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

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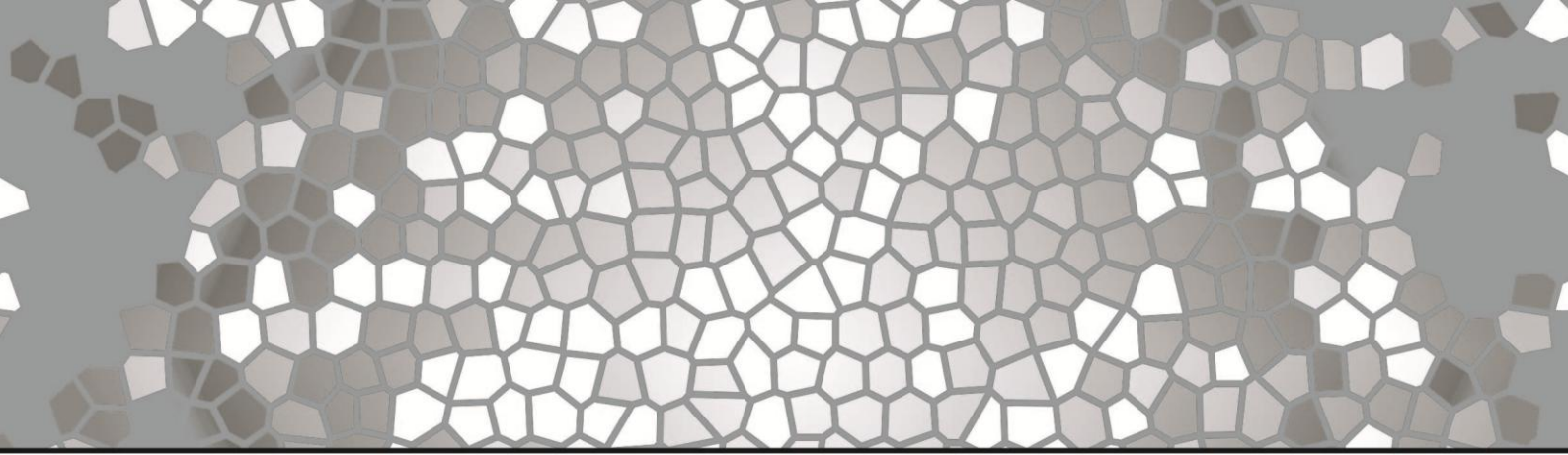


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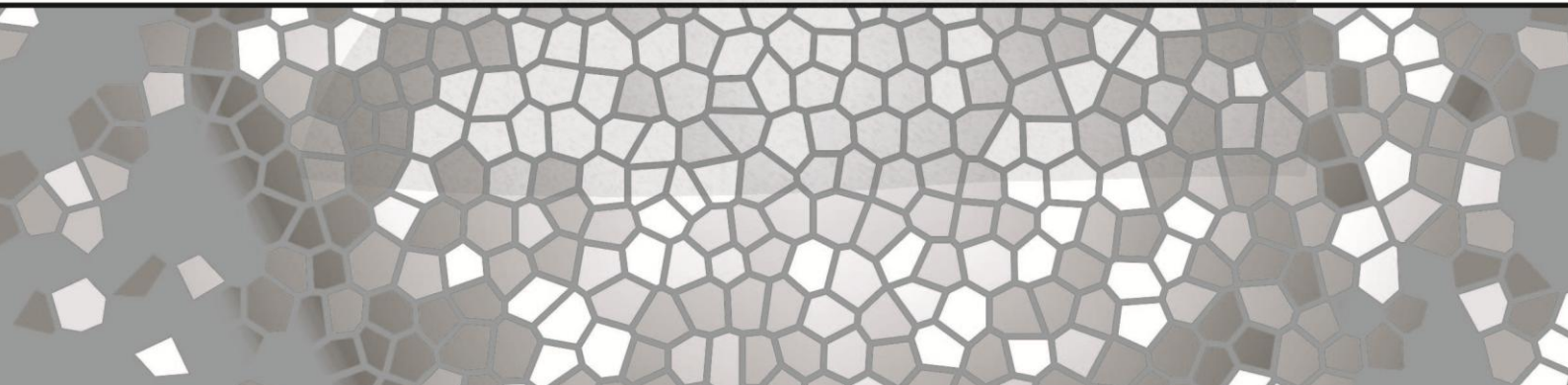
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Chapter 7

