



UNIVERSITY of OULU  
OULUN YLIOPISTO

KRALJ, SARA

COGNITIVE-EMOTIONAL INTERPLAY: IMPLICATIONS FOR CHILDREN'S  
DEVELOPMENT OF SELF-AWARE EMOTION REGULATION AS THE LAST  
DEVELOPMENTAL PHASE OF EMOTIONAL INTELLIGENCE

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Department of Educational Sciences and Teacher Education Intercultural Teacher Education		Author Kralj, Sara	
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Abstract <p>Cognitive and emotional developmental trajectories account for individual differences in children. Individual variations of emotional intelligence may be a result of various factors. For the purpose of this work children's development of emotional intelligence is examined through individual developmental aspect related to development of cognition and emotion. The ability to be aware of own emotions and emotions of others and being able to regulate own emotions facilitates the highest developmental levels of emotional intelligence. Therefore this work employs emotional intelligence and self-aware emotion regulation as concepts of interchangeable meaning.</p> <p>The developmental courses of emotion and cognition are inter-related to an extent at which it is unrealistic to categorize them into separate developmental processes. This thesis focuses on multilevel interplay between emotion and cognition in the course of their development. The theories by LeDoux and Levental are integrated to provide a comprehensive theory of interplay between emotion and cognition in children's development.</p> <p>While consensus exists about emotional and cognitive development exerting influence over enhancement of emotional intelligence, there is little evidence of how exactly the enhancement is enabled. The structural overview of the emotion-cognition interplay aims at filling the literature gap by recognizing processes which may account for the development of emotional intelligence in children.</p> <p>This thesis provides implications for the development of emotional intelligence by integrating the levels of emotional awareness model with model of emotional intelligence as an ability. Increasingly more complex mental representations of past events with emotional content enable advancement of emotional awareness. Therefore processing of emotional information shifts from implicit to explicit which enables employment of cognitive function when dealing with emotional information.</p> <p>As a result of acquired ability of reasoning about emotions child is not only aware of own emotions and emotions of others, but is also able to regulate own emotions according to specific social situations. Self-aware emotion regulation is thereof possible result of cognitive-emotional development and a facilitator for highest levels of emotional intelligence in children.</p>			
Keywords children, cognitive-emotional development, emotional intelligence, self-aware emotion regulation			

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## 1. INTRODUCTION

This work will focus on examination of emotional and cognitive development and the possible implications of their interplay. Since there is an abundance of research separating developmental streams of cognition and emotion, this thesis will focus on multilevel connections between them. Furthermore, theories separating these two developmental streams seem to overlook their complex interplay. Since these theories follow one developmental stream and recognize only limited connections with other developmental streams they are referred to as a linear theories Therefore theories of emotional or cognitive development serve more their own purpose rather than providing insight into actual developmental processes. For the purpose of integrating developmental streams of emotion and cognition, theories by LeDoux and Leventhal will be examined. Both theories recognize significant interplay between emotion and cognition, however in combination they provide more comprehensive theory of the interplay, as opposed to apart.

The examination of possible interactions between emotion and cognition in the child's development will then shift to the implications of these interactions, for the development of emotional intelligence (EI). It is important to note that there are various other influences contributing to the children's development of EI; such as social environment and temperament of each individual child. Notwithstanding other possible influences on the development of children's EI, the focal point of this work is the development of self-aware emotion regulation and the role of emotions and cognition in it. Self-aware emotion regulation is, for the purpose of this work, viewed as the last developmental phase of emotional intelligence. The choice to focus on self-aware emotion regulation instead of the entire concept of emotional intelligence derives from the fact that EI is a concept encompassing many abilities or traits. Since it is unrealistic to look at all the factors that might influence the development of EI - such as biological, socio-cultural and economic - the core of this thesis will be cognitive-emotional developmental currents. Through these currents children could acquire traits and abilities that may contribute to the enrichment of their EI. The research question is focused on examining **interplay of cognition and emotion in children's development of emotional intelligence or self-aware emotion regulation.**

A lot of research has been done previously in the field of psychology about the development of emotions in children; some prominent theorists in the field are Saarni, Harris and Olthof. Similarly, there is abundance of research related to cognitive development in children; such as work of Freud, Erikson, Vygotsky and Piaget. However, research has not been focusing enough on relating development of cognition and emotions to emotional intelligence. There is a general consensus that increasing cognitive functions result in higher emotional awareness and consequently emotional intelligence. However, there is little actual insight into how cognitive-emotional development influences emotional intelligence. Therefore this work focuses on examination of the process that leads to development of emotional intelligence. This work will focus on filling the gap and examine the processes that result in implications for development of emotional intelligence.

The thesis starts with examination of theoretical constructs: emotional intelligence, emotional development and cognitive development. Emotional intelligence is reviewed through the development of the construct itself, then defined and discussed in terms of measuring approaches. Furthermore, definitions of EI are examined into detail and overlapping trait of different definitions is identified.

Afterwards emotion is defined and emotional development is overviewed, with a focus on emotion understanding and self-regulation. Similarly, cognition is defined first and then cognitive development is discussed through principles of Piaget's cognitive development theory.

After examining basic constructs, the relations between them are established; firstly emotion and cognition are examined through multilevel interaction theory. The products of that interaction are then applied to examine development of emotional intelligence. Lastly, findings of the thesis are examined and discussed critically as to what are they conditioned with and what other influences may contribute to the findings.

## 2. EMOTIONAL INTELLIGENCE

This section focuses on examining the construct of emotional intelligence. Since research on EI is vast and scattered in different theoretical fields it is important to look into the development of the construct and identify how and why EI separated from other related constructs. After the overview of EI emergence an insight into measurement approaches to EI is provided to aid understanding of various EI definitions.

### 2.1. Construct emergence

The term intelligence is a broad concept encompassing various abilities, which are related to each other. However, ascribing specific characteristics to sub-intelligences is necessary for the purpose of establishing them as distinct forms of intelligence (Mayer & Geher, 1996).

Theorists of developmental processes of intelligence significantly agree with one's information processing ability, to a certain extent determining acquisition of knowledge and skills. Information processing encompasses all mental activity that indicates minimal self-involvement. Because this kind of mental activity is employed without involvement of emotional reasoning, it is commonly referred to as *cold information processing* (Mayer, Salovey & Caruso, 1999). On the other hand, mental activity that involves self-engagement and emotional processing of information is termed *hot information processing*.

