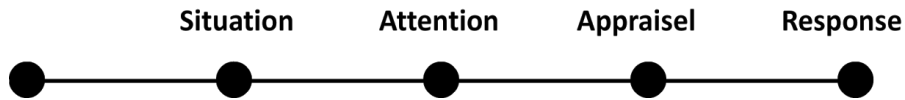


Figure 1. Emotion Process

An emotion always starts with a psychologically relevant *situation*. For example, in the middle of the night you are lying in bed and you hear the front door opening. Immediately, your *attention* is drawn to the situation. Or in other words, the emotion forces itself to your awareness (Frijda, 1986). As a consequence, bodily systems activate, such as changes in blood pressure and heart rate. Emotions are functional in a way that it makes us feel like doing something, the so-called *action tendency*. In case of fear, you tend to fight or flight. Additionally, the situation which is attended to (sound of opening door), gives rise to a cognitive evaluation or *appraisal* of the eliciting event; you may want to run to the door to see what is happening, or you may want to stay in bed and hide under the blankets. The product of this appraisal is the actual *response*, such as running to the door or hiding under the blankets. In turn, this response changes the situation and the process starts all over again. For example, you run to the door and realize that you forgot to lock the door and the wind blew it open. As a consequence you may feel relieved.

Situations in which you feel there is real danger or threat, automatic action patterns are essential for survival (e.g., running to the door to attack an intruder). However, these primary action tendencies are not always accepted and needed in more complex social situations. For example, in a meeting at work, you are annoyed by a colleague who is criticizing your work. Your first tendency is to make a comment about it to express your discontent. However, in order to attend to personal goals as well as social goals (such as maintaining a pleasant atmosphere during the meeting), a more socially acceptable and regulated form of the emotional reaction is needed. The so-called cognitive control system accounts for this reappraisal of the emotion, and enables people to adaptively respond to an emotionally arousing situation (Gross & Thompson, 2007). Thus, in order to attend to the social demands of the environment and maintain socially engaged, emotions need to be regulated.

Primary reactions to emotions are more prominently expressed by young children, in comparison to adults. For example, when a child is faced with a strange looking object, the child might feel afraid. As a consequence the child might start to cry, run away, or even attack the object. As children get older, they learn how to inhibit these impulsive reactions and their emotion expressions get more sophisticated and adapted to the social environment. Parents, caregivers and teachers play an important role by teaching children certain emotion regulation strategies. For example, a parent might teach their child how to ask the teacher for help, when a peer takes their toy. Or, the teacher might teach a child to count till 10 when the child is very angry.

Children and adolescents with ASD are faced with impairments in social communication and differences in neurophysiology, which means that social interactions might be unpredictable and they might be oversensitive to change. These impairments may prevent children and adolescents with ASD from learning emotion regulation strategies. For example, a hug from a parent might not be

recognized as comforting behavior. Oversensitivity for sound may prevent a child from participating in new environments, such as a playground. As a consequence of these impairments, children with ASD might withdraw themselves from social situations or develop inappropriate self-regulatory behaviors (e.g., lashing out) (Laurent & Rubin). In this thesis, we examine how emotion regulation is linked to social functioning and psychopathology in children and adolescents with ASD.

### *Emotion regulation*

It is important to note that in this thesis we take a broad perspective on 'emotion regulation' in children with ASD by examining (i) an important prerequisite for emotion regulation, namely emotion awareness, (ii) coping strategies, and (iii) the understanding of others' emotions or empathy. To consider emotion regulation in terms of these three aspects stems from the idea that a successful exchange of emotional information can only be established when children are aware of their own emotions, but also understand and react to their own and others' emotions appropriately (Halberstadt, Denham, & Dunsmore, 2001).

i) Emotion awareness refers to the ability to differentiate between various emotions, to determine antecedents and possible consequences of emotions, to verbally share emotions, and to identify the physiological changes that accompany emotions. Lambie and Marcel (2002) consider emotion awareness to be a precondition for adaptive emotion regulation. In order to effectively regulate or cope with one's own emotions, it is necessary to have a certain insight into one's own emotions. There are several aspects of the emotion process of which one could be aware (Lambie & Marcel, 2002). First, there are the bodily changes which arise with the emotion, such as heart rate, breathing change, and tense muscles (Scherer & Wallbot, 1994). Secondly, there are the conscious thoughts, such as whether or not the emotion causing event is regarded as beyond one's control. Third, there are the action urges, such as wanting to move or wanting to protect (Lambie & Marcel, 2002). The emotion experience consists of all these three aspects. By understanding and identifying one's own emotion experience, one becomes able to control primary emotional reactions. For example, when a child recognizes an experienced emotion as anger, he/she knows that counting to 10 is a way to reduce the anger. Children learn to recognize their emotions by self-monitoring, observing others and the information provided by the community. For example, parents and caregivers teach their children when they experience sadness ("You're crying, don't be sad"). In TD children and adolescents, emotion awareness is associated with mental well-being and social functioning, in terms of decreased levels of internalizing symptoms and somatic complaints, and higher levels of friendship quality (Kouwenberg, Rieffe, & Banerjee, 2012; Rieffe & De Rooij, 2012; Rieffe et al., 2007b).

