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## **MASTER THESIS**

**The prevalence and potential risk factors of suicidal  
ideation in 8-year-olds in the JOnG! study**

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ABSTRACT OF THE MASTER THESIS

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**Title of the master thesis:** The prevalence and potential risk factors of suicidal ideation in 8-year-olds in the JOnG! study

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**Abstract (255 words):** The objective of this cross-sectional study was to be one of the first studies to investigate the prevalence and potential risk factors of suicidal ideation in a relatively large sample of 8-year-old children specifically. To do this, we used the 6-year-olds cohort of the JOnG! study, consistent of 1,350 primary caregivers, at the timepoint that the children were 8 years old. In total, 12.1% of the primary caregivers indicated that their child had said that he or she would rather be dead or that they had noticed that their child thought it would be better if he or she would be dead. The average age on which this suicidal ideation was reported, was 7 to 8 years old. The youngest child was 3 years old. Slightly more primary caregivers indicated that their child had said or thought it multiple times (58.9%) in comparison to only once (41.1%). Results showed that a psychiatric diagnosis and specifically an attention deficit hyperactivity disorder and an autism spectrum disorder, higher levels of impulsivity and aggression, an increase of the family income, a lower level of the parental scales rules and positive parental behavior and a higher level of the parental scales harsh punishment and parental psychological control are potential risk factors for the development of suicidal ideation. Independent samples t-test analyses also identified multiple stressful life events as a potential risk factor. In the future, a longitudinal study should be executed so we can appoint these potential risk factors as being present prior to the development of suicidal ideation.

*Keywords:* suicidal ideation; children; prevalence; potential risk factors

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## **1. Introduction**

Suicide is one of the most serious public health problems worldwide. Roughly 800,000 people die by suicide every year and, in 2016, suicide was the second leading cause of death in young people aged 15 to 29 years old (World Health Organization [WHO], 2019). In addition to being a particularly predominant cause of death among adolescents and young adults, it is also prevalent among children. Although researchers for many years believed that children younger than 12 years old were not capable of dying by suicide, a growing body of research has since stated that children are in fact capable of ideating, planning and attempting suicide. Furthermore, children can also die by suicide (Lin, Lin, Hsieh, & Chang, 2014; Tishler, Reiss, & Rhodes, 2007). Suicidal behaviors have even been reported in children as young as 3 years old (Whalen, Dixon-Gordon, Belden, Barch, & Luby, 2015). In the United States, suicide was the second leading cause of death among 10- to 14-year-old children in 2017 (Centers for Disease Control and Prevention [CDC], 2019), with a significantly higher suicide rate among boys than girls (Dervic et al., 2006; Nock et al., 2008). This suggests that more suicide interventions should focus on young children, because this also seems to be a susceptible age group for suicidal behaviors. The most common methods reported by children (aged 9-11 years) are respectively cutting or stabbing, choking or hanging, and attempting to be killed by an object, animal or person, although geographical and temporal variations were observed in the usage of methods (Soole, Kőlves, & De Leo, 2015; Taussig, Harpin, & Maguire, 2014). Typically, suicide does not occur abruptly. Suicidal ideation, a suicide plan, and a suicide attempt are all critical parts that lead up to the actual act of suicide. Suicide ideation can be defined as "thoughts of engaging in behavior intended to end one's life", a suicide plan as "the formulation of a specific method through which one intends to die", a suicide attempt as "engagement in potentially self-injurious behavior in which there is at least some intent to die" and lastly suicide as "the act of intentionally ending one's own life". (Nock et al., 2008, p. 134).

Suicidal ideation is not only a critical part in the suicidal process but it is also an important factor to enable effective suicide prevention strategies (Arria et al., 2009). Furthermore, it has been suggested that suicidal ideation is a precursor of suicide. More specifically, suicidal ideation has an increased risk to develop into a suicide plan, followed by a suicide attempt and actual suicide. In their study, Kessler, Borges, and Walters (1999) found that 34% of the adolescents who reported suicidal ideation went on to make a suicide plan and 72% of these adolescents eventually made a suicide attempt. Specifically for children, researchers argued that suicidal ideation is associated with

an increased risk for suicide attempt in adolescence. Klimes-Dougan et al. (1999) found that 15% of the children who reported suicidal ideation in early childhood and 16% of the children who reported suicidal ideation in middle childhood, attempted suicide during a subsequent period. This paper also stated that 77% of the children who attempted suicide had reported suicidal ideation three or more years prior to making a suicide attempt. The risk to progress to a next phase in the suicidal process is the highest the first year after the onset of the prior phase (Nock et al., 2008). This implies the importance of intervening quickly and preferably in the earliest phase, namely suicidal ideation. Furthermore, Whalen et al. (2015) indicated that suicidal ideation in early childhood (3-7 years) predicts suicidal ideation in school-aged children. So not only is suicidal ideation a precursor of suicide, it is also an important marker for ongoing suicidal ideation.

As was described above, suicidal ideation is an important precursor of suicidal behavior. This entails that other suicidal behaviors develop because there is some form of suicidal ideation present. But why does suicidal ideation develop in the first place? There are three leading theories that offer an answer to this question, which are all part of the "ideation-to-action framework" (Klonsky, May, & Saffer, 2016). The first leading theory is the interpersonal theory (Joiner, 2005). This theory suggests that suicidal ideation is instilled by a combination of perceived burdensomeness and thwarted belongingness. However, as long as individuals do not develop the capability to act on these perceptions, it is retained to the stage suicidal ideation of the suicidal process. Individuals may develop this capability through the habituation to painful and/or fearsome experiences by repeated exposure to such experiences. According to Joiner (2005), the development of this capability is necessary to overcome the human urge for self-preservation. Second, O'Connor (2011) created the integrated motivational-volitional theory. This tri-partite model describes the factors that may lead to suicidal behavior in three phases. In the pre-motivational phase background factors such as individual vulnerabilities, life events and environment lead to an elevated risk to create suicidal ideation in the second phase. The second 'motivational' phase entails that individuals may experience a threat to self-moderators such as coping and social problem-solving and motivational moderators such as burdensomeness and thoughts about the future. As a result of the threat to self-moderators, feelings of defeat and humiliation and consequently entrapment may arise. Next, the motivational moderators will lead to suicidal ideation and intention. Lastly, suicidal behavior will be present in the third 'volitional' phase, in which fearlessness about death, exposure to suicide and so on will moderate suicidal behavior (O'Connor & Kirtley, 2018). Lastly, Klonsky and May (2015) developed the three-step theory which states that pain (mostly psychologically) is the first step towards suicidal

ideation. These researchers reasoned that if a person experienced living as being characterized by pain, this person is in essence being punished for living. This can lead to less desire to live. If this pain is combined with hopelessness, that person will most likely display some suicidal ideation.

So far we have established that suicidal ideation is a serious health problem worldwide and that it is an important precursor of suicide. However, does this also apply to children? Although suicidal ideation is less prevalent among children than it is among adolescents (Klimes-Dougan et al., 1999; Nock et al., 2008; Velez & Cohen, 1988), it is not uncommon either. Velez and Cohen (1988) conducted a study among 6- to 12-year-old children and found that on average 12% of the children reported suicidal ideation. They added that the prevalence varied from 26% to 2% in function of the definition used to describe suicidal ideation (e.g. "Thinks about killing self", "Wishes she or he were dead", "Thinks a lot about death and dying"). Thompson et al. (2005) discovered a smaller, but still relatively alarming 9.9% reporting of suicidal ideation in an 8-year-olds cohort. More recently, Kovess-Masfety et al. (2015) researched suicidal ideation and death thoughts in children of the same age group, resident in seven different European countries. They found that 16.96% of the children in their sample reported suicidal ideation ("Have you ever wanted to die?") and 21.93% had had thoughts about death ("Do you often think about death or dying?"). Even more recently, Tan, Xia, and Reece (2018) conducted a large sample study in China and stated that 27.67% of the 9- to 12-year-old children reported suicidal ideation. Notably, the rates of suicidal ideation are higher in Asian countries, so we must be aware of cultural variations in interpreting these percentages. As opposed to suicide, suicidal ideation seemed to be more prevalent among girls than boys (Foley, Goldston, Costello, & Angold, 2006; Nock et al., 2008; Tan et al., 2018; Velez & Cohen, 1988; Wyman et al., 2009), although when focused specifically on suicidal ideation in early-childhood, Whalen et al. (2015) found that it was more common among boys. Besides the relatively high prevalence percentages of suicidal ideation, researchers also suggested that suicide rates are increasing among children and adolescents (10-19 years), whereas suicide rates for young adults (20-34) are not (Centers for Disease Control and Prevention [CDC], 2018; World Health Organization [WHO], 2018). Furthermore, Min et al. (2012) warned that suicidal ideation is a growing issue, especially in China, even in children as young as elementary-school-aged. This underlines the increasing importance of researching suicidal behaviors in young children specifically.