In the three branch model of intelligences by Thorndlike (as cited in Mayer & Geher, 1996) classes of abstract abilities and mechanical abilities fall into *cold* processing category. Abstract abilities are thought-based activities, such as verbal and symbolic thinking. Furthermore, mechanical abilities are related to controlling one's own body and manipulating objects. These two groups of abilities differ significantly from the third ability class, which is social intelligence. As the first two classes predispose little emotional involvement and rely mostly on cognitively controlled actions, the social intelligence class is in the realm of emotional functioning and therefore implies *hot*

processing. The social intelligence class has been studied less than the other two classes, as it is both theoretically (Mayer & Salovey, 1993) and empirically difficult to make it distinguishable from others (Mayer & Geher, 1996).

Emotional intelligence emerged from social intelligence (Fer, 2004), though it is not really clear to what extent they are overlapping. The term EI was first used in the 1960s, incidentally in literary criticism and psychiatry (Mayer, Salovey & Caruso, 2004, p. 198). The first notion of Gardner's (1983) multiple intelligence has established two intelligences which could, to a certain extent, be identified as emotional intelligence: inter- and intrapersonal intelligences. EI has been considered as a distinct intelligence; however it is a member of a group of potential *hot information processing* intelligences (Mayer et al., 1999, p. 268). Even though all the intelligences in the group overlap, they are still distinct as to how they divide human abilities (Mayer et al., 1999). Therefore EI is a distinct ability; however it is also tightly correlated with others and therefore develops and expresses in the interplay with other intelligences.

Since EI is interconnected with other intelligence constructs it has been criticized to be a type of personality miscast as intelligence (Saarni, 1989). Another claim emphasizes that if EI was an intelligence, it could be included into the general intelligence (Fer, 2004). However, theories concerning EI and its influence on performance in different contexts have acknowledged a major benefit of possessing at a higher level of EI, as compared to less developed EI. In various fields, such as education and psychology, EI has shown relevance and applicability and should therefore be distinguished from the general intelligence, as well as the personality.

The construct of EI has been conceptualized as an ability on the one hand, and as a set of traits on the other hand; also referred to as ability EI and trait EI. Even though measurement approaches and conceptualizations differ between these two EI conceptualizations, they are both referred to as standard intelligences. However, standard intelligence entails fulfillment of certain criteria to be recognized as such. Mayer, Salovey and Caruso (1999) propose three criteria for intelligence: conceptual, correlational and



developmental. That is to say, measures of EI should be designed to give correct answers, as opposed to self-report answers. Furthermore, EI should demonstrate correlation to other intelligences and be developing with age (Mayer et al., 2004). According to the definition of Mayer, Salovey and Caruso (1999) ability EI is a standard intelligence and trait EI is not, as it does not meet at least one of the requirements for a standard intelligence.

Petrides (2011) claims that neither approach to EI can define it as a distinct intelligence and that attempts to do so are absurd. Rather, it is crucial to take consistent steps and follow both one model thoroughly when measuring and defining the constructs. In other words, merging components of the two models will give a construct that does not relate to either conceptualization of EI.

The distinguishing aspect between trait EI and ability EI relies vastly on the approaches to their measurement. That is why a brief overview of EI's measuring approaches is needed.

## **2.2. Measuring approaches**

An overview of the measuring approaches of EI is necessary to get a holistic picture of the complexity in the research field of EI. Measures used for trait EI and ability EI do not correlate, therefore a distinction between the models is necessary (Petrides, 2011).

The ability models measure intelligence by objective, performance-based scales (Zeidner, Matthews, Roberts, & MacCann, 2003), therefore measuring the maximum performance (Petrides, 2011). These tests are based on the correctness of the answers. While the ability model approaches employ tests that are producing objective answers, approaches to EI as a set of traits test self-understanding of emotions. These tests are in a format of self-report questionnaires (Petrides, 2011), which implies that they inquire about people's own beliefs about their emotional intelligence (Mayer et al., 1999).

Both measurement tools have been developed for adults. As the focus of this work is to examine the development of EI in children, neither ability EI nor EI measurement tools are

applicable. However, to understand the difference between the definitions of the two EI models, it is necessary to acknowledge how they approach the measurement of the constructs. A measuring tool that relates to EI and can be used for children is LEAS. Also known as Levels of Emotional Awareness Scale, it has been initially developed for adults, but afterward adapted for children (Bajgar, Ciarrochi, Lane & Deane, 2005). This model is measuring the difference in complexity of emotional awareness. More specifically, it measures children's "ability to monitor emotion states, as well as the structural complexity of that experience; such as somatic response, action response, discrete emotion or blended emotions" (Bajgar et al., p. 572).

Measuring a concept in versatile ways inevitably yields results that differ, no matter the conceptualization of EI (Petrides, 2011). The way EI is measured does not only distinguish it from other constructs, but also defines what it encompasses exactly. Building on the distinctions between the measuring approaches, an overview of EI definitions follows.

### **2.3. Defining the construct**

Research in the field of EI is not united in its definition; rather it is polarized between two conceptualization of the construct. A narrower definition establishes EI as a mental ability related to emotional functioning. On the other hand a broader definition of EI comprises both cognitive abilities and aspects of personality.

#### **2.3.1. Emotional intelligence as an ability**

Ability EI is conceived as an actual ability that comprises emotion-related cognitive abilities (Petrides, 2011, p. 657). In other words, it is an ability to reason about emotions (Mayer, Roberts & Barsade, 2008) and therefore intertwines elements of cognition and emotions. Salovey and Mayer have developed the initial model of EI through empirical studies, by assessing the ability to recognize different kind of stimuli and also by understanding emotions in stories (Mayer et al., 1999). Drawing on their research, they designed a four branch ability model wherein emotional intelligence is a set of abilities

rather than a chosen behavior. The four branch ability model consists of four broad sets of abilities. The first branch consists of perception, appraisal, and expression of emotion, as well as identifying emotions in oneself. For example, a child might identify a feeling of joy when he is being read to. The second branch is related to the emotion's facilitation of thinking, concerning assimilation of basic emotional experiences into mental life. In practice, that mean a child is employing the feeling of joy when listening to the story; perceiving events in the light of the joy just experienced. The third branch encompasses understanding and analyzing emotions, reasoning about emotions or employing emotional knowledge. It also includes recognizing nuances between emotions and development of emotion over time. Put differently, when analyzing a certain emotion, from a character in a book, a child is considering how that character is acting and also assessing the character's emotions based on his own joyful feeling. The fourth branch consists of the management and reflective regulation of emotions in self and others, to promote emotional and intellectual growth. In practice, that means the child is regulating his/her own feeling of joy when listening about the emotion state of a book character. These four set of abilities are arranged in a continuum, from lower skills to higher, from first to fourth branch (Mayer, 2001, Mayer & Salovey, 1993, 1995, 1997, 1999; Mayer et al. 2000, 2004; Salovey & Greval, 2005). However, the development of each branch does not happen in isolation from others, and also one branch's development does not have to be complete for the other branch to start developing. Rather, each of these areas is developing from childhood on and as skills grow in one area they also grow in the other (Mayer et al., 2008, p. 513).