The tendency to neglect emotion expressions of others might prevent children with ASD to learn from their environment in recognizing their own emotions (Begeer, et al., 2008; Begeer, Rieffe, Terwogt, & Stockmann, 2006; Laurent & Rubin, 2004). Additionally, because these children express their own emotions to a lesser extent compared to their TD peers, they might receive less feedback from their environment (Laurent & Rubin, 2004). These factors make it difficult for children with ASD to learn from their environment in linking their own internal signals to a certain emotion. To illustrate, children with ASD appear to have difficulties with describing and identifying their emotions (Hill, Berthoz, & Frith, 2004; Rieffe, Meerum Terwogt, & Kotronopoulou, 2007a). For example, in a study by Rieffe, Meerum Terwogt, and Kotronopoulou (2007a) children with ASD were presented with a structured interview about their own emotion experiences. From this study it is shown that children with



ASD, besides having an impaired ability in differentiating between complex emotions, also show an impaired in understanding of causes of their own emotions. More precisely, although children with ASD were able to differentiate between the emotions happiness, sadness, anger, and fear, they had difficulties with respect to the awareness of more complex emotions, such as jealousy, pride or shame. Next to establishing the level of emotion awareness in children with ASD, we examine how emotion awareness is linked to the quality of peer relationships and internalizing symptoms.

ii) The second aspect of emotion regulation which we examine in this thesis is coping, which refers to regulating the emotional impact of a stressful event (Lazarus & Folkman, 1984). As described earlier, primary emotional reactions are not always accepted by the social environment. In order to modify these primary impulses, different (cognitive) coping strategies could be applied. For example, when a child is faced with a problem that accompanies negative emotions, it is more beneficial to stop and think of a possible solution, instead of venting anger through externalization (e.g., screaming or hitting doors). From a very young age, children are taught by their parents and caregivers how to modify these initial emotional impulses, and therefore meet the demands from society, without giving up their personal goals.

Children with ASD show different emotional reactions than those that would be expected in certain situations (e.g., laughing when a peer is crying), and they tend to overreact to arousing or threatening events with sometimes social withdrawal as a consequence (Loveland, 2005). During parent meetings for our research project, parents of children with ASD often told about instances where their children have out-of-control reactions and tantrums. Children with ASD experience difficulties in interpreting, recognizing and communicating emotions which prevents them from learning cognitive strategies to deal with their emotions. If a parent of a child with ASD does not know when their child is angry or scared, the parent is unable to support their child in regulating these emotions (e.g., “You are angry, count till ten and you will feel better”.)

In this thesis we examine three kinds of coping styles, including approach coping, avoidant coping, and maladaptive coping in children with ASD. Approach coping styles include strategies in which the emotion evoking problem is approached, such as seeking social support, or trying to find a solution for the problem. Avoidant coping styles include strategies in which the problem is avoided, such as seeking distraction, or trivializing the problem. Maladaptive coping strategies include internalizing behaviors (e.g., worrying and rumination), and externalizing behavior (e.g., punching and screaming). In TD development, coping styles are strongly associated with psychological functioning. For example, approach coping styles are associated with less symptoms of depression (Wright, et al., 2010).

Research shows that children with ASD tend to use less approach coping styles than TD children (Rieffe et al., 2011). However, relatively few studies examined effects of different coping styles on psychological functioning. For example, whereas it is clear that maladaptive coping styles (e.g., rumination, acting out) are related to more internalizing symptoms in children with ASD and TD children (Rieffe, et al., 2011), it is still unclear what the effects of avoidant coping styles for psychological functioning are for children with ASD. Examining the effects of avoidant coping styles in children with ASD is especially important, because these children often make use of avoidance, or social withdrawal, when facing an emotion evoking situation (Loveland, 2005). As coping styles are indicative of psychological functioning (Rieffe, et al., 2011; Wright et al., 2010), in this thesis we examine coping styles in children with ASD and how these are related to symptoms of depression.

iii) The third aspect of emotion regulation which we examine in this thesis is empathy. Empathy refers to the ability to accurately perceive and understand another person's emotions and to react to these emotions appropriately (Rieffe, Ketelaar, & Wiefferink, 2010). Empathy is an important feature of human interpersonal behavior. Besides sharing and understanding other people's feelings and intentions, it also motivates to help others and to prevent people from hurting each other (Baron-Cohen & Wheelwright, 2004). Different layers of empathy can be distinguished (Leiberg & Anders, 2006). First, there is emotional contagion or affective empathy. While observing someone having a certain emotion, the same affective state is triggered in the observer.