In the following sections, we will discuss the most important risk factors of suicidal ideation in children that have been studied so far, first those related to the child and then those related to the family. Next, this paper will specifically focus on two specific risk factors, namely parenting style

and loss in the family. The literature research forms the base of the research hypotheses of this study, elaborated upon in the final paragraph of this section.

### **1.1. Risk Factors For Suicidal Ideation In Children**

Most research about suicide and suicidal ideation has been conducted among adolescents and has uncovered many risk factors. Still, it is important to conduct research specifically aimed at uncovering risk factors in young children. Tan et al. (2018) claimed that risk factors of suicidal ideation in primary school students differ between middle school and high school students. This implies that the risk factors of suicidal ideation which were found in studies with adolescent participants may not be applicable for young children. For that reason this paper will focus on the risk factors that were specifically uncovered for children.

#### **1.1.1. Child risk factors**

First, suicidal ideation in children has been related to mental health factors and more specifically to psychiatric disorders. Some researchers even suggested that being diagnosed with a psychiatric disorder is the strongest risk factor for suicidal ideation, suicide attempt and even suicide in youth, although this was less evident among child suicides in comparison to adolescents suicides (Soole et al., 2015). Pfeffer, Conte, Plutchik, and Jerrett (1979) illustrated this association by observing that 72% of psychiatrically hospitalized children aged 6 to 12 years displayed some suicidal ideation. Kovess-Masfety et al. (2015) further confirmed this by stating that all the children in their study with psychiatric diagnoses displayed significantly more suicidal behaviors than children with no psychiatric diagnosis. Moreover, Foley et al. (2006) found that children with a psychiatric diagnosis were six times more likely to be suicidal and 22 times more likely if they were diagnosed with multiple psychiatric disorders. Anxiety, disruptive and mood disorders were suggested as the most common diagnoses, with depression as greatest risk factor. In case of multiple psychiatric diagnoses, depression in combination with anxiety and depression in combination with a disruptive disorder formed the highest risk. Mayes, Calhoun, Baweja, and Mahr (2015) and Nadorff, Nazem, and Fiske (2013) also suggested bulimia nervosa, anorexia nervosa, autism, duration of sleeping disorders and intellectual disability as risk factors with respectively bulimia nervosa, depression or anxiety disorder and oppositional defiant disorder, as the three leading risk factors in the association between psychiatric disorders and suicidal ideation. Furthermore, children with suicidal ideation

reported nearly six times more depressive symptoms and children diagnosed with a major depressive disorder reported significantly more suicide plans and attempts. Suicidal children also reported three to four times more behavioral problems, including attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder, and conduct problems (Wyman et al., 2009). In addition, researchers suggested that ADHD, oppositional defiant disorders and conduct disorders were more prevalent among suicidal children under the age of 12 than they were among suicidal adolescents. This might imply a diagnostic difference between suicidal children and suicidal adolescents (Ben-Yehuda et al., 2012; Whalen et al., 2015). Ben-Yehuda et al. (2012) also stated that suicidal behaviors in adolescents have a greater association with desperation, while suicidal behaviors in children have a greater association with frustration and impulsivity. Furthermore, Wyman et al. (2009) found that suicidal ideation was more likely to be reported by children with elevated aggressive-disruptive behavior. In other words, young children that display a degree of suicidal ideation are more often diagnosed with externalizing disorders while this is not the case with older children (Kovess-Masfety et al., 2015; Whalen et al., 2015). This highlights yet again the importance of researching risk factors in a sample that exclusively includes young children. In addition to the strong connection between suicidal ideation and psychiatric disorders in children, Nock and Kazdin (2002) argued that negative automatic thoughts, anhedonia, and hopelessness about the future are all important risk factors, even when controlling for depressive symptoms in a psychiatric inpatients sample. Giannetta et al. (2012), Liu et al. (2006), Pfeffer et al. (1979), and Tan et al. (2018) added impulsivity, feelings of worthlessness, risk taking, sensation seeking, tendencies towards self-accusation, and frequent somatic complaints to the list of risk factors of suicidal ideation and suicidal behavior in young children. Lastly, Thompson et al. (2005) suggested increased psychological distress, needing mental health services, poor academic performance, poor problem solving skills, and social skills deficits as risk factors for suicidal ideation. Especially those children that react with avoidance, anger, or aggression to social conflicts are at higher risk. These reactions may reflect chronically conflictual relationships and/or poor coping abilities.

Noteworthy, Soole et al. (2015) found a limited number of studies in their review regarding suicide in children that focused on children as a separate population or as a subsample. This implies that we must consider that some of the studies mentioned above did not solely include young children in their participants pool. The majority of the studies covered children from approximately 9 to 12 years old. Mayes et al. (2015) included participants from 6 to 18 years old, Liu et al. (2006) recruited participants from 6 to 15 years old, Giannetta et al. (2012) children from the age of 10 to

the age of 13 years old and Tan et al. (2018) included participants aged 9-18 years. Although young children were included in their study, they also included children who were older than 12 years old and can be seen as (pre-)adolescents. This may imply that the risk factors they uncovered might not be significant should their studies be replicated with a study whose participants consist solely of children aged 12 years and under. Jackson and Nuttal (2001), Pfeffer et al. (1979) and Wyman et al. (2009) were the only researchers mentioned above who specifically studied young children from the age of 6 to 9, 6 to 12 and 5 to 12 years old respectively.

### **1.1.2. Family risk factors**

Soole et al. (2015) reviewed studies including children aged 14 years old and younger and found that parent-child conflicts were the most common precipitant of suicidality. This implies the importance of researching family risk factors for suicidal behaviors in young children.

Wagner, Silverman, and Martin (2003) studied multiple possible risk factors for suicidal behavior in children related to family influences. They concluded that family cohesion, child abuse, and parental psychopathology were significant risk factors. Thompson et al. (2005) confirmed that a poor family cohesion, drastic changes in the home environment and child abuse increased the risk of suicidal ideation, even by age 8. More specifically, they suggested that maltreatment of the child and witnessing violence were significantly associated with suicidal ideation. Dunn, McLaughlin, Slopen, Rosand, and Smoller (2013) noted that exposure to physical abuse is related to an elevated risk for suicidal ideation in childhood, except during infancy, with the largest risk for the development of suicidal ideation being exposure to physical abuse during preschool. Exposure to sexual abuse was also linked with suicidal ideation if the exposure took place in the infancy or the preschool period. Taussig et al. (2014) even stated that physical abuse and chronicity of maltreatment are the most robust predictors of suicidality. Another important risk factor is the presence of psychopathology of the parents. Klimes-Dougan et al. (1999) found that children (aged 6-14 years) reported significantly more suicidal thoughts and behaviors if their mother was diagnosed with a depression. Whalen et al. (2015) also observed that maternal psychopathology was a significant risk factor for suicidal ideation in 5-year-olds, and a follow-up at 9.5 years old suggested that this continued to be a risk factor. Lastly, parental suicide attempts also seemed to be a risk factor. Children of parents who attempted suicide were five times more likely to attempt suicide themselves (Brent et al., 2015), although this was not confirmed by Whalen et al. (2015) which suggests that

the influence of family history of suicide attempts is stronger in older children. Additionally, caregiver mental health needs, multiple transitions in the child's living situation and a quarrelsome family environment as opposed to a harmonious family were identified as risk factors (Lin et al., 2014; Thompson et al., 2005) and Kovess-Masfety et al. (2015) observed that both suicidal ideation and death thoughts in children were more frequent in large families and single-parent families.