General Discussion



The goal of this thesis was to 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. In this thesis three aspects of emotion regulation were included in order to gain a complete picture of how emotion regulation is associated with social functioning and psychopathology in children with ASD; i) Emotion awareness; ii) Coping strategies; iii) Empathy. In this final chapter, the findings of the studies are summarized and reflected upon in light of limitations of the thesis, clinical implications, and directions for future research.

Differences between children with ASD and TD children

Every chapter's research question began with examining differences between children with ASD and TD children on the absolute level of the studied variables. With respect to some aspects of emotion regulation children with ASD did not score significantly different from TD children. First, children with ASD reported the same levels of emotion awareness as TD children (chapter 6), similar to previous findings (Rieffe, et al., 2011). Second, children with ASD reported to use three coping styles (approach, avoidant, and maladaptive) as often as their TD peers (chapter 3). Third, children with ASD reported to be as affected by others' emotions as TD children (chapter 4), confirming previous studies (Dziobek, et al., 2008; Jones, et al., 2010). These findings underline the idea that children with ASD are not impaired in affective empathy (Smith, 2009). However, children with ASD did score lower than their TD peers on indices for cognitive empathy, namely empathic understanding, theory of mind (ToM), and prosocial behavior (chapter 4 and 6), confirming previous studies (Baron-Cohen & Wheelwright, 2004; Jones, et al., 2010).

With respect to social functioning, children with ASD significantly differed from their TD peers on almost every aspect of social functioning that was measured in this thesis. Children with ASD reported to have poorer friendship quality and to be victimized more often than their TD peers (chapter 3, 5, and 6). Additionally, children with ASD reported to experience a lower level of social emotions, such as shame and guilt (chapter 5). These results were as expected and confirm previous studies suggesting that these children experience social deficits which in turn influence peer relationships (Bellini, 2004; Frith, 1989; Locke, et al., 2010).

Interestingly, by examining differences between the two groups on the measures for psychopathology, no differences emerged on externalizing behaviors. Children with ASD did not score themselves higher on anger, reactive and proactive aggression, and bullying compared to TD children (chapter 4 and 5), although their parents did score them higher on externalizing behaviors. With respect to internalizing behaviors, children with ASD reported higher levels of depression and specific anxiety (except fear of failure and criticism) than their TD peers, but significantly similar levels of sense coherence.

However, the aim of this thesis was to go beyond examining absolute differences between the two groups, by examining differences in the associations between these variables. The outcomes will be discussed in more detail in the next section.

The link between emotion regulation and social functioning

Some resemblances in the relation between emotion regulation and social functioning emerged between children with ASD and TD children. For example, **chapter 6** showed that higher levels of emotion awareness were related to more positive and less negative friendship features in both groups. Apparently, the ability to differentiate and communicate the own emotions is as important for the quality of friendships in children with ASD, as it is in TD children (Kouwenberg, et al., 2012). Besides differentiating the own emotions, understanding others' emotions also appeared to be associated with higher quality friendships in both groups. These findings show that friendships in children with ASD do have a certain emotional value, in a sense that sharing emotions and reacting to each other's emotions define the quality of friendships. Although children with ASD seem to have a strong wish for friendship, they lack the capacity for creating qualitative relationships with their peers. Chapter 6 showed that this is mainly due to the fact that they are less able to take the other's perspective. Impaired perspective taking skills could lead to inadequate judgments of other's intentions. For example, putting an arm around the shoulder could be considered as intimidating, especially in the case of sensory sensitivities (Laurent & Rubin, 2004). Furthermore, role playing or jokes, which are common friendship activities, could be a problem when the child does not understand the other's perspective. Klin and Volkmar (2003) argue that children with ASD are less able to communicate their emotions in a socially adaptive way, which hampers continuation of peer relationships.