Although children with ASD have several problems with the detection and apprehension of others' emotions, they are not insensitive to the distress of other people. For example, research showed that children with ASD get as emotionally (if not more) aroused in response to distress cues in pictures of faces, as TD children (Blair, 1999). This over-arousal could be caused by their limited ability to differentiate between one's own and other's emotions. This could lead to an inefficient empathic reaction to the emotions of others, because their own emotions instead of the others' are the main object of their attention. In recent research emotional contagion has been linked to mirror neuron activity in the parietal/frontal part of the brain (Cattaneo & Rizzolatti, 2009). These mirror neurons activate while performing a goal-directed action, but also when observing someone else perform an action. Studies on the activity of the mirror neuron system (MNS) in individuals with ASD show mixed results, with some studies showing that mirror neurons are inactive in people with ASD (e.g., Dapretto et al., 2006), and more recent research showing that the (MNS) is active (Fan et al., 2010; Press, Richardson, & Bird, 2010). Differences between results of these studies could be explained by the fact that children with ASD are less attentive to social stimuli by nature, rather than inactive mirror neurons (Press, 2010). The results from the study by Fan and colleagues (2010) and Press and colleagues (2010), combined with the results from Blair (1999) showing that children with ASD are not impaired in affective empathy point to the idea that empathic impairments in children with ASD have to stem from the other domain, namely cognitive empathy.

Cognitive empathy, or perspective taking is a higher-order level of empathy. In order to react empathically to another person's emotion, one should be able to understand the other's emotion and its antecedents. The cognitive ability to place oneself in someone else's mental state is also referred to as Theory of Mind (ToM). Theory of mind is the capacity to understand or predict others' behaviors based on the subjective desires and/or beliefs of that other person (Gordon, 1992). For an adaptive empathic response to occur, the other-oriented and self-oriented focus should be balanced (Eisenberg et al., 1996a). In other words, the observer should recognize that his/her own arousal is a consequence of the other's emotion and not one's own emotion, which requires a certain level of cognitive empathy. Personal or empathic distress occurs when the observer is unable to understand or react to the other's emotion. As a consequence, the observer is too caught up in their own emotions and is unable to tune into the other's emotional state.

In TD children, personal distress can be observed in very young children, when they lack the cognitive abilities to distinguish the other's emotions from their own emotions. However, personal distress decreases naturally with age when children's skills for cognitive emotion regulation develop (Rieffe et al., 2010). Eventually, empathy is supposed to induce prosocial behaviors, such as helping, sharing, comforting, in an attempt to alleviate the other person's distress. In TD development,

empathy is strongly related to social functioning and psychopathology (Blair, 2010; Eisenberg et al., 1996b).

It is well known that people with ASD show deficits in cognitive empathy and ToM development (Baron-Cohen, Leslie, & Frith, 1985; Dziobek et al., 2008; Jones et al., 2010; Rogers et al., 2007). Children with ASD appear to be less able to recognize mental states of others, and to understand causes of others' emotions (Dziobek, et al., 2008; Jones, et al., 2010). These ToM deficits also underlie their restricted capacity to differentiate between one's own and others' emotions. Loveland (2005) argues that because of impaired cognitive empathy, these children are unable to use emotional information of the other person in order to adjust and regulate their own behavior. Furthermore, children with ASD are less aware of the consequences that their own behavior has on other people, which makes it even more difficult to 'fit in' with the social world (Loveland, 2005). It has therefore been argued that the imbalance between affective and cognitive empathy is responsible for decreased empathic or prosocial behavior in children with ASD (Smith, 2009). Although the consequences of impaired cognitive empathy are plausible, relatively few studies have examined this. In this thesis, we examine to what extent this imbalanced development of empathy in children with ASD is linked to several aspects of social functioning and psychopathology.

#### *Research themes and thesis structure*

Research concerning the link between impaired emotion regulation and social functioning and psychopathology is emerging (e.g., Laurent & Rubin, 2004). Increasing our knowledge about this link can potentially greatly impact the way that children with ASD are regarded, and how parents, professionals, and teachers interact with these children. In **chapter 2** we examine how different aspects of emotion processing are related to three indices of anxiety. Anger and shame experiences during social situations are taken into account in order to examine how feelings of anxiety in children with ASD arise. In **chapter 3** we examine coping styles, and how these are related to depression. Moreover, we examine whether certain aspects of social functioning independently contribute to symptoms of depression in children with ASD, compared to TD children. In **chapter 4** we examine empathy in children with ASD more thoroughly, and how different aspects of empathy are related to aggressive behavior. Our concern in this chapter is to examine whether aggressive behavior in children with ASD could be interpreted the same way as in TD children. Moreover, emotion regulation in the form of anger dysregulation is taken into account in order to gain more knowledge about the motives for aggressive behavior in children with ASD. In **chapter 5** we examine victimization and bullying in children with ASD, and how emotion dysregulation is related to these social aspects, as compared to TD children. In **chapter 6** we are concerned with the examination of the quality of peer friendships and how friendship quality is related to emotion awareness and empathy. Examining these associations enables us to say something about the emotional value of peer relationships in children/adolescents with ASD, compared to TD children. Finally, in **chapter 7** the impact and possible implications of the outcomes of the studies included in this thesis are discussed.