It is important to note that family risk factors were likely mediated by child-functioning variables. More specifically, psychological distress, substance use and social skills deficits may have increased the influence of family environment on suicidal ideation (Thompson et al., 2005).

#### ***1.1.2.1. Loss in the family***

An important family factor which has not yet been discussed, is loss in the family. We specifically focused on this factor because the death of a sibling or parent is one of the most traumatic and stressful events young children can experience (Bergman, Axberg, & Hanson, 2017; Yamamoto et al., 1996). As a result of this event, children express a variety of grief reactions (e.g., sadness, anger, fear, lashing out). Although children have a less complex understanding of loss and death than adults because of their restricted knowledge and life experiences (Corr & Balk, 2010), they do understand the basis of the concept "death" by age 4 (Barrett & Behne, 2005) and thus can also express serious grief reactions. These reactions can lead to both behavioral and psychological disturbances, including suicidal ideation, increased psychiatric problems in the first two years after the loss and an increased risk for violent criminal convictions, in both parent-bereaved children and those who lost other relatives (Cerel, Fristad, Verducci, Weller, & Weller, 2006; Kaplow, Saunders, Angold, & Costello, 2010; Melhem, Moritz, Walker, Shear, & Brent, 2007). In terms of the association with suicidal behavior in offspring, both parental mode of death and the offspring's age at the time of parental death were suggested to moderate this association. The rates of suicidal behavior were the highest when the mode of parental death was suicide and the offspring was less than 26 years old at the time it occurred (Wilcox et al., 2010).

Not only has the complex grief that a loss in the family unleashes been associated with several negative outcomes in offspring, it has also been implied that the parenting becomes increasingly more important in the aftermath of the loss because young children then largely depend on their parent(s). Young children mainly attempt to cope with their grief by seeking security and care from their parent(s). Thus, some children may become more demanding when it comes to

parenting. In addition to the increased pressure on the parenting because of the coping strategies of the children, the parent or parents also has/have to cope with their own grief and try to create a healthy post-mortem life for the family (Tein, Sandler, Ayers, & Wolchik, 2006). This implies that the parent(s) has/have to deal with a lot of demands, and this heightens the risk for psychopathological complaints. Melhem, Walker, Moritz, and Brent (2008) found that surviving parents reported an increase in depression, anxiety, post-traumatic stress syndrome, suicidal ideation and functional impairment, which in turn has a significant impact on their offspring. Moreover, Bugge, Darbyshire, Røkholt, Haugstvedt, and Helseth (2014) remarked that the parents' own grief affects the child because the parent experiences tension between actively grieving (i.e., becoming angry, distraught, tearful, anxious) and being a "good parent". This association was moderated by the parent's feelings of being supported. In other words, the more a parent felt supported, the less the parent's own grief affected the child's grief (Bergman et al., 2017). Furthermore, Schmiege, Khoo, Sandler, Ayers, and Wolchik (2006) found that both parental help to recover and post-mortem family environment are the key for a healthy grieving process in children. This implies that when children are confronted with a loss in the family, they might benefit from a positive parenting style (i.e., parental support). Other researchers have also confirmed this implication and found that a positive parenting style is a protective factor for children who have had to deal with a loss in the family. Moreover, positive parenting was also associated with fewer mental health problems and is an important resource for resilience, stress and coping when a child has to adapt to changed circumstances such as loss in the family (Haine, Wolchik, Sandler, Millsap, & Ayers, 2006; Kwok et al., 2005).

Because of the influence a positive parenting style is suggested to have on a child when dealing with a loss in the family, this paper will specifically examine this topic in the next paragraph.

#### **1.1.2.2. Parenting**

Because a child's family is the key setting for social development, one may suggest that the quality of family relationships plays a significant role in developing negative pathways that can lead to suicidal behaviors (Wagner et al., 2003). Especially the presence of difficulties in the relationship between parents and their child has been found as one of the most important events that could lead to suicide (Séguin, Renaud, Lesage, Robert, & Turecki, 2011).

Thus far, little research has been conducted about the influence of parenting style on the development of suicidal ideation. Although research about this subject is scarce, the few researchers that did focus on this topic used the most common known parenting styles in their study (Baumrind, 1966, 1971), namely: permissive, authoritarian, authoritative and rejecting-neglecting style. First, the permissive style indicated parents who had a high responsiveness and a low demandingness. These parents presented themselves as a resource that the child may use as he or she wishes and let the child regulate their own activities. They interacted with the child in an acceptant, nonpunitive and agreeing manner. Second, the authoritarian style characterized a low responsiveness and a high demandingness by the parents. These parents set a standard of behavior and assess whether the child's behavior is in accordance with their standard. This entailed that these parents value obedience, restrict the autonomy of the child and display a higher level of authority in comparison to the permissive parents. Third, the authoritative style characterized a high responsiveness and a high demandingness by the parents. These parents applied a style that is balanced between valuing disciplined conformity and autonomous self-will of the child. Lastly, parents both low on responsiveness and demandingness were labeled as operating by the rejecting-neglecting style. So far, researchers suggested that the more "negative" parenting styles (i.e., authoritarian and rejecting-neglecting styles) are related to several risk behaviors and personality facets such as a higher risk for suicidal behavior, substance use and a decrease of self-esteem and social competence (Jackson, Henriksen, & Foshee, 1998; Lai & McBride-Chang, 2010). Furthermore, adolescents (aged 14-18 years) who grew up with authoritative homes seemed to profit from this parenting style, while adolescents who were raised by neglectful parents were disadvantaged. When raised in an authoritarian home, less distinct (dis)advantages were present (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). Regarding suicidality, a recent study found that children of rejecting-neglecting parents show a higher risk for suicide attempts in adolescence and other risk behaviors. In addition to the rejecting-neglecting parental style, low parental warmth, perceived authoritarian parenting, lack of maternal care and/or overprotection in mothers, lack of paternal care, lack of a protective adult relationship, aggressive and antisocial behavior shown by the child in a climate of parental hostility and a negative family climate were also associated with an increased risk for suicidal behavior. A positive family climate and the application of the authoritative parenting style however, may act as a buffer against the development of suicidal ideation in adolescents (Bergman et al., 2017; Donath, Graessel, Baier, Bleich, & Hillemacher, 2014; Hardt, Herke, & Schier, 2010; Jackson & Nuttal, 2001; Lai & McBride-Chang, 2010; Séguin et al., 2011).

In addition to the four parenting styles by Baumrind (1966, 1971), Barber (1996) indicated that parental behaviors can be more easily assembled in two dimensions, namely Support and Control. Barber (1996) argued that Baumrind merged certain constructs that led to the loss of potentially valuable information. For example, the authoritarian parenting style consisted of both parental psychological and non-psychological control and characteristics of the rejection and responsiveness dimensions. Because these constructs were emerged under one parenting style, researchers may not be able to research the unique effects of the individual forms of parenting.