In both groups, feelings of anger were positively related to bully behavior (**chapter 5**). However, from this finding the question arises whether the motive for anger is the same in both groups. From previous research it seems that while TD children make a strategic use of anger in order to gain dominance, in children with ASD anger is more likely to be caused by frustration and misunderstandings in social situations (Begeer et al., 2011; Olthof et al., 2011). Important to note is that although observed behavior of children with ASD may resemble that of their TD peers, the motives for that behavior could differ between the two groups. If we look at the differences in the relation between emotion regulation and social functioning between the two groups, these motives become clearer.

To illustrate, contagion and prosocial behavior were associated with more negative friendship interactions, but only in the ASD group (**chapter 6**). From this finding it appears that to be affected by others' emotions could be confusing for children with ASD, and could even be associated with negative interactions, such as arguing or anger (Smith, 2009). In addition, the positive relationship between prosocial behavior and negative friendship interactions shows that for children with ASD trying to help their friend in distress, but possibly not succeeding in that, is related to negative interactions with their friends, such as arguing and conflicts. Smith 2009 offers an insight into this mechanism, arguing that children with ASD are affected by other's emotions, but lack the cognitive ability to transfer this affect into empathic behavior. The following situation is an example of this mechanism:

Peter and William are playing with cars. Once the car of William is broken, William starts to cry. Peter sees William crying and experiences empathic arousal. Because Peter knows that William is sad because his car is broken, Peter hands over his own car to William. William is relieved and as a consequence, Peter is also.

Now imagine another situation:

Peter sees William crying and experiences empathic arousal. However, Peter does not understand why William is crying. The fact that William is crying is a totally unpredictable situation for Peter. Moreover, Peter does not know how to react and as is not able to down-regulate his arousal.

These situations illustrate that for a child or adolescent with ASD to be confronted with the other's emotion could be very stressful. Instead of empathic behavior, alternative self-regulating strategies could exist of looking away, lashing out of stereotypic behavior (Laurent & Rubin, 2004). If we combine these findings with the finding that anger is positively related to bullying behavior in the ASD group, we can conclude that frustration caused by being confronted with the other's distress (in a conflict with best friend, or peer), is related to negative acts towards the other, whether it is in the form of bullying or anger towards a friend. These findings provide an important answer to why social difficulties in children with ASD exist. More importantly, it shows that children with ASD are motivated to form meaningful relationships with their peers, but become frustrated and act out when they do not succeed in that.

The link between emotion regulation and psychopathology

When examining the relationship between emotion regulation and psychopathology, we found some important similarities between children with ASD and TD children in the relation between emotion regulation and internalizing behavior. For example, **chapter 2** showed that an external focus on emotions, or linking an emotion to an emotion-evoking event, was associated with less specific anxiety and more sense of coherence in both groups. Although we already knew this accounts for TD children (Rieffe & De Rooij, 2012), this finding provides information about why such a high rate of anxiety in children with ASD emerges. Apparently, anxiety in children with ASD is related to a confusing and unpredictable idea of the social world (Bellini, 2004, 2006). When a child is unable to see a certain emotion is related to a certain event (whether it is the own or the other's emotion), emotions and the environment may be unpredictable and confusing. A qualitative study from Trembath and colleagues (2012) shows that unexpected changes in the environment create a lot of fear in children with ASD. Rieffe et al. (2011) found that children with ASD scored higher on bodily awareness compared to TD children, which means that children with ASD are more aware of the bodily changes related to a certain emotion. Possibly, due to this relatively high bodily awareness children with ASD are focused on themselves, instead of the other and the emotion-evoking situation. Due to this self-oriented focus, they are less able to relate an emotion to its cause. Relating an emotion to an emotion-evoking situation is important for choosing the right emotion regulating strategy (e.g., The girl's screaming makes me scared, so I will ask the girl to stop screaming). Eventually, the self-oriented focus in children with ASD will account for a diminished ability to apply metacognitive strategies for regulating emotions (Laurent & Rubin, 2004).

