



Article Assessment of Children's Fears: Impact of Cognitive Level

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Abstract: The aim of this study is to contribute to the debate concerning the intensity of fears in high-IQ children. Many authors have pointed out that this population presents a particular psychoaffective profile that can lead to greater anxieties and fears. One hundred and one children (normal-IQ vs. high-IQ) were subjected to an adaptation of the Fear Inventory (FSSC-R; Inventaire des peurs de l'enfant, IPE-R). The results show that fear of danger and death is significantly more intense than all other fears in children aged 5 to 12. However, the pattern of results obtained did not differ according to the cognitive abilities of the children questioned. These results are important because they challenge the preconceived ideas conveyed in the media and by many practitioners who have made giftedness their stock-in-trade. If there is indeed a difference, it may be linked not to the children's perception of their own emotional state but rather to its behavioral manifestations, which may be more intense in high-IQ children. These results are discussed in relation to the literature, and research perspectives are proposed.

Keywords: emotion; fear; high-IQ children; inventory of fears; development

1. Introduction

Eyes wide open, upper eyelids raised, lower ones tensed, eyebrows raised and pulled together, mouth open, and lips stretched horizontally backward—this is how we might describe the expression of fear, according to Ekman's work [1]. Fear, the feeling experienced in the presence of danger, whether real or imagined, is a basic emotion like anger, joy, disgust, surprise, or sadness [2,3]. While they all play a part in ensuring an individual's survival, each has a very specific role [4]. Fear has both a physical and psychological protective function, reflected in the modification of three components: (a) the cognitive component, which corresponds to the changes in mental state linked to the emotion and is the subjective component of the emotional experience; (b) the behavioral component, which refers to all the behavioral and expressive manifestations of an emotion, such as posture, tone of voice, or, as we have seen, facial expression; and (c) the physiological component [5]. Thus, when a danger is perceived, the individual's emotional state alters, leading to physiological changes such as an increase in heart rate.

This activates defensive strategies, such as flight or attack, in order to best overcome the dangerous event [6]. The perception of danger may come from a real, present, and imminent event or from an imaginary one [7]. In this respect, the distinction between the concepts of fear and anxiety is very slight.

Although used interchangeably in everyday language, fear and anxiety are not triggered by the same situations and do not lead to the same expressions and behaviors in the subject. While fear leads to an immediate reaction to an event perceived as dangerous, anxiety is linked to expecting the negative effects of an event before it has even occurred [8]. Anxiety thus enables us to anticipate possible dangers and to plan reactions that can be applied when the time comes. However, unlike fear, anxiety does not arise from a specific object known to the subject. Rather, it is a diffuse feeling based on the sensation that something is going to go wrong without knowing precisely what it is. Anxiety keeps us alert and awake, while fear enables us to act directly on the situation [9]. They are, therefore,



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Copyright: © 2024 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). two complementary parts of a fundamental protection system that is effective as long as they do not interfere with all spheres of the individual's life. Moreover, it is important to note that the links between fear and anxiety can become clearer through an understanding of specific fears associated with certain anxiety disorders. For instance, separation anxiety disorder is characterized by excessive fear or anxiety concerning separation from those to whom an individual is attached, which may manifest in various behaviors such as clinging to caregivers or reluctance to leave home [10]. Such associations emphasize the intricate relationship between specific fears and corresponding anxiety disorders, further illustrating the nuanced differences between fear and anxiety.

The aim of this article is to compare the intensity of fears in children aged 5 to 12, comparing normal-IQ children with high-IQ children. After reviewing the current state of fear in children and the specificity of children with high cognitive ability, we will present the results of research carried out in France and discuss them in light of current theoretical debates.