Support contains those parental behaviors that show the child understanding, warmth and acceptance. Control, on the other hand, entails parental behaviors that influence the child's behavior. This last dimension can be segregated in behavioral control and psychological control. Behavioral control can be seen as those parental behaviors that try to control or steer the behavior of the child and psychological control can be defined as those behaviors by which the parent tries to intrude into the emotional and psychological development of the child (e.g., self-expression, emotions)(Barber, 1996; Barber, Stolz, Olsen, Collins, & Burchinal, 2005). These two types of control were claimed to influence preadolescents and adolescents negatively, in both longitudinal and cross-sectional studies. Both psychological and behavioral control have been mentioned as important predictors of externalized problems such as delinquency. Parental psychological control was also suggested as a significant predictor of internalized problems such as depression, while perceived parental support was associated with social initiative and lower depression (Barber, 1996; Barber et al., 2005). As discussed above, both internalized and externalized problems were discovered as important risk factors for suicidal ideation. Because these problems were associated with both suicidal ideation and the parental behavior-dimensions support and control and these dimensions are used more frequently in recent research, we used these constructs in our study to research the moderating role of parenting style between the possible association of loss in the family and suicidal ideation.

The limited research that has been conducted so far, which examined the relationship between suicidal ideation and parenting styles, focused exclusively on adolescents. This means that these associations have not yet been researched in a sample comprised of young children and, as mentioned above, it is important to research risk factors for young children specifically. Therefore one of the aims of the present study is to uncover the possible moderating role of parenting style between loss in the family and suicidal ideation. To do this, we used questionnaires that measured parental support and parental psychological/behavioral control.

## **1.2. Present Study**

First, this study explored the prevalence of suicidal ideation at age 8 in a Flemish cohort, as reported by the child's caregiver about the child. Second, we hypothesized that there is an association between suicidal ideation and psychiatric diagnoses. As mentioned above, the presence of multiple diagnoses is one of the most important predictors of suicidal ideation in children (Foley et al., 2006). Third, Ben-Yehuda et al. (2012) and Thompson et al. (2005) respectively suggested that suicidal ideation in young children is associated with higher levels of impulsivity and aggression. The current study examined whether this finding can be replicated by analyzing the association between suicidal ideation at age 8 and elevated levels of impulsivity/aggression in the child. Fourth, on the grounds of the integrated motivational-volitional theory of O'Connor (2011) we explored the association between suicidal ideation and stressful life events. We hypothesized that it is more likely for suicidal ideation to be present if multiple stressful life events have occurred. Regarding family risk factors, we examined the association between suicidal ideation at age 8 and loss in the family. We hypothesized that suicidal ideation is positively associated with loss in the family. Finally, as parenting can act as a buffer against suicidal ideation (Bergman et al., 2017; Donath et al., 2014; Hardt et al., 2001; Lai & McBride-Chang, 2010; Séguin et al., 2011), we hypothesized that positive parenting may act as a buffer in the possible relationship between loss in the family and suicidal ideation. To analyze this, we used the 6-year-old-cohort of the JOnG! study, questioned when their child was 8 years old.

We started our analyses with requesting the frequencies of suicidal ideation to examine its prevalence. Next, a chi-squared test was conducted to analyze the association between suicidal ideation and the possible above-mentioned risk factors. Additionally, the Cramér's V coefficient and phi coefficient was requested to inspect the strength of these associations. Next, a logistic regression was executed to examine the direction of the significant associations that had been found. Lastly, two independent samples t-test were performed to analyze the association between suicidal ideation and multiple psychiatric diagnoses one the one hand and multiple life events on the other hand.

## **2. Method**

### **2.1. Participants**

The participants were drawn from the JOnG! study, which is a multiannual program of Steunpunt Welzijn, Volksgezondheid en Gezin (SWVG). The main objective of this study was to follow the development of mental health, family relationships, and healthcare of Flemish families with 0-, 6- and 12-year old children. Furthermore, the study analyzed the interplay of medical, psychological and parenting/child-rearing aspects of the development of the children systematically. The study had a mixed longitudinal design, in which these three cohorts were followed for three years. For this study, the 6-year-old cohort (i.e. born in 2002) of the JOnG! study was used. In total, the third wave 6-year-old cohort contained 9,838 children (4,970 boys and 4,868 girls) of which the primary care giver of 1,891 children (19.2%) agreed to participate. Of these primary caregivers, 1,350 filled out the questionnaire correctly about their child born in 2002, at that time aged 8 years old, that were used for this study and thus were included in this study. The questionnaires that were used in this study, were completed by the primary caregivers of the child. More specifically, they were filled out by either the biological mother (94.4%), the biological father (4.2%), a foster or adoption parent (1.1%), a grandparent (0.2%), or another family member (0.1%) about their 8-year-old child.

The participants were selected through two phases in which they used a conditional random sampling plan. In the first phase, nine districts in Flanders were selected by using the district-description Kind & Gezin uses for their consultation clinics. Both urban and rural areas were included and the diversity and distribution over the nine Flemish districts were considered. Ypres and Ostend in West Flanders, Ghent 1 and Oudenaarde in East Flanders, Antwerp-North 1 and Geel in Antwerp, Genk in Limburg, Tielt-Winge in Flemish Brabant, and Brussel-North 1 in Brussels-Capital Region were selected to be included in the study. Each district represented a cohort of approximately 1,000 children that were born in 2002. The sample of possible participants was drawn out of the Flemish register of persons, which was authorized by Vaccinet. Because the children from the district Brussels-Capital Region had to follow Dutch education to be able to participate in this study and this information could not be obtained through databanks, there were no children recruited from this district. To compensate, they expanded district Ghent to Ghent 1, 2 and 3 instead of just 1. In the second phase the caregivers of all 6-year-olds, resident in one of the eight remaining districts, were invited to participate in the study via a letter, a flyer, an informed consent, a first questionnaire bundle and a stamped envelope in their postbox. These items were sent to the families in the eight

districts in March 2009 and additionally in August 2009 to Ghent 2 and 3. The informed consent had to be signed by at least one of the primary caregivers. This means that the children were recruited via their primary caregiver and only they were questioned about their child born in 2002. If the primary caregiver had not yet responded after ten weeks, the researchers sent them a reminder. In case of loss of the documents, they were informed that they could request new documents through a letter, a phone call or an e-mail. If the participants had any questions about the completing of the questionnaire, they could call 1700, which is a Flemish governmental service. The staff members were delivered a script of the JOnG! study, so they could help the primary caregivers with their questions. If the staff members did not know the answer to the question(s), they could e-mail it to JOnG!-staff members. The design, questionnaire, letters, written information, and informed consent were approved by the ethical commission of K.U. Leuven with additional advice from the ethical commission of UGent. The participants partook voluntarily (Grietens, Hoppenbrouwers, Desoete, Wiersema, & Van Leeuwen, 2010). In this study, we exclusively used the data of the third wave (i.e. 6-year-olds cohort) at the time that their child was 8 years old.

## **2.2. Material**

This study is part of a larger research, as mentioned above. We will only discuss the questionnaires that were relevant for this paper. The questionnaires used for this study were filled out by one of the primary caregivers when the child was 8 years old (wave 3 JOnG! cohort 6). When the primary caregivers were asked to fill out these questionnaires, they were inquired to focus on the child born in 2002. Consequently, all the reported data was focused on that child.

### **2.2.1. Suicidal ideation and psychiatric diagnoses**

Suicidal ideation was measured through eight questions about the possible expression of suicidal statements and thoughts by the child. These questions were designed specifically for the JOnG! study. First, the primary caregivers were asked whether their child had ever said that he or she would rather be dead. Next, they were asked whether they had ever noticed that their child thought it would be better if she or he would be dead. The answers were assessed on a two-point scale ('no' = 0; 'yes' = 1). These two questions were computed into the categorical variable 'suicidal ideation' ('no' = 0; 'yes' = 1). If the primary caregiver answered 'yes' to one or both of the two questions, they had to fill out additional questions. These additional questions entailed at which age

the child first made that statement or had had that thought (open question), how often ('once' = 1; 'multiple times' = 2), whether their child had said or thought this in the past six months ('no' = 0; 'yes' = 1), what the primary caregivers thought was the occasion for the statement or thought (open question) and to which extent they were worried at the time that their child made that statement or thought and in this moment. These last two questions were assessed on a 4-point Likert scale ('very much' = 1; 'much' = 2; 'some' = 3; 'a bit' = 4; 'not' = 5).