### 2.3.2. Emotional intelligence as a set of traits

EI, as defined in the trait model, consists of traits that are beyond cognition only and related to the emotional function. Trait EI refers to "a constellation of emotion-related self-perceptions and dispositions (Petrides & Furnham, 2003, p. 40), which are situated in the lower level of personality" (Petrides, Pita, & Kokkinaki, 2007 in Petrides, 2011, p. 657); such as empathy, adaptability and self-control. Therefore trait EI is a construct of both cognitive abilities and aspects of personality and motivation (Mayer et al., 2008). Personality traits included in the trait EI model are enabling emotion regulation and

management in everyday life situations (Mayer et al., 1999). EI models developed by Goleman and Bar-On both conceptualize EI as a set of traits. Goleman's model (1995) contains five dimensions of EI: self-awareness, self-regulation, motivation, empathy and social skills. Each dimension breaks down further into three or more emotional competencies. Bar-On's model, also referred to as emotional-social intelligence model, is substantially overlapping with Goleman's model of EI. This construct includes "emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (Bar-On, 2006, p. 3).

### 2.3.3. Emotional awareness

Beyond the extent to which emotional intelligence falls into the sphere of personality, there is a strong claim that emotional intelligence influences individuals' endeavors in social situations. EI theorists advance the fact that there are differences in how people perceive and employ emotional information in dealing with their own and other's emotions (Petrides & Furnham, 2003). A comprehensive model that partially overlaps with EI is emotional competence. It is more contextual than other EI models as it recognizes social environment as a major contributor to emotional development. Further on, it acknowledges one's own involvement in emotional development (Saarni, 1989).

The emotional competence model, as opposed to emotional intelligence models, is not focusing on measurement of the construct, but on the knowledge and skills that individual can acquire to function optimally in different situations. It is "the demonstration of self-efficacy in emotion-eliciting social transactions" (Saarni, 1997, p. 38). It has been argued that emotional competencies model is more adequate for applications in education, however Mayer and Salovey argue that emotional intelligence provides more flexible criterion for emotional competence (1997, p. 15).

An underlying construct significant for emotional intelligence models, as well as emotional competence is emotional awareness. Even though the distinctions between the

conceptualizations of emotional intelligence and its' related constructs are well justified, Petrides and Furnham (2003) acknowledge that they, in certain instances, overlap significantly. Emotional self-awareness is emphasized as being common to all EI conceptualizations (Petrides & Furnham, 2003, p. 40), as well as to the emotional competence model. Emotional awareness is an ability to recognize and describe the emotion in oneself and others (Lane, 2006). EI and emotional competence model operate on the underlying assumption that their level of development depends on ability to process emotional information in various situations. To be able to manage emotions successfully, one has to firstly be aware of his/her own emotions, as well as emotions of others.

Emotional awareness is required for facilitation of emotional intelligence. Therefore to understand how EI is developed in children one has to first be familiar with processes through which highest levels of emotional awareness are acquired. A child perceives emotions from an early age, however emotional awareness emerges through the process of emotional development.

### 3. EMOTIONS

The focus of this section is to provide an overview of emotional development. Since emotion is the most important term of this overview the first subsection is defining it. Afterwards stages of emotional understanding throughout child's development are discussed; from understanding emotions and reasons for these emotions to the development of emotional self-awareness and self-regulation.

#### 3.1. What is emotion?

In order to examine emotional development, it is necessary to first take a look at what exactly emotion is, why and how it occurs and how it is expressed. As research on emotions is abundant, only a general overview of certain definitions will be carried out here.

Emotion is a response to a change. It happens in a context of relationship (Lazarus as cited in Mayer, Salovey, Caruso & Sitarenios, 2001). More specifically, an emotion occurs when a person's relationship is changing. When people assess the world around them and make connections to their own world, they come to give personal meaning to the events, therefore assessing whether an event is hurtful or beneficial. This changes the relationships and affects the person's *action readiness* (Frijda, 1987). Emotional information then internally activates different psychological subsystems including physiological responses, cognition and conscious awareness. A person reassesses the priority of his/her actions and that results in various forms; such as action, physiological change or expressional change (Oatley & Jenkins, 1996). Some responses last shortly, while others stay for a longer period of time and are referred to as moods. The central aspect of emotions is change in readiness that gives priority to some plans and goals and intervenes in social relationships (Oatley & Jenkins, 1996, p. 130).

Lazarus emphasized that it is not the nature of the event that determines the nature of the emotional response, but rather "the subjective appraisal of the event in relation to the

individual's needs and coping ability" (as cited in Hamilton, Bower & Frijda, 1987, p. 90). The subjectivity of the appraisal points to the fact that changing relationships will result in different emotional responses in different people, as they will derive the meaning of the external stimuli from their previous subjective experience. Put differently, events are the triggers of emotions, but emotions do not depend on events only, they depend also on the values and previous experiences of an individual.

Therefore the individual's response to a stimulus event conveys information about the individual's appraisal and motivated reactions to relationships (Mayer et. al., 2004). For an emotion to occur, it is not enough to be influenced by external event, but it is also necessary to feel motivated, ready for action.

Examining the emotion and acknowledging the fact that its occurrence is linked significantly to each individual, next section will depict the development of handling emotional information.

### **3.2. Emotional development**

The developmental process of children's understanding of emotion will be the main topic of this subsection, as it is crucial for development of self-awareness. Children's self-regulation will be addressed briefly as well, as it is the process that relates significantly to emotional awareness.

#### **3.2.1. Understanding emotions and reasons for emotions**

Emotional learning is a process that happens in the interaction of the child and the environment. Without the inputs from both parts, it is impossible to develop understandings about emotional meanings. Children learn how to communicate emotionally before they develop speech. The first learning process they undergo is recognition of emotions. Children's recognition of emotions is linked to the emotional expressions and characteristics of a situation that usually evokes certain feelings (Smrtnik

Vitulič, 2007). However, recognizing emotions from external cues is quite fast advanced to understanding beyond immediate emotional states (Harris & Saarni, 1989).