Another similarity was found between the two groups for the relationship between emotion regulation and depression (**chapter 3**). Trying to find a solution or seeking social support when facing a problem was associated with lower levels of depression in both groups. Despite the fact that these coping strategies are cognitive strategies, rather than behavioral, it shows that for children with ASD having a *sense* that they can control or handle a stressful situation, is an important protector against internalizing symptoms. Furthermore, maladaptive coping, such as worrying or acting

out, was related to higher levels of depression in both groups. This finding confirms the idea that acting out and worrying are indicators for depressive symptoms, both for TD children as for children with ASD (Magnuson & Constantino, 2011; Zeman, et al., 2002). If we sum up these similarities between the two groups regarding the relation between emotion regulation and internalizing behavior (**chapter 2 and 3**), we can conclude that it is important for both groups to have the idea that they control and deal with stressful situations. Understanding where a certain emotion is coming from (external focus) and knowing how to deal with them (cognitive approach coping) provides important tools for children in order to protect them from internalizing problems.

With respect to the relation between emotion regulation and externalizing behavior, it is shown in both groups that overarousal in the form of anger and personal distress was positively related to aggressive behavior in both groups (**chapter 4**), confirming previous studies (Hubbard, et al., 2002; Marsee & Frick, 2007). This confirms the idea that emotion dysregulation is an important indicator for aggressive behavior in children (see also **chapter 5**). Interestingly, children with ASD did not score higher on reactive and proactive aggression compared to TD children. It is important to note that all the items from the child questionnaires examining externalizing behavior were related to a certain event (e.g., “I hit another child, because I was bullied”). It could be that children with ASD do show more aggressive behaviors, but that they are less able to link this behavior to a certain event. Moreover, if a child with ASD acts aggressively when hearing a hard sound, the items from the used questionnaire will not capture this. The fact that parents of children with ASD did score their children higher on externalizing behavior, shows that they probably act more aggressively. Furthermore, the ability to take the other’s perspective was associated with less proactive aggression in both groups. Thus, next to poor emotion regulation, a diminished ability to take the other’s perspective into account is related to more aggressive behavior. These findings are in line with other studies showing that less cognitive empathy is related to more proactive aggression (Gini, Albiero, Benelli, & Altoe, 2007; Mayberry & Espelage, 2007; Rieffe & Camodeca). This means that when children are less aware of the cognitions or feelings of the other, they tend to be more aggressive. In sum, both an impaired ability to regulate feelings of anger and a diminished capability of taking the other’s perspective into account are related to more externalizing behaviors in children with and without ASD.

When examining differences in the link between emotion regulation and psychopathology between the two groups, an interesting pattern emerged for children with ASD as opposed to their TD peers. It appears that approaching or confronting a certain problem (i.e., the other’s or own distress), rather than avoiding it, is associated with higher levels of psychopathology in children with ASD. There are several findings in this thesis that underline this idea, which will be discussed in the next section.

First, when examining the relation between emotion regulation and internalizing problems, we can conclude that approaching a certain problem is not the only beneficial strategy for children with ASD. In fact, we found that besides approaching a problem (in this case a situation related to oneself), avoiding a problem could also be beneficial for children with ASD, as it is related to lower levels of depression (**chapter 3**). Regardless of the question whether it is beneficial on the long or the short term, it shows that avoiding a problematic situation by neglecting or trivializing it, could also be an effective strategy to decrease distress, especially in the case where the child does not expect to be able to successfully manage the situation.