The presence of a psychiatric diagnosis was assessed by asking the primary caregiver: 'Has your child been diagnosed with one of the following things since May 2010?' (i.e. in the past year). Beneath the question were several psychiatric diagnoses of which the primary caregiver could mark the box ('yes' = 1; 'no' = 0).

### **2.2.2. Levels of impulsivity and aggression**

The levels of impulsivity and aggression in the child were examined by using items of the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997). The SDQ is a well-know, brief screening tool that consists out of 25 items that are divided in five scales: emotional symptoms (five items), conduct problems (five items), hyperactivity/inattention (five items), peer relationship problems (five items) and prosocial behavior (five items). The first four scales must be added together to generate a total difficulties score based on 20 items. The questionnaire was translated to Dutch by van Widenfelt, Goedhart, Treffers, and Goodman (2003). The mean-inter-informant product-moment correlations of the scales of this translated version were satisfactory ( $r_{\text{parent-teacher}} = .38$ ;  $r_{\text{teacher-self-report}} = .27$ ;  $r_{\text{parent-self-report}} = .35$ ), as were the mean-inter-informant product-moment correlations of the impact questions ( $r_{\text{mean parent-teacher}} = .48$ ;  $r_{\text{mean parent-self-report}} = .24$ ). van Widenfelt et al. (2003) also found a good concurrent validity with other measures of psychopathology. There are several versions of the SDQ available and in this study we used the Parent Report Measure for Children aged 4-16. Of this translated parent report version, two items were used to measure the levels of impulsivity and aggression, namely 'My child thinks things out before acting' (reverse scored) and 'My child often loses his or her temper'. The answers were scored on a 3-point scale ('not true' = 1; 'somewhat true' = 2; 'certainly true'; 3). The Cronbach alpha's values found in studies for the parent version were acceptable for both the total difficulties scale ( $\alpha = .81$ ) and the subscales (ranging from  $\alpha = .57$  to  $\alpha = .84$ ).

### 2.2.3. Stressful life events

Stressful life events and thus loss in the family were measured by using a Dutch questionnaire that assesses 19 life-events in the family. Originally this questionnaire, named the *Vragenlijst Meegemaakte Gebeurtenissen* (VMG; Veerman & Ten Brink, 1993), was used as a structured screening tool to detect possible stressful events in the life of the child (aged 3 to 17 years). It consisted out of 37 items of which 34 could be described as negative stressful and three as positive. However, the VMG has been revised three times since and now consists out of 24 items (Veerman, Janssen, Ten Brink, van der Horst, & Koedoot, 2003). Of those 24 items 19 were included in our study ( $\alpha = .44$ ). These life-events (e.g., 'our family gained financial problems', 'I have been hospitalized') concerned the past 12 months and 1 year prior to the day they completed the questionnaire. Three items focused specifically on loss in the family (i.e., 'my partner passed away', 'a son or daughter has passed away' and 'a close relative or acquaintance has passed away'). It is scored on a 5-point scale (1 = 'did not experience it'; 2 = 'experienced as a negative and stressful life event'; 3 = 'experienced as a negative, but not stressful life event'; 4 = 'experienced as a positive, but not stressful life event'; 5 = 'experienced as a positive and stressful life event'). The Cronbach's alpha values of the VMG in past studies indicated a good ( $\alpha = .80$ ) to medium ( $\alpha = .68$ ) internal consistency (Baetens et al., 2014; Veerman et al., 2003).

### 2.2.4. Parenting

As mentioned above, parenting consists of two dimensions, namely Support (i.e., positive parenting) and Control (i.e., negative parenting). To examine these dimensions, we used two questionnaires. First, the *Parental Behavior Scale* (PBS) was used to assess parental support and behavioral control. This scale was originally designed by Van Leeuwen and Vermulst (2004) and named the *Ghent Parental Behavioral Scale* (GPBS). It was constructed after the discovery of some failures in other existing instruments that measured parenting styles. The GPBS can be distinguished in two-dimension components or second-order factors: Support/Warmth and (behavioral) Control. The dimension Support/Warmth consists of the subscales Positive Parental Behavior, Autonomy and Rules and (Material) Reward, and the dimension Control consists of the subscales Discipline, (Harsh) Punishment and Ignoring. Each item represents a certain type of behavior that belongs to one of the nine scales. For this study, the original Dutch version of the Parental Behavior Scale was used, although in a shortened form that was developed because of the need of shorter questionnaires. This shortened version, named *Schaal Ouderlijk Gedrag* (SOG-25) in the original Dutch version, kept

25 out of the 45 items (e.g., 'I hit my child if he/she disobeys', 'When my child comes home from school, I make time for him/her') and still includes the essential constructs to measure the aspects of the second-order factors Support/Warmth (i.e., positive parenting, autonomy, (material) reward, and rules) and (behavioral) Control (i.e., punishing, harsh punishing and neglect). The primary caregivers were asked to rate the frequency per item on a 5-point Likert scale ('never' = 1; 'seldom' = 2; 'sometimes' = 3; 'often' = 4; 'always' = 5) with their focus on parental behavior towards their child born in 2002. When the questionnaire had been completed, a mean score was calculated for the set of items that belong to a scale. Van Leeuwen and Vermulst (2004) found that the internal consistency is acceptable ( $\alpha = .70$ ) to good ( $\alpha = .80$ ), although the reliability for Reward was rather low. The Cronbach Alpha's values for the support items ( $\alpha = .83$ ) and the behavioral control items ( $\alpha = .76$ ) separately were good (Baetens et al., 2014). The ratings of parents correlated positively and significantly with the ratings of children and a solid factor structure was reported in different samples. This questionnaire has mainly been used in the Dutch-speaking (Van Leeuwen & Vermulst, 2004) and French-speaking (Meunier & Roskam, 2007) region of Belgium.

Second, we used the *Psychological Control Scale* (PCS) to measure parental psychological control. Barber (1996) was the first to prove that psychological control can be measured reliably and thought of it as a form of control that manipulates, invalidates and constrains the emotional and psychological expression and experience of children. To develop this first *Psychological Control Scale*, Barber (1996) used the theoretical conceptualizations of psychological control and some items from Schaefer (1965). The final version is a unidimensional scale and consists out of eight items about invalidation of feelings, restriction of verbal expression, personal attack and withhold love (e.g., 'I interrupt my child', 'I avoid looking at my child when he/she disappointed me')(Barber, 1996; Grietens et al., 2010). Furthermore, this final version entails cross-cultural items and classical items, and has a good reliability. Additional, Barber et al. (2005) found a good validity for psychological control as a measurement of parenting. This questionnaire must be completed by the parent(s) and lets the parent(s) reflect on their behavior toward their child. It is scored on the same 5-point Likert scale as the SOG-25. Kuppens, Grietens, Onghena, and Michiels (2009) translated the questionnaire to Dutch and this version was used to assess parental psychological control in our study. Although this questionnaire has a good reliability and validity, we must consider that most measurements of this scale have been conducted among adolescent samples (Barber & Harmon, 2002). In our study, the internal consistency of the Parental Behavioral Scale was good ( $\alpha = .79$ ) and of the Psychological Control Scale medium ( $\alpha = .69$ ).