Banerjee (1997) proposed a three phase model of understanding emotions in children on the basis of examination of empirical researches. The phase includes basic principles of a person's understanding of emotions and it is not strictly determined. The first phase in the emotion understanding is recognition of reasons for emotions in outside factors (Banerjee, 1997) and is attributed to early childhood. Outside factors are less complex explanations and are most commonly situational, behavioral or bodily explanations of emotions (Smrtnik Vitulič, 2007). Ideas of emotions are therefore more behavioral than mentalistic (Harris & Saarni, 1989). In the study by Harris, Olthof and Terwogt (1981) children were participating to explain their concept of emotions. Three different age groups: 6, 11 and 13 exhibited different understanding of emotion. Children in the lowest age group understood emotions according to S-R model (stimulus-reaction) whereby a certain situation triggered a response and an emotion was described as a certain behavior. In comparison to 6 years old children, especially the middle age group showed the improvement in recognizing emotion as physiological change, but also increased mental explanations of emotions. Children in two older groups used non-visible, mental aspects of emotions (Harris et. al., 1981). When emotion is described by children as a certain behavior or facial expression, it is implied that the emotional state is momentary. The situation that elicited a short-term response, such as facial expression or certain behavior, is the only parameter taken into account by younger children. They only recognize a stimulus eliciting a situation and react with a non-mentalistic response, meaning that they believe emotions can be perceived immediately after stimulus occurred (Harris & Olthof, 1982). In the early childhood, emotions are perceived to last as long as a certain situation and similar situations are believed to be experienced with same emotions. Even though preschool children can already have a mentalistic understanding of emotions, their understanding lacks depth. They understand that emotional assessment relies on beliefs and desires, but overlook what happened before the current situation which they are assessing (Harris & Saarni, 1989, p. 22). Young children therefore take only certain personal information in account, except their preferences (Harris & Saarni, 1989, p. 15). Children gradually add more complex



explanations of emotions and some of the less complex explanations are used less, others become obsolete (Harris et al., 1981).

When children exert the emotion understanding based on situation-response model, they move from the first phase of emotion understanding to the second phase. Banerjee (1997) explains it as mentalistic emotion understanding that entails understanding of similarities and differences between people, and the fact that emotions depend on specific personal characteristics. Middle childhood is characterized with the understanding that reasons for feelings are in thought processes of a person (Smrtnik Vitulič, 2007). This is the turning point in understanding emotion, as children cannot understand the most basic emotional states unless they penetrate beyond the expression of those states (Oatley & Jenkins, 1996, p. 11). The development of one's own emotion understanding happens simultaneously with the development of understanding of others' emotions, however it is easier to understand one's own than others' emotions (Smrtnik Vitulič, 2007).

Even though children are increasingly aware of individual differences in emotionality, they cannot always make sense of others' mental function and therefore still rely on more behavioral emotion indicators. However, children in middle childhood overcome the S-R model of emotion understanding, and understand that response to a stimulus may not be immediately visible (Harris & Olthof, 1982) as well as realize that a person is regulating the display of feelings according to the demands of a social situation. Older children, compared to the children in the early years of school, can much better utilize personal information and therefore realize that past emotional states can influence the emotional response to a situation (Harris & Saarni, 1989). They also become aware of the possibility to feel more than one emotion simultaneously (Harris & Olthof, 1982).

### 3.2.2. Emotional self-regulation

Increasing mentalistic concepts induces changes in the child's social cognition. According to Banerjee's model (1997), children reach the third phase of emotional understanding when they can use the emotional understanding in practice and adapt emotions to the

requirements of social environment. In their late childhood and early adolescence years, children understand that emotions are a product of individual characteristics of a person and of his/her motives (Smrtnik Vitulič, 2007). The biggest change in the emotion understanding happens in the transition from childhood to youth (Smrtnik Vitulič, 2007), as an immediate result of metacognition and therefore emotional awareness.

Increasingly complex emotions are available to children with increasing age. Experiences and development of cognitive abilities help in shaping theories about emotions (Papalia, Olds & Feldman in Smrtnik Vitulič, 2007, p. 53). The ability to form theories about emotions implies the awareness of one's own and others' emotions. The emotional self-awareness described by Korrel (2014) is the ability of a child to recognize his/her emotions, know the reasons for these emotions and be able to recognize how others respond to his/her emotions. Further on, emotional self-awareness is crucial for the development of emotional intelligence (Korrel, 2014, p. 51) When a child is aware of what he/she is feeling in the moment when an emotion happens, and knows where a certain emotional response originated from, he/she is also able to change his/her emotional response. The ability to control and regulate one's own emotional responses is especially relevant in social situations.

When children are getting older, they acquire new mechanism of emotion regulation. The first acquisition that makes the regulation possible is language, and the next is metacognition. While already 6 years old children are aware that appearances may be misleading and not indicate the feeling a person is experiencing (Harris & Saarni, 1989), older children discover intentionally monitored and guided emotional expressions in themselves and others (Flavell, 1985, p. 141). The control of emotions may operate either on "self-reflection that influences self-regulation or on socially mediated learning, to assess what are emotions acceptable for display" (Harris & Saarni, 1989, p. 16). The use of internal strategies related to cognition improves, and regulation is selective depending on the situation. At the same time, the use of external strategies for emotion regulation remains in use (Brenner & Salovey, 1997). With the development of metacognition, children gain knowledge about the limitations of their memory and acquire strategies to

avoid them (Harris & Saarni, 1989).

Emotional development is interwoven with other developmental processes. The purpose of the following chapter is to present an overview of the children's cognitive development, and highlight connections between emotions and cognition in children's development.

## 4. COGNITION

Cognition is a widely discussed term in the field of children developmental psychology. For the purpose of this work it will be defined to understand its implications in the overview of its development. The principles of Piaget are employed in breaking down the structural characteristics of cognitive development. The last subsection then focuses on cognitive development in relation to affect as to indicate the interrelation of the emotional and cognitive development.

### 4.1. What is cognition?

Struggles to define cognition have derived from what to include in the definition and what to leave out. In other words, it is challenging to determine which process is not in some way related to cognition. Cognition can be understood solely as an information-processing related to higher mental processes. These are: "knowledge, consciousness, intelligence, thinking, imagining, creating, generating plans and strategies, reasoning, inferring, problem solving, conceptualizing, classifying, relating, symbolizing and other less mental processes such as imaginary, memory, attention and learning" (Flavell, 1985, p. 2). From the information-processing viewpoint, human cognition comprises ways in which people process information mentally. Therefore cognition refers to all mental processes that happen between a stimulus and response to that stimulus (Sternberg & Salter, 1982). Cognition in a narrower sense encompasses higher cognitive processes needed for understanding, whereby understanding is an ability of simultaneous connection of all the relevant information about a phenomenon (Smrtnik Vitulič, 2007).

However, information processing and other psychological processes are interwoven in cognitive functioning (Flavell, 1985). Each process plays an important role in the function of other processes (Flavell, 1985), therefore the separation of mental processes can be done only theoretically. A comprehensive and more holistic definition of cognition should acknowledge the fact that cognition entails interconnectedness of the processes in human mind. Das Gupta and Richardson define cognition as all the processes involved in

organizing, handling and using knowledge, and refers to all processes and products of the human mind that lead to knowledge (1995, p. 3).