Second, contagion, or to be affected by the other's emotional state, was positively associated with reactive aggression, but only in children with ASD (**chapter 4**). The same applied for (the attempt to) understanding others' emotions. From the fact that higher levels of both contagion and empathic understanding were related to more reactive aggression in children with ASD, it appears that any kind of confronting or approaching the other's distress is related to more distress in the child itself. A lack of cognitive understanding or ToM (which we also found) is indicated as a possible cause of this distress (Blair, 1999; Jones, et al., 2010). A prerequisite for adequately reacting to another's distress, is to have a balance between a self-oriented and an other-oriented focus. This means that for a child to be able to comfort another child in distress, the child has to be aware of the fact that the distress is caused by the emotional expression of that other child, rather than a distressing event related to the child her/himself (Rieffe, et al., 2010). Moreover, in order to comfort the other child effectively, the child has to understand how and why the other child is feeling that way. When confronted with the other's distress, but not knowing how to react to it, could logically turn into frustrations and therefore aggressive behavior for children with ASD. This idea is supported by the previously discussed finding that trying to understand the other's emotion is related to more negative friendship interactions. In conclusion, these findings indicate that in children with ASD psychopathology, in the form of internalizing and externalizing, is related to a diminished cognitive and affective ability to deal with distressing situations related to the self or to the other. It appears that children with ASD are motivated to engage in social interactions, but experience fewer successes in these interactions, compared to their TD peers. These failures and subsequent feelings of anger and frustration can be the onset of internalizing and externalizing behaviors, such as depression and aggression. In order to protect themselves from these problems, children with ASD tend to use avoiding strategies, which proves to be beneficial at least on the short term. The question remains whether these avoiding strategies may prevent children with ASD from learning from social situations and eventually isolate them from the social world.

The link between social functioning and psychopathology

This thesis also examined relations between some aspects of social functioning and psychopathology. Interestingly, children with ASD showed very different results regarding this link compared to their TD peers. Unlike in TD children, negative friendship interactions and victimization uniquely contributed to higher levels of depression in children with ASD. Furthermore, feelings of fear were positively related to victimization, only in children with ASD (**chapter 5 and 6**). Possibly, difficulties and failures in peer interactions increase loneliness, depression, and anxiety. On the other hand, internalizing problems in children with ASD may isolate them from their peers and therefore increase difficulties in peer interactions and become victimized. These findings illustrate the unique effect of social functioning on the emotional well-being of children with ASD. Possibly, failures in social development create a downward spiral in a sense that social failures lead to social avoidance, which lead to more negative affect, which lead to social failures again.

Chapter 2 showed that externalizing problems, namely dysregulated anger, are related to more social anxiety in children with ASD. Possibly, by expressing too much anger children with ASD experience difficulties in peer relationships. In turn, these difficulties or social failures may account for developing or increasing social anxiety. An alternative explanation could be that due to an impaired Theory of Mind in children with ASD, social situations are unpredictable and create arousal, which is difficult for these children to down regulate. Unregulated anxiety may turn into frustration and anger. Thus, anxiety and anger may be two sides of the same coin. In

conclusion, these findings show that social deficits play a unique role in the psychological development in children with ASD.

General Conclusion

In this thesis we examined 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. We divided the concept emotion regulation into three parts: i) Emotion awareness, ii) Coping , and iii) Empathy. With regard to absolute differences between the two groups, we saw that children with ASD mainly scored lower on social functioning and higher on internalizing problems, compared to their TD peers. Furthermore, we can conclude that all three aspects of emotion regulation are linked to social functioning and psychopathology in both groups, emphasizing the importance of emotion regulation for the emotional and social well-being of children.

Regarding children with ASD, although they are motivated to engage in peer interactions and friendships, it appeared that cognitive and affective impairments may prevent them from effectively deal with the own and other's emotions. During an emotion, children with ASD are too self-oriented and are unable to relate the emotion to the emotion-evoking situation which prevents them from applying an effective emotion regulation strategy. As a consequence, these children will continue to apply idiosyncratic and maladjusted behavior to regulate their emotions. In turn, these behaviors will lead to social failures and rejection, which may increase feelings of sadness, loneliness, and frustration. Although in both groups, overarousal and anger is related to externalizing behavior, only in the ASD group the confrontation with the other's emotion is already proved to be a distressing situation. In fact, not knowing how to react to the own and other's distress is frustrating for them and is associated with aggressive behavior. Avoiding strategies may prevent these children from social failures on the short-term, but may turn into more isolation and internalizing problems on the long-term.