### **2.3. Procedure**

The primary caregivers in the 6-year-olds cohort were asked to fill out a questionnaire at three different timepoints, namely when their child, born specifically in 2002, was 6, 7 and 8 years old. At the three timepoints, the primary caregivers received a letter and a questionnaire in their post box. The letter described what the questionnaire is about and included several instructions that can help the primary caregivers fill out the JOnG!-questionnaire. The letter also stated that it is intended that the mother completes the questionnaire about her child born in 2002. However, if this were not possible, someone else was allowed to do it. After the tips and instructions, the JOnG!-questionnaire started with asking the subject to fill out his or her contact details (e.g., name, address), the date on which the questionnaire was completed and what the relationship of the subject is with the child. Further on, several topics were explored (e.g. medical history, temperament of child, academic performances, etc.). Once the questionnaire was completed, the primary caregivers were asked in the letter to return the bundle by using the (stamped) envelope that was attached to the bundle. Lastly, the researchers asked to send back the bundle as soon as possible and thanked the primary caregivers in advance.

## **3. Results**

### **3.1. The Prevalence And Descriptives of Suicidal Ideation**

In total, 12.1% of the primary caregivers reported the presence of suicidal ideation. Of these primary caregivers, 12% indicated that their child had said that he or she would rather be dead and 4% indicated that they had noticed that their child thought it would be better if he or she would be dead. The average age on which suicidal ideation was reported, was 7 to 8 years old. The youngest child was 3 years old. Of those primary caregivers who reported suicidal ideation in their child, slightly more primary caregivers indicated that their child had said or thought it multiple times (58.9%) in comparison to only once (41.1%). Yet, in the past 6 months, 68.7% of the primary caregivers indicated that their child had not thought or said it and 31.3% that their child had thought or said it. The primary caregivers were asked what they thought was the occasion that had led up to this statement/thought through an open question. Among the most common occasions were: when the child felt angry, sad, frustrated unhappy and/or less worthy. The primary caregivers indicated that children would often express the desire to be dead under the influence of strong emotions. Also very common were conflicts in or events that concern the family (e.g., heated

arguments, divorce, health problems, death), conflicts with friends and problems at school. Problems at school included adaptation (e.g., low grades, not being able to keep up), being left out in class and being bullied. The participants were asked to which extent they were worried about the statement/thought then and now. Most participants indicated that they were a little worried about the statement/thought at the moment their child had thought/said it (26.2%) and not worried at all at the moment they completed the questionnaire (52.4%). Notably, there were equally as many participants indicating that they were at that moment very much worried (17.8%) or not worried at all (17.8%).

### **3.2. Suicidal ideation And Psychiatric Diagnoses**

In total, 15.2% of the children in our sample have been diagnosed with a psychiatric disorder or intellectual giftedness. Of these children, according by the primary caregivers, 13% has one psychiatric diagnosis, 1.7% two diagnoses, 0.3% three diagnoses and 0.2% four or five diagnoses. The most often reported diagnoses were respectively a learning disorder (6.4%), intellectual giftedness (2.3%), autism spectrum disorder (2.2%), and attention deficit hyperactivity disorder (ADHD) (1.9%). Less than one percent reported a not yet aforementioned psychiatric diagnoses. To analyze the association between suicidal ideation and psychiatric diagnoses, a chi-squared test was used. Suicidal ideation was weakly yet significantly associated with the presence of a psychiatric diagnosis ( $\chi^2(1) = 6.909, p = .009, \phi = .073$ ). Specifically, suicidal ideation was significantly related to the diagnoses ADHD ( $\chi^2(1) = 9.538, p = .002, \phi = .085$ ), depression ( $\chi^2(1) = 21.905, p < .000, \phi = .129$ ), and autism spectrum disorder ( $\chi^2(1) = 4.507, p = .034, \phi = .059$ ), although the strength of these associations was very weak. Intellectual giftedness, anxiety disorder, Gilles de la Tourette, intellectually disabled, learning disorder, developmental coordination disorder, and behavioral disorder were not significantly associated with suicidal ideation. To determine the direction of the significant associations, a logistic regression was performed. We found that the primary caregivers for those children who have been diagnosed with a psychiatric diagnosis and more specifically with ADHD or autism spectrum disorder were more likely to report the presence of suicidal ideation in comparison with primary caregivers whose children have not been diagnosed (odds-ratio<sub>psychiatric diagnosis</sub> = 1.725, 95% CI = [1.114, 2.600]; odds-ratio<sub>ADHD</sub> = 3.395, 95% CI = [1.349, 8.544]; odds-ratio<sub>autism spectrum disorder</sub> = 2.494, 95% CI = [1.043, 5.967]), and this difference is significant

(Wald(1)<sub>psychiatric diagnosis</sub> = 6.776,  $p = 0.009$ ; Wald(1)<sub>ADHD</sub> = 6.736,  $p = .009$ ; Wald(1)<sub>autism spectrum disorder</sub> = 4.22,  $p = .040$ ).

Lastly, by performing an independent samples t-test, we found a significant difference between the presence of suicidal ideation ( $M = .30$ ,  $SD = .673$ ) and the absence of suicidal ideation ( $M = .16$ ,  $SD = .439$ ) if multiple psychiatric diagnoses were reported. In other words, multiple psychiatric diagnoses were significantly more likely reported if suicidal ideation had also been reported ( $t(175.848) = -2.421$ ,  $p = .017$ , 95% CI = [-.242, -.025]).

### **3.3. Suicidal Ideation And Levels Of Impulsivity/Aggression**

To the question 'my child often loses his or her temper', which we used to measure the level of aggression, 27% of the primary caregivers answered 'somewhat true' and 8.4% 'certainly true'. To the question we used to measure impulsivity, namely 'my child thinks things out before acting', 50.3% of the primary caregivers answered 'somewhat true' and 39.2% 'certainly true'. To examine whether the level of impulsivity and aggression is associated with suicidal ideation, we performed a 2x3 chi-square test. A very weak yet significant association was found between suicidal ideation and the level of impulsivity ( $\chi^2(2) = 17.341$ ,  $p < .001$ ,  $V = .115$ ). Between suicidal ideation and the level of aggression, a weak yet significant association was discovered ( $\chi^2(2) = 47.034$ ,  $p < .001$ ,  $V = .190$ ).

Next, a logistic regression was executed. It showed that children with higher levels of aggression were significantly more likely to experience suicidal ideation (odds-ratio = 2.013, 95% CI = [1.586, 2.555], and this difference is significant (Wald(1) = 33.054,  $p < .001$ ). The logistic regression displayed the same result for the level of impulsivity (odds-ratio = .631, 95% CI = [.489, .814], Wald(1) = 12.562,  $p < .001$ ).

### **3.4. Suicidal Ideation And Stressful Life Events**

The most reported stressful life events were the death of an acquaintance or close family member (17.7%), the hospitalization of a child (7.6%), the hospitalization of the person filling out the questionnaire (7.2%), a considerable decrease of the family income with at least 20% or more (6.7%), financial problems (5.5%), and divorcing or breaking up with their partner (5.2%). The remaining stressful life events were reported by 5% of the primary caregivers or less. First, a chi-squared test was used to determine which stressful life events were associated with suicidal ideation.

Additionally, the phi coefficient was requested to examine the strength of the associations. We found that a considerable change (decrease and increase of at least 20%) of the family income was associated with suicidal ideation, although this association was very weak ( $\chi^2(1)_{\text{increase}} = 5.385, p = .020, \phi = .065$ ;  $\chi^2(1)_{\text{decrease}} = 4.095, p = .043, \phi = .056$ ). Specifically for loss in the family, no significant associations were found (see Table 1). Using a logistic regression, we found that it was significantly more likely for suicidal ideation to be reported if a considerable increase of at least 20% of the family income had happened (odds-ratio = 2.270, 95% CI = [1.090, 4.725], Wald(1) = 4.799,  $p = 0.028$ ). Lastly, an independent samples t-test was conducted to examine whether suicidal ideation was more present if multiple stressful life events had occurred. A significant difference was found between suicidal ideation and no suicidal ideation, when comparing for multiple stressful life events ( $t(1297) = -2.698, p = .007, 95\% \text{ CI} = [-.439, -.069]$ ).