## 4.2. Cognitive development

Cognitive development entails the acquisition and development of cognitive processes. In this overview the focus will be on Piaget's theory, which is usually categorized as constructivist view of cognitive development. However, there are also other views on cognitive development in the literature; such as nativist or associationist views. These views stem from a different understanding of development itself and are therefore not relevant for the purpose of this work.

### 4.2.1. Principles of Piaget's theory of cognitive development

Piaget's theory of cognitive development acknowledges the relationship between the external stimulus and the response to it. In addition to this process the theory also gives the credit for change to the individual, not viewing the developmental change solely as a result of external influence. The human organism therefore has the advantage of possessing structures that can assimilate and accommodate, and in that manner enable the organism to interact with the environment (Inhelder, Sinclair & Bovet, 1974). Piaget's assimilation-accommodation represents human cognitive function as an interaction with the environment that inevitably leads to developmental changes categorized as cognitive development (Flavell, 1985). It is important to bear in mind that Piaget conceptualizes cognitive development as a rough equivalent to the development of intelligence. Therefore adaptation to the environment results in child's increased intelligence (Das Gupta & Richardson, 1995, p. 6).

Piaget's theory is based on *schemas*, *equilibration*, *disequilibrium*, *assimilation* and *accommodation*. All these elements are crucial in the child's interaction with events and objects from his/her environment, integrating new elements into already existing structures and gradually forming new structures (Inhelder et. al., 1974). *Assimilation* is the process

of adapting external stimuli to one's own internal mental structures. *Accommodation* is the assimilation's complementary process adapting schemas to the external stimuli (Flavell, 1985, p. 5). When a child is in an environment that is challenging, the internal need for improvement causes a conflict in the child and the process that Piaget calls *disequilibrium* occurs (Das Gupta & Richardson, 1995, p. 9). The disequilibrium in the child is intrinsic and stems from child's motivation. Therefore it happens when the assimilation and the accommodation are not balanced. During the process of *equilibration*, the assimilation and the accommodation occur to match the existing situation, with the already existing representations in the child's mind. Piaget calls these representations *schemas* and they are representation in the mind of a set of perceptions and actions that are used in the same functions of the mind (Inhelder et. al., 1974).

Assimilatory behavior changes existing schemas and becomes applicable to a bigger variety of events and objects, especially because every object and event has to be slightly accommodated (Inhelder et. al., 1974). The adaptive behavior resulting from the assimilation and accommodation in disequilibrium changes schemas or integrates them. With the assimilation of more primitive schemes into improved ones, the child forms a new schema that was not existent before (Inhelder et. al., 1974). As schemas improve, reasoning changes qualitatively (Wadsworth, 1989) and the child acquires more structured cognitive processes. Cognitive development, according to Piaget, is organized in stages that differ qualitatively, (Das Gupta & Richardson, 1995) but always follow the same order (Wadsworth, 1989).

The understanding of Piaget's terminology and working mechanisms by which he explains development is needed for the next section. The overview of Piaget's basic principles of cognitive development build foundation for the next section, which focuses on examination of cognitive developmental stages in children, with relation to their affective development. Affect encompasses phenomena that are related to emotions, moods, dispositions and preferences (Oatley & Jenkins, 1996, p. 124).

#### 4.2.2. Cognition and affect in Piaget's theory of cognitive development

The improvement or formation of a schema does not affect solely the child's cognition. Other processes related to cognition, which according to the broader definition of cognition are numerous, are also influenced. According to Inhelder, Sinclair and Bovet (1974, p. 15) concepts do not develop in closed systems, but are in constant interaction and that results in the learning progress. Therefore, affect is related to cognition in the developmental process. Piaget has focused on cognitive development in his work, but has also mentioned the importance of the affect in the development. For the purpose of this thesis, the examination of Piaget's cognitive development will also be related to his contribution on affective development.

In Piaget's model of cognitive development, progress happens according to stages which are inherently predisposed, meaning that they can only happen in a certain order. However, it does not mean they happen at the same age for every individual child.

Infants to children of roughly 2 years are in sensory-motor developmental stage (Flavell, 1985) and are not yet able to make the separation between themselves and the rest of the world (Wadsworth, 1989). That is the egocentrism of the first developmental stage and to overcome it, infants have to be investigating the objects around them even when they are not perceivable (Flavell, 1985), in order to gain the understanding of reversibility. At this point, adaptation is mostly reflexive, but also sensory and motoric (Wadsworth, 1989).

The transition to the next stage, preoperational period, is characterized mostly with the acquisition of language. As children are able to speak about their encounters and create shared meanings, it is easier for them to remember certain things. However, mental representations still rely on stories, and casual relations are not completely understood and used (Flavell, 1985). Children in preoperational period can already distinguish between reality and appearance (Flavell, 1985), and also make distinctions between their own and others' thoughts (Wadsworth, 1989). First mental representations enable a child to be aware of experiences being not just momentary. Put differently, experiences can be remembered and used in predicting future experiences, especially those that have often reoccurred in the past. That is especially important in the use of affective experiences in

social situations (Wadsworth, 1989). Bearing in mind the increased ability to communicate, children of roughly 1 to 6 years of age can inform others and receive information from others through newly established self-control (Flavell, 1985). Even though the preoperational period results in development in many areas, the children's cognitive structures are not yet completely coordinated and new material that is being assimilated into schemas has a distortive affect of child's assessment of reality (Inhelder et. al., 1974, p. 4). However, in preoperational stage, the child can focus only on one dimension at a time (Das Gupta & Richardson, 1995), therefore remembrance of past encounters may not be providing the children with multisided past experiences. The adaptations throughout the first two stages of development are mainly motoric and sensory. However, towards the end of the preoperational period, adaptations are more cognitive.

In the next stage, the concrete operational stage, children can separate perceived events and mental representations (Wadsworth, 1989). This stage roughly corresponds to middle childhood, encompassing children from around age of 7 until late childhood and beginning of transition to adolescence. It is not needed for children to rely on the rightness of things as imposed on them, but they can start making their own evaluations, building on their own morality and values (Wadsworth, 1989). Children in this period are increasingly aware of their mental processes and can already regulate the stream of their consciousness (Demetriou, 2000 in Zeidner et. al., 2003, p. 74). Because of the increased awareness, the thought is more structured and stable, similarly is also affect (Wadsworth, 1989). Newly acquired reversibility to past cognitive and affective experiences also results in development of logical thought. Being able to use past and present cognitive and affective information in the present reasoning is the first step towards metacognition. With metacognition in the picture, the cognitive functioning of an individual becomes increasingly more complex than earlier in life. Metacognition is using cognition in the context of broader mental life (Mayer et al., 2001). Most development of metacognition occurs during the late middle childhood and adolescence, so on the transition between concrete operational stage to the stage of formal operations. Flavell (1985) proposes an information-processing approach for examining this transition period, as he claims that only relying on Piaget's theory it is not sufficient. However, the overview of development



at this stage will also be equipped with some of Piaget's insights into affective development in the formal operational stage. The information processing approach entails "analytical examination of patterns of cognitive functioning when solving certain tasks" (Flavell, 1985, p. 75). Different units of information are processed in versatile ways; therefore the information-processing approach is needed. While cognitive strategies make cognitive processes progress, metacognitive strategies monitor that progress (Flavell, 1985). During the middle childhood and adolescence, the awareness of specific cognitive processes is increased and future planning is enabled (Demetriou as cited in Zeidner et al., 2003, p. 74). Moreover, thinking and reasoning about hypothetical scenarios develops (Wadsworth, 1989).