This thesis also showed that observable behavior of children with ASD should be interpreted differently from that of TD children. For example, aggressive behavior in children with ASD mainly appeared to relate to frustration and the cognitive and affective impairment to deal with stressful situations, whereas TD children also appeared to be able to apply aggressive behavior in order to dominate or gain control. Children with ASD might feel misunderstood due to misinterpretations of their behavior. In turn, this may lead to more unpredictability in social situations.

Limitations and directions for further research

The current thesis has contributed to existing knowledge regarding the link between emotion regulation and social functioning and psychopathology. However, some limitations should be discussed. First, results from this thesis were mainly based on self-report questionnaires. Although only the children themselves are expected to have direct knowledge about their own thoughts and feelings, a combination of self-report, parent-report, observations, and physiological measures might give us more insight into how children with ASD experience the world around them, and how psychopathology arises. For example, future research should focus on the physiological effects in children with ASD of being confronted with the other's distress. If we can combine these findings with examining the cognitive ability of differentiating between the own and other's emotions, we can define what exactly makes experiencing others' emotions so stressful for these children.

Second, in order to draw conclusions about the causality and direction of the relation between emotion regulation, social functioning, and psychopathology, future

research should include longitudinal analyses. For example, do social deficits in children with ASD increase internalizing problems? Or are internalizing problems the cause of social isolation and failures? Most likely, social deficits and internalizing problems are reinforcing each other.

Third, girls with ASD are relatively understudied in this thesis, due to a small sample size. Future research should concentrate on this group more, especially because ASD symptoms seem to be manifested differently in girls, compared to boys. For example, girls with ASD appear to experience greater communication deficits and more internalizing problems, compared to boys with ASD (Hartley & Sikora, 2009).

Clinical implications

The findings of this thesis allow us to make some tentative recommendations for the treatment of children with ASD and their families. First, children with ASD appear to experience a great deal of distress when being confronted with other's emotions. Therapy efforts need to focus on creating awareness in parents and their children about the fact that other's distress, to some level, influences the own emotional state of the child. If parents are better able to understand the causes and consequences of others' emotions for their children, they could give their children more insight into their own emotions and could therefore make social situations more predictable and manageable for them. Ideally and if possible, children with ASD should be taught that they are able to decrease their own empathic distress by comforting the other. However, it may already be very helpful if parents are aware of cause and effects of their children's emotions.

Second, anger expression in children with ASD implies a tendency to guard one's limits and to confront the social world. However, this behavior might scare their peers off and even isolate them. In line with other research, suggesting that children with ASD are less sensitive for their social reputation (Izuma, Matsumoto, Camerer, & Adolphs, 2011; Scheeren et al., 2010), therapy should focus on teaching them how to present themselves to the social world. Children with ASD should be taught that their emotional expressions influence the emotional state of their peers and vice versa. Teaching these children how to administer self-regulation strategies may decrease the intensity of their emotional expressions, and therefore increase their social reputation. A recent study already showed promising results by applying this type of self-regulation therapies, on preschool children with ASD (Thompson & Johnston, 2013).

Third, as children with ASD tend to avoid stressful situations because they possibly do not expect they are able to manage them, therapy efforts should focus on improving their problem-solving skills. When children with ASD are able to trust upon their own coping skills, they might be less tended to avoid stressful situations. For example, they should be taught how to ask for social support in order to manage stressful situations. On the other hand, therapy should also focus on families and peers of children with ASD in order to make them aware of the fact that these children might need more time before they can adequately respond in certain stressful situations. It might help children with ASD to first distantiate themselves from the situation, in order to relieve some stress, before approaching the situation adaptively. Children with ASD will always show some emotional and social deficits to a certain level, and we as society should accommodate them as much as we can in order to make life easier for them.