Furthermore, we researched the association between suicidal ideation and loss in the family. Of the primary caregivers, 17.54% had experienced the death of a loved one. Of this percentage, 2.10% reported suicidal ideation in their child. The most experienced type of loss was the loss of an acquaintance or family member (17.30%), and 2.17% of this percentage also reported suicidal ideation in their child. Only .46% of the primary caregivers experienced the loss of a partner and .39% the loss of a daughter or son. Almost no suicidal ideation was reported within these small percentages. None of the primary caregivers reported suicidal ideation if the loss of a partner had occurred and of the .39% who had lost a daughter or son only .08% reported suicidal ideation in their child. To further analyze the association between suicidal ideation and loss in the family, a two proportion Z-test was used. As can be seen below in Table 1, the presence of suicidal ideation was not significantly associated with loss in the family ( $z = -.002, p = .500$ ). Furthermore, no specific types of loss were significantly related to suicidal ideation in the child born in 2002. Therefore, no further analyses were performed to examine the moderating role of positive parenting. Instead, the influence of parenting on suicidal ideation was examined.

Table 1

*The Association Of Suicidal Ideation With Loss In The Family (n = 1350)*

<b>Variables</b>	<b>Number responding</b>	<b><math>\hat{p}_1</math> (%)</b>	<b><math>\hat{p}_2</math> (%)</b>	<b>Z</b>	<b>p (1-sided)</b>
Loss	1283	12.00	12.00	-.002	.500
Loss of parent	1294	.00	12.19	-.912	.181
Loss of sister/brother	1293	20.00	12.03	.546	.291
Loss of an acquaintance/ family member	1289	12.56	11.91	.268	.393

Parental behavioral control was inspected by using the SOG-25, which was divided into five scales: punishment, harsh punishment, positive parenting, rules, and material reward. The scales were computed by calculated the mean of the items belonging to the corresponding scale. The associations between these scales and suicidal ideation were explored by conducting a logistic regression (Table 2). We found that suicidal ideation was significantly less present if the primary caregivers reported lower levels of the scale harsh punishment (odds-ratio = 2.053, 95 % CI = [1.117; 3.772], Wald(1) = 5.369,  $p = .020$ ), higher levels of the scale positive parenting (odds-ratio = .625, 95 % CI = [.432; .904], Wald(1) = 6.229,  $p = .013$ ) and higher levels of the scale rules (odds-ratio = .687, 95% CI = [.497, .951], Wald(1) = 5.110,  $p = .024$ ). To examine parental psychological control, the PCS was used. A scale was made by calculating the mean of the eight items and a logistic regression was performed. We found that it was more likely for suicidal ideation to be reported if a higher level of parental psychological control was present (odds-ratio = 2.284, 95% CI = [1.485, 3.512]) and this difference was significant (Wald(1) = 14.152,  $p < .001$ ).

Table 2

*The Association Of The Parental Behavioral Control Scales Of The SOG-25 And Suicidal Ideation**(n = 1309)*

<b>Variables</b>	<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>p</b>	<b>OR</b>	<b>95% CI OR</b>
Punishment	.021	.106	.038	.846	1.021	[.830; 1.255]
Harsh punishment	.719	.310	5.369	.020	2.053	[1.117; 3.772]
Positive parenting	-.470	.188	6.229	.013	.625	[.432; .904]
Rules	-.375	.166	5.110	.024	.687	[.497; .951]
Material reward	-.046	.128	.127	.721	.955	[.744; 1.227]

#### 4. Discussion

Although suicidal ideation is less prevalent among children than it is among adolescents, it remains an important precursor of suicidal behavior and especially at a younger age because the earlier suicidal ideation is present, the more likely one will die by suicide at an older age (Klimes-Dougan et al., 1999; Nock et al., 2008; Velez & Cohen, 1988; Whalen et al., 2015). So far, researchers uncovered many risk factors for suicidal ideation such as child psychopathology (Ben-Yehuda et al., 2012; Foley et al., 2006; Mayes et al., 2015; Nadorff et al., 2013; Pfeffer et al., 1979; Wyman et al., 2009) and family influences (Brent et al., 2015; Dunn et al., 2013; Klimes-Dougan et al., 1999; Kovess-Masfety et al., 2015; Lin et al., 2014; Soole et al., 2015; Taussig et al., 2014; Wagner et al., 2003; Whalen et al., 2015). However, the majority of these studies included both child and adolescent participants and recent research suggested that risk factors for suicidal ideation differ between children and adolescents (Tan et al., 2018). This implies that the risk factors for suicidal ideation, which were found in studies that also included adolescent participants, may not be applicable for young children. Therefore, this paper specifically focused on uncovering risk factors for suicidal ideation in children.

In this study, the aim was to examine the prevalence and risk factors for suicidal ideation in 8-year-olds specifically. To do this, we used the 6-year-olds cohort of the JOnG! study. The primary caregivers in this cohort received a questionnaire, when their child was 8 years old, in which was

asked whether their child had ever expressed suicidal ideation. Next, we looked into the existing literature to select possible risk factors for suicidal ideation that were reported in this questionnaire.

#### **4.1. Prevalence And Potential Risk Factors Of Suicidal Ideation In This Study**

First, we explored the prevalence of suicidal ideation at age 8 in the Flemish cohort, as reported by the primary caregivers about their child. In total, 12.1% of the primary caregivers reported that their child had said or thought that he or she would rather be dead. The average age on which suicidal ideation was reported, was 7 to 8 years old. The youngest child was 3 years old. This percentage was relatively in line with the existing literature, although we noticed a remarkable difference between the prevalence of suicidal ideation in Western countries (9.9% to 16.96%) and Asian countries (27.67%) (Kovess-Masfety et al., 2015; Tan et al., 2018; Thompson et al., 2005). This entails that we must be aware of cultural variations in future research. Also, we must take into account the different definitions used in the studies to describe suicidal ideation. Velez and Cohen (1988) found that the prevalence may vary from 26% to 2% in function of the used definition and thus, to obtain a more accurate prevalence percentage, we should agree on a universal definition of suicidal ideation. Aside the prevalence, we found that slightly more primary caregivers indicated that their child had said or thought it multiple times (58.9%) in comparison to only once (41.1%). They reported that their child was most likely to say or think this if he or she was under the influence of strong emotions (i.e. angry, sad).

Second, we hypothesized suicidal ideation to be more present in children with a psychiatric diagnosis or multiple psychiatric diagnoses. Consistent with prior studies, this hypothesis was accepted (Foley et al., 2006; Kovess-Masfety et al., 2015; Pfeffer et al., 1979). Next, we zoomed in on specific psychiatric diagnoses. We found that suicidal ideation was more present in children with attention deficit hyperactivity disorder (ADHD) and an autism spectrum disorder. This was similar to what other researchers had already found (Ben-Yehuda et al., 2012; Mayes et al., 2015; Wyman et al., 2009). Suicidal ideation was not significantly more present in children with depression, anxiety disorders, learning disorders, a developmental coordination disorder, behavioral disorders not including ADHD, Gilles de la Tourette, intellectual giftedness and intellectually disabled. These results were somewhat surprising because depression, anxiety disorders, behavioral disorders and intellectual disability had been appointed as important risk factors of suicidal ideation in previous studies (Foley et al., 2006; Mayes et al., 2015; Nadorff et al., 2013; Wyman et al., 2009). However,

researchers recently argued that the risk factors, including psychiatric disorders, associated with suicidal ideation in children may differ from those in adolescents (Ben-Yehuda et al., 2012; Tan et al., 2018; Whalen et al., 2013). Thus, this discrepancy may be due to the partaking of adolescent participants in some of the above-mentioned studies. Previous studies also found eating disorders and sleeping disorders as significant risk factors of suicidal ideation (Nadorff et al., 2013). These disorders were not included in our study.