Metacognitive strategies consist of metacognitive knowledge and metacognitive experiences, and they affect each other, as well as cognition (Flavell, 1985). In other words, all thinking concerning a mental process is influenced by experiences. Metacognitive experiences that consist of both experiences related to cognition and affect can be more or less conscious, but always relate to certain cognitive operation (Flavell, 1985). If metacognitive experiences influence the way an individual assesses a current situation, both affective and cognitive development stem initially from the same source (Wadsworth, 1989).

Metacognitive knowledge is employed according to previous experiences of emotion and cognition. Therefore it is important to consider how a situational appraisal happens before a child develops metacognitive strategies. Additionally, metacognition is developed only when a child develops certain cognitive complexity. Is therefore a child able to regulate his/her own emotions only after a certain cognitive developmental level? The next section will examine the products of cognitive development that enable emotional awareness and self-regulation.

## **5. COGNITIVE-EMOTIONAL DEVELOPMENT AND DEVELOPMENT OF EMOTIONAL INTELLIGENCE**

The following section will examine the interplay between emotion and cognition in children's development. From a structural overview of the interplay the discussion will move to children's processing of emotional information in relation to increasingly complex cognitive structures. Further on, the products of cognitive-emotional development will be discussed as possible facilitators for enhancement of child's EI.

### **5.1. Emotion-cognition interplay**

The way in which emotions and cognition influence each other and make for the emotional and cognitive development has been studied extensively in contemporary psychology. Theories that emerged initially as results of these studies made a polarizing distinction between the nature of emotion-cognition interaction. Theories that attribute emotion as prerequisite for cognition are functional theories. These theories' main proponents are considering whether emotion can be experienced when thought is not present (Zajonc as cited in Lewis, Wolan Sullivan & Michalson, 1984). An issue of greater importance is however whether emotions can produce different ways of thinking (Lewis et al., 1984, p. 272). The claim that emotional reaction can happen without involvement of thought has not been accepted by the proponents of cognitive theories. They claim that cognition is a prerequisite for emotion as the process of stimulus evaluation is the basis for emotion formation (Smrtnik Vitulič, 2007). That is to say emotions only arise when stimulus is cognitively evaluated as important for the person (Oatley & Jenkins, 1996).

Both functional and cognitive theories consider emotions and cognition as separate, but interrelated in their interplay (Izard, 1984). The consideration of these two processes as separate is problematic because of its simplicity. The distinction produces boundaries that overlook the on-going interaction between these two domains (Lewis et al., 1984, p. 275). The claims based on ontogenetic (visible morphological characteristics) and phylogenetic (shared genes) evolution about limbic system developing before neocortex is justifying the

separation of the processes. The limbic system contains of different structures and is located under the cerebrum, on both sides of thalamus. On the other hand neocortex is the top most layer of the cerebral hemisphere. Because emotions are in the domain of the limbical structures, they function independently of cognition, which is mainly attributed to neocortex (Zajonc as cited in Smrtnik Vitulic, 2007). However, the development of the structures in human brain indicates the development of the neocortex from the limbic structures. Because both cognition and emotion share common structures in the limbic system (Izard, 1984) it is not reasonable to separate their function.

Therefore representations of interactions between emotion and cognition have to go beyond separating the two processes, but recognizing their interdependence in its complexity. Both processes are complex behavioral compounds, whose structure changes with the development and therefore these compounds are a product of complex processing system (Leventhal & Scherer, 1987, p. 7). Emotions affect cognitive processes and cognitive processes can induce emotions, which again influence cognition (Izard, 1984, pp. 33-34). The relationship between emotion and cognition is more of a cyclical interaction rather than a linear one. Merging different theories that have connected aspects of cognitive and functional theories can produce a comprehensive model of interaction between emotion and cognition. Since the “development progression in children’s cognitive and emotion appear closely intertwined” (Bajgar et al., 2005, p. 571) this work focuses on the developmental aspect of relationships between the two processes. Theories by LeDoux and Leventhal will be related to propose a multilevel theory, focusing on the developmental products of emotion-cognition interactions.

LeDoux proposed four categories in which the relationship between emotion and cognition can be categorized. The first category separates the two processes based on evolution, claiming that an emotion can happen without involvement of cognition (Smrtnik Vitulic, 2007). However, an emotion occurs with unconscious involvement of cognition, as activated past memory reacting upon a situation that requires immediate response. The first category corresponds to the sensory-motor or bottom-up processing that happens in earliest stages of development (Leventhal & Scherer, 1987) wherein representations are acquired

or conditioned (Zajonc & Markus, 1984, p. 97). The emotional state of a very young child is therefore a result of processing on cognitive level, which is intrinsic and unavailable to the child in his mental representations. Even though the child is not aware of the cognitive functioning, it does not mean that it is separated from an emotion. The second and third category proposed by LeDoux encompasses various relationships between emotion and cognition. The second category proposes the influence of cognition on a function of emotional processes (LeDoux as cited in Smrtnik Vitulic, 2007). Put differently, knowledge about past emotional experiences influences the current emotional state. The third category establishes integration of both processes in responses to a stimulus (LeDoux as cited in Smrtnik Vitulic, 2007). In other words, experiencing ideas and feelings when engaged in cognition contribute to the knowledge about cognition (Flavell, 1985, p. 108). The relationships between the second and third category proposed by LeDoux suggest changes in the emotional experiences of the children. An experience with specific persons, objects and events develop schemata which contain their history in perceptual memories that further form current emotional experience (Leventhal & Scherer, 1987, p. 22). The schemata that were before acquired are becoming transformed (Zajonc & Markus, 1984, p. 97). Child's sensory-motor processing is transformed as conceptual or top-down processing becomes more automatic (Leventhal & Scherer, 1987). It is in the fourth category that emotion-cognition connection is manifested in the development of knowledge about emotions and adapted uses of that knowledge (LeDoux as cited in Smrtnik Vitulic, 2007). While the sensory-motor processing can still be in function, the conceptual processing is employed in most of the emotional processing that the child does. "Conceptual effects impact emotional processing mainly by sensitizing classes of schemata relevant to situation that are related at a more abstract level" (Leventhal & Scherer, 1987, p. 22).

As cognitive representations of emotional encounters become more complex, child is acquiring increasing control over own emotional processing. That is to say, cognitive development bears implication for facilitation of EI. The next section examines the medium through which the facilitation of EI occurs-emotional awareness.

## **5.2. Emotional intelligence as a product of emotion-cognition interplay**

The examination of interaction between emotion and cognition in the child's development is the prerequisite for understanding the possible results emerging from that interaction. This section will focus on elements that can make for the development of EI, deriving from the cognitive-emotional development. The implications of the interaction will be discussed by connecting branches from EI as an ability model and emotional awareness levels.

With increased knowledge, encompassing both cognitive and emotional information, children learn to cope better with the outside, as well as with the inside world. That increasing awareness is a result of differentiated and integrated cognitive schemata responsible for processing emotional information (Lane, 2006). Similar to the development of cognitive schemata, levels of emotional awareness follow in an order that is predetermined, and the higher levels do not eliminate the lower ones. The emotional awareness model differentiates five levels which change from being implicit emotional states to being explicit. These five levels depend upon cognitive organization of emotional experiences (Lane, 2006, p. 117): bodily sensations, action tendencies, single emotions, blends of emotions and combination of blends (Lane & Schwartz as cited in Bajgar et. al., 2005).

The organization of a child's emotional states from implicit to explicit therefore happens with increasingly complex organization of cognitive structures. When a child moves from employing emotions implicitly to explicit emotional function, the cognitive processes, such as thinking and reasoning about emotions, are enabled. The conscious awareness of emotion states requires the participation of mental representations that are not unique to emotion (Lane, 2006, p. 116). From an implicit emotional processing that does not require cognition, a child moves to the explicit processes wherein emotions are conscious and increasingly complex. However, children's cognitive schemata differ in its complexity since they depend on past emotional experiences (Bajgar et. al., 2005).

In the ability model of EI, emotion and thought interact when processing emotional content

(Mayer, Salovey & Caruso, 2002). The first branch of ability EI encompassing emotional perception is the only branch of the four that does not necessarily involve thought in emotional processing situations. In its function, the first branch corresponds to bodily sensations, from the levels of emotional awareness model. Emotion perception could subsume bodily sensations as it happens mostly implicitly and does not require the involvement of thought to be carried out successfully. Implicit processing does not indicate the absence of thought; it only means that the child is not aware of a cognitive processing when dealing with emotional information. The second branch in ability EI model is, similar to first branch, encompassing functions that use emotions more than cognition, at least explicitly. The second branch is dealing with how emotions are used to enhance cognition, and corresponds to action tendencies from the emotional awareness model. The enhancement of thought through emotion is the notion of a certain emotional state leading to a modified cognitive process. This changed cognitive process then redirects the attention and results in certain action. Similar to first branch, second branch is situated in a relatively discrete area of information processing, and is bound more to emotional processing (Mayer et al., 2004) without the involvement of conscious cognitive processing.

The biggest shift in cognitive involvement in the emotional processing is seen on the transition to the third branch of ability EI, the emotion understanding. The third branch, as the first, involves reasoning about emotions, only now a child is aware of the reasoning. It encompasses the awareness of single emotions and also blends of different emotions. The child is now increasingly aware of his/her emotions and reasoning about emotional information shifts from implicit to explicit. With newly gained insight into reasoning about emotions, the child can understand his/her own emotions and ones of others better. Mayer, Salovey and Caruso (2001) claim that the emotion understanding branch is cognitively the most saturated, also compared to the fourth branch, the emotion management. As such, "emotion management is actually less cognitive than emotional understanding, because it must balance many factors including the motivational, emotional, and cognitive" (Mayer et al., 2001, p. 236). Even though the emotion management does involve others aspect than just emotion and cognition, it is still cognitively the most saturated of all the four branches. That is because it encompasses a combination of blends of emotions that have to

be managed at an abstract level. Therefore, a child does not only have to be aware of his/her emotional states, but has to be able to regulate them according to the internal and external factors. Only when a child is able to perform all these operations, can he/she manage to act appropriately in a certain social situation. Therefore the self-aware emotion regulation is the main activity of the emotion management branch. The complexity of the fourth branch can be acquired only when a child is able to understand his/hers and others emotions. It is not possible for a child to be aware of his/her emotions without understanding them. Similarly, the self-regulation of emotions depends highly on understanding first, as to discover the personal meaning of an emotion and regulate it according to the situation.

For every branch of EI (Mayer et al., 1999), there is a certain emotion function needed, which inevitably depends upon cognition. When certain emotional abilities are enabled through and in interaction with cognition, the mobility from one branch of ability EI to the next becomes possible. As the interaction between cognition and emotion is happening in multiple levels, the development of EI can happen with branches overlapping. However, the ability to fully employ EI is reached when a child is aware of his/her own and others' emotions, and is able to regulate them. Therefore the products of the interaction between emotion and cognition are the possible facilitators of EI.

## 6. DISCUSSION

The child's development and emergence of self-aware emotion regulation is a clear result of the interplay between emotion and cognition. That does not mean there are no other factors influencing the development of emotional function. There are at least two more important factors influencing individual differences in emotional intelligence; biological bases for emotionality and learned rule-based skills for emotional regulation (Zeidner et al., 2003). Nonetheless, the focus of this work is self-aware emotion regulation and its implications in the child's development of EI and therefore also discussion is built around this individual developmental aspect of EI.

Even though social environment exerts high influence over the development of children's EI it has been put aside for the purpose of this work. That being said, social influences have to be acknowledged as a very prominent factor in children's self-aware emotion regulation. Social factors influencing individual's development of EI are related to individuals' temperament and rule-based acquired skills. The social context relates closely to culturally-bound rules and therefore patterns of emotionally intelligent behavior may vary greatly among children. Moreover, the way an individual interacts in a certain environment is influenced significantly by his/her self-esteem and openness. Children who are introverted might have more difficulties dealing with the emotional information of oneself and others in social situations. Therefore the social context is at least as complex as the individual developmental context.

A consensus that EI is developable exists in the field of research of EI. However, it is important to bear in mind the conceptualizations of EI when thinking about measures that can be taken for its development. The consensus about the development of EI is applicable when EI is defined as a set of traits, and when the measures for development are taken during the childhood (Dulewicz & Higgs, 2004). Even though EI defined as an ability does not fall into the consensus of being developable, there might be implications for the influences on its development - being more significant during the childhood years than later in life. That is because significant influences on the development of EI as ability are



the results of the cognitive-emotional development. With the development, the child is experiencing an increasing amount of emotional states, as a result of altered feelings that transform into newly acquired cognitive functions (Kagan, 1984). The child therefore acquires new representations or schemata that enable more conscious processing of various situations.