Third, we found that suicidal ideation was significantly more present in children with higher levels of aggression and impulsivity. This was consistent with our hypothesis and previous research (Ben-Yehuda et al., 2012; Tan et al., 2018; Thompson et al., 2005; Wyman et al., 2009). Interestingly, this corresponded with our finding that suicidal ideation was more present in children who had been diagnosed with ADHD, since this psychiatric disorder is known to have an impulsive component. This correspondence may explain why ADHD was significantly more reported if the children displayed suicidal ideation. Also, previous research stated that children with suicidal ideation are more often diagnosed with externalizing disorders while this is not the case with older children (Kovess-Masfety et al., 2015; Whalen et al., 2015). This may be due to the higher levels of impulsivity and aggression.

Fourth, on the grounds of the integrated motivational-volitional theory of O'Connor (2011), we explored the association between suicidal ideation and (multiple) stressful life events. We found that suicidal ideation was significantly more present if multiple stressful life events had been reported. Yet, no specific stressful life events, aside a very weak association between suicidal ideation and a considerable decrease and increase of at least 20% of the family income, influenced the presence of suicidal ideation specifically. When performing a logistic regression, only a considerable increase of the family income stood ground. This association may be explained due to the higher job demands when receiving an increment and consequently having less spare time and attention for offspring. Also, O'Connors theory (2011) stated that individual vulnerabilities, life events and environment lead to an elevated risk to create suicidal ideation. The lack of significant associations between suicidal ideation and stressful life events may be due to the absence of individual vulnerabilities and negative environmental factors in those children who experienced stressful life events. Moreover, some of the stressful life events that were mentioned in the literature, such as physical or sexual abuse and witnessing violence (Thompson et al., 2005; Dunn et al., 2013), differed from those we examined in our questionnaire. Furthermore, the questionnaire we used

focused on stressful life events experienced by the primary caregiver instead of by the child (e.g., 'I took children of my new partner in my home'). Within the domain of stressful life events, we specifically hypothesized that suicidal ideation would be more present if a loss in the family had occurred, because the death of a sibling or parent is one of the most traumatic and stressful events young children can experience (Bergman, Axberg, & Hanson, 2017; Yamamoto et al., 1996). Since suicidal ideation was not significantly associated with the occurrence of stressful life events and thus loss in the family, this hypothesis was rejected. We must take into account that the questionnaire was for the majority filled out by the mother. Subsequently, it is possible that the child, in the case of losing a sibling or parent, refrained from exposing his or her suicidal ideation to their parent because he or she does not want to further burden the parent. For parental loss specifically, Wilcox et al. (2010) stated that the development of suicidal ideation is moderated by the parental mode of death and that suicidal ideation was most present if the mode of death was suicide. Because we did not administer information about this, we could not verify this and it may very well be that none of the parents in our study died by suicide.

Finally, we hypothesized that positive parenting acted as a protective moderator between suicidal ideation and loss in the family (Haine et al., 2006; Kwok et al., 2005; Schmiege et al., 2006). This hypothesis could not be analyzed because no association was found between suicidal ideation and loss in the family. Because previous studies stated that parenting can act as a protective factor against suicidal ideation, we drew up a new hypothesis (Bergman et al., 2017; Donath et al., 2014; Hardt et al., 2010; Jackson et al., 1998; Jackson & Nuttal, 2001; Lai & McBride-Chang, 2010; Séguin et al., 2011; Steinberg et al., 1994). We hypothesized that suicidal ideation was less likely to be present if higher levels of positive parenting (i.e., the scales positive parenting, (material) reward, autonomy and rules) and lower levels of negative parenting (i.e., the scales harsh punishment, punishment, neglect and psychological control) were reported. This hypothesis was partially accepted. We found that suicidal ideation was significantly less likely to be present if higher levels of the scales rules and positive parenting and lower levels of the scales harsh punishment and psychological control were reported. In other words, the more parents give their child rules and apply positive parental behavior, and the less they use harsh (physical) punishment and try to intrude the emotional and psychological development of their child, the less likely it is for suicidal ideation to develop.

#### **4.2. Strengths And Limitations**

Many of the previous studies concerning suicidal ideation in young children consisted of a relatively small sample size or included adolescent participants in their sample. Recently, researchers stated that risk factors of suicidal ideation in young children differ from those in adolescents. This implies that the risk factors of suicidal ideation which were found in studies with adolescent participants may not be applicable for young children (Ben-Yehuda et al., 2012; Tan et al., 2018; Whalen et al., 2013). This study is one of the first studies that broadly examined a number of possible risk factors for suicidal ideation in a relatively large sample, consistent of eight-year-old children specifically. Because of the relatively large sample size ( $N > 200$ ), missing data and non-normal distribution was negligible and did not influence the results significantly.

Aside the strengths of this study, several limitations should also be noted. First, the definition used in our study was not examined in a pre-study. This could have a significant influence since researchers stated that the prevalence may vary from 26% to 2% in function of the definition used to describe suicidal ideation. Second, the questionnaire we used was filled in by the biological mother in most cases (94.4%) and not by the child. Previous research suggested that mothers reported their children as thinking less about death and dying than did the children themselves (Velez & Cohen, 1988). Because our data was largely parent-reported, there might be an underreporting of suicidal ideation. Also, not all children with suicidal ideation express this to their primary caregivers. This potential underreporting could have a not negligible influence on our results. Third, our study used only the cross-sectional data of the 6-year-olds cohort of the JOnG! study. Consequently, in the current study we did not determine whether the uncovered potential risk factors preceded the onset of suicidal ideation and thus if these correlates are truly risk factors. Fourth, this study focused on uncovering single risk factors while some risk factors may only be significantly associated with suicidal ideation in combination with other risk factors (e.g., life events in the integrated motivational-volitional theory of O'Connor (2011)). Furthermore, because this study focused on finding potential risk factors, few protective factors were examined (i.e., positive parenting). The lack of research focusing on protective factors was also present in the existing literature concerning this topic. This gap may result in an adequate early detection of suicidal ideation, due to the knowledge of these risk factors, with few ways to diminish this elevated risk to develop suicidal ideation.

### **4.3. Implications**

The current study's findings can be situated in the first step of the suicidal process, namely suicidal ideation. By uncovering the potential risk factors for suicidal ideation in children, we may be able to prevent the development of a suicide plan, attempt and suicide. Also, we could intervene more quickly in the clinical practice by developing an early detection screening tool for suicidal ideation in children. To do this, a longitudinal study must be conducted in the future to narrow down the risk factors that precede the onset of suicidal ideation. Furthermore, future research should also include the examination of protective factors. Most studies in this field of research focus on uncovering potential risk factors, although the identification of protective factors is equally important. If future research could discover important protective factors for suicidal ideation, we could perhaps first detect possible risk factors of suicidal ideation and if an alarming amount of risk factors were assessed heighten these protective factors to the extent that it is possible.

### **4.4. Conclusion**

This study is one of the first studies to identify several potential risk factors of suicidal ideation in a relatively large sample of 8-year-old children specifically. In summary, we concluded that the prevalence of suicidal ideation in this study is 12.1%. We also uncovered that a psychiatric diagnosis or multiple psychiatric diagnoses potentially elevated the risk for suicidal ideation, specifically if this psychiatric diagnosis was an attention deficit hyperactivity disorder or an autism spectrum disorder. Furthermore, we discovered higher levels of impulsivity and aggression, the occurrence of multiple stressful life events, a considerable increase of the family income, a lower level of rules and positive parenting and a higher level of harsh punishment and parental psychological control as potential risk factors for the development of suicidal ideation. If replicated in a longitudinal study, we can appoint these potential risk factors as being present prior to the development of suicidal ideation. Thus, in future research we may then be able to generate an early detection screening tool specifically for suicidal ideation in young children that can be used in the clinical practice.

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