The emergence of the awareness of one's own consciousness is the prerequisite for abstract thinking, which also encompasses the child's use of emotional information. A child can regulate his/her own stream of consciousness in early childhood, but is however not yet able to regulate specific cognitive processes. It seems that children acquire awareness of specific cognitive processes on the transition between the concrete operational stage and the formal operational stage. That transition happens in the late childhood, when the emergence of metacognition enables the employment of emotion-regulation skills that are not implicit, but happen consciously. Put differently, the abstract thinking and the ability to reason about emotional information are clear results of metacognitive abilities. The most relevant skills for EI that emerge as a result of metacognition are emotional awareness and self-regulation. The ability to manage one's emotions depends on whether a child is aware of his/her own feelings and if he/she can use the emotions in a way that supports cognition. In other words, the question is whether a child can employ hot information processing-the kind of mental activities that involve emotional self-involvement-in various situations. In addition, EI depends on the child recognizing the emotional information as beneficial and useful for the enhancement of one's own activities. Therefore the emotional management, as the last developmental branch of EI as ability, is coterminous with self-aware emotion regulation. That is to say, in order for a child to manage his/her own emotions, he/she has to undergo three preceding branches in the ability model of EI. Still, processes of emotion perception, emotion facilitation and emotion understanding alone do not enable a child to manage his/her emotions. The crucial element that has to be present for the development of EI is metacognition: the ability to reason about one's own thinking and emotional processing.

The increasing amount of knowledge related to both use of cognition and emotion does not

necessarily result in the child's development of EI. While some adults may be able to perform cognitive operations on the level of formal operations, they may have sensory-motor emotional reactions (Eich, Kihlstrom, Bower, Forgas, & Niedenthal, 2000, p. 53). In other words, while the cognitive functioning is highly developed, the emotional awareness is highly underdeveloped. That is why a claim by Lane (2006) about emotional awareness, being an ability that emerges as a result of cognitive development can be rather insufficient. While acknowledging the fact that increased emotional awareness is a result of cognitive development, it has to be emphasized that it does not coincide with its progress. If the cognitive development and the development of emotional awareness do not necessarily coincide, can the claim still be made that self-aware emotion regulation is a clear result of cognitive-emotional development? The answer is yes, because developmental processes in which a child has not been deprived of opportunities for cognitive and emotional learning do result in the development of EI. Furthermore, if emotional awareness is a product of cognitive development, it might not become evident as soon as the child has reached a certain stage of cognitive development. It is possible that the ability to be aware of one's own and others' emotions happens in a time lapse from that particular developmental stage. Additionally, the development of emotional awareness is interwoven with the development of self-regulation. The developmental process of self-regulation depends highly on the opportunities where a child can exercise his/her social adaptability skills. The exposure alone to variety of social situations will enable the development of coping mechanisms that employ self-regulation. According to developmental theory "the emotions produced by the delay of immediate gratification facilitate the development of more mature thought processes" (Lewis et al., 1984, p. 272). In situations where a child has to employ self-regulation, he/she is using his/her cognition to overcome current emotional state to reach an emotional state that emerged as a result of a cognitive process. In turn, the cognitive process shapes the emotional awareness, which shifts to a next level as a result of self-regulation. Therefore, the development of emotional awareness is influenced by the self-regulation and vice versa. That means isolating one of them as the only product of cognitive development would do little justice to the complexity of development of EI.

Only when a child is aware of his/her emotions, can he/she identify the reasons for his/her emotions and recognize how other people respond to these emotions. Put differently, the child is employing his/her ability of EI. If there is no deprivation of opportunities for the cognitive development, then every child has the potential to develop self-aware emotion regulation. However, there is a strong consensus that the ability for self-aware emotion regulation varies significantly, and not all children possess a similar magnitude of EI. Mayer and Geher (1996) attribute possible individual differences in EI to: generally better cognitive skills, openness to one's own and others' emotional reactions, and better knowledge about the connections between thought and emotions (p. 91). Since cognitive skills are highly bound to genes, there are little implications for the advancement beyond certain level. Nevertheless, that does not mean that a child is bound to a certain level of EI because of his/her genetically predetermined cognitive abilities. The abilities to perceive and use emotional information are highly teachable and much less inherent than cognitive abilities. Accordingly, self-aware regulation abilities "differentiate during childhood with temperament and rule-based skills persisting as distinct factors even after the development of self-awareness" (Zeidner et. al., 2003, p. 90). The fact that emotional states or experiences are the result of learning raises implications for the educational context and also gives an explanation for individual differences in EI. Children may not be able to use cognition in a way that will support their emotional function. With cognitive development, they might get the potential to develop emotionally, but that highly depends on the support they get from their environment.

In a real life context, children inevitably construct and then develop their EI as a result of factors that are internal, as much as external. Since these factors are largely interconnected it is challenging to assess which one contributes to the development of EI the most. The examination of two interrelated influences on the development of EI was carried out within the boundaries of scope and depth realistic for this work. Acknowledging the fact that the individual developmental perspective is not the only one influencing EI carries implications for possible further research of children's construction of EI. Development of EI in relation to culturally-constructed patterns of behavior may be a possible theme to deepen the insight into children's EI. Since emotion perception, display and regulation is carried out according to specific cultural context, future research could study construction

and meaning of EI across different cultures. Studying the development and meaning of EI from a socio-cultural perspective could further contribute to more holistic understanding of the development of EI in children. Additionally, research deriving from this thesis could take an approach related to individual's role in the construction of EI. That is to say, individual's perceptions and meanings of EI could be investigated to gain insight into its construction, recognizing individual children as central subjects in the development of their EI.

Because emotional experiences are facilitated by knowledge, the interpretations and direct observations (Lewis et al., 1984), there is much that children can learn from social situations. Since knowledge related to emotional behavior is facilitated in social situations, educational implications for its construction are vast. Positive reinforcement in the classroom related to social behavior and emotional decisions can be facilitated from an early age. Even though children at an early age are not able to employ metacognitive strategies when dealing with emotional information, they do observe and learn from their immediate environment. That is to say, patterns of behavior are internalized and acted upon unconsciously before the emergence of metacognition. If a child receives positive feedback on his emotional endeavors, it is more likely that he/she will be more aware of his/her emotions as well as emotions of others. Parents and teachers can facilitate and encourage the use of adaptive strategies to reach personal goals in a way that respects the established social context (Lane, 2000, p. 185). Put differently, the use of self-aware emotion regulation has to be taught consciously, as well as practiced regularly. With these conditions fulfilled, cognitive processing and self-aware emotion regulation serve as a meaningful tool for children. In other words, children's EI is facilitated through efficient use of cognitive and emotional knowledge needed in interpersonal and intrapersonal situations.

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