2. Related Works

2.1. The Development of Children's Fears

Although strongly linked to each individual's life experiences and to intra-personal variability, it seems that we share similar fears depending on the period of our lives [11]. Studies carried out on children aged 5 to 12 show that the most frequent fears can be grouped into three main dimensions. The first relates to fear of danger and death. In the early stages of this age group, children begin to become aware of the potential "danger" of certain situations (e.g., getting stuck in an elevator) or places (e.g., going to the doctor) [12]. This awareness can lead to fears of varying intensity and persistence, depending on the child's early experiences but also on the signals conveyed by the parents [13]. Gradually, the fear of danger becomes the fear of irreversibility and, thus, the fear of death. Present throughout this period, it peaks at around age 9 and depends on an understanding of its definitive, inevitable, and universal nature [14]. The second dimension relates to the fear of creatures and animals. By the age of 5, children's fertile imagination [15] leads to a fear of monsters, ogres, witches, and wolves [16]. These "imaginary" fears often give rise to a fear of the dark and a fear of being alone, which can last until the age of 12 [17]. These intergenerational and intercultural fears are fed by myths, children's stories, cartoons, and animated films. The third dimension is social fear. These often appear around the age of 5–6 when the child starts elementary school [17] and can increase with the child's (often school-related) social experiences. Fears of not succeeding or of doing badly in the face of school demands [18] are common, as is the fear of ridicule. These childhood fears are universal [19,20] and considered "normal". They can even increase children's involvement in learning tasks. However, this positive effect depends on the frequency and intensity of these fears, as they can also increase stress levels, leading to disengagement from the task due in part to the implementation of avoidance strategies [21]. Based on cognitive development theory, similar fear patterns are observed in children at the same stage of development. For example, for children at the stage of concrete operations, if differences linked to pathology are disregarded, several studies have shown no difference in fear scores between the ages of 7 and 13 [22,23]. With regard to imaginary, improbable, and realistic fears, there was no significant difference between 3 and 7 years of age (i.e., children in the pre-operative stage) [24]. In conclusion, fears evolve throughout childhood in close relation to the child's cognitive and emotional development [25] and seem to lose intensity over the years (for total scores) [26]. However, inter-individual variations exist, irrespective of the child's age [7]. Environmental factors such as parenting practices, attachment styles, or the family environment may have an impact on the intensity of fears [27], as may certain internal factors such as cognitive particularities.

2.2. The Fears of Gifted Children

There is, at present, no unanimous and unambiguous definition of intelligence [28–33]. This definition is situated in a particular social, cultural, and theoretical context. While there is abundant scientific literature on people with higher intellectual abilities, so-called gifted individuals, the controversy around the notion of intelligence leads to vagueness concerning the notion of giftedness. Several definitions of giftedness coexist in the scientific literature (for example, the high cognitive ability definition, the multiple criteria definition, and the three-ring model). The definition of a gifted child based on high cognitive ability is that of a child whose total score on a standardized intelligence quotient (IQ) test, such as the WPPSI-IV or WISC-V, exceeds the threshold of 130, i.e., the "very superior" class. Researchers differ, however, on the value of this threshold [34–39]. Multiple domain definitions [40] include factors such as achievement, motivation, and creativity. These definitions are close to Renzulli's model, according to which there are three relevant traits in giftedness: above-average ability, creativity, and commitment to the task [41]. Thus, while the percentage of gifted people is estimated at 2.5% based on the high cognitive ability model, it is 9.3% under the multiple-criteria definition. [42] showed that the percentage of people considered gifted was a natural result of the characteristics of the definition chosen by the authors.

In the field of scientific research, the conclusions reached by comparative studies on anxiety and stress in high-IQ children are not unanimous, making it all the more complex to understand the phenomenon [for a summary, see [43]. The interest in research on fear in high-IQ children stems from the clinical observations of many practitioners, who have underlined the hypersensitivity of these children, preventing them from regulating their emotions and distancing themselves from them [44–47], as well as their tendency to dramatize. Their intolerance of frustration leads to worrying, uncertainty, insecurity, and anxiety. In fact, these children are characterized by arborescent thinking that favors a "magnifying glass effect" and provokes an emotional and physiological over-response to stress and an over-reaction to environmental stimuli [48,49].

Some studies have shown that high-IQ children have (1) more intense fears of the unknown (e.g., metaphysical questions about the world, life, knowledge, etc.) [12,50,51], which can be explained by their superior cognitive abilities, particularly in comprehension [50,52], their overexcitability, and (2) stronger physiological reactions to stress. Conversely, a number of studies indicate that certain types of fear or anxiety do not differ significantly from those of the general population, either in children [53–55] or adolescents [56,57]. For example, Harrison and Van Haneghan's [51] study found no significant difference in fear of death between typical and gifted adolescents. The study by Machů and Morysová [58] even reported a lower intensity of fear related to family (e.g., I am afraid of disappointing my parents or family), school results (e.g., I am afraid of getting bad grades), losing friends (e.g., I am afraid others will make fun of me), and phobias (e.g., I am afraid of big animals) in gifted children aged 8 to 12 compared with their typical counterparts. These discrepancies in results are partly explained by differences linked to the particular situations in which certain gifted children are placed (grade skipping, special schools, etc.) [58,59] but also, most certainly, by the selection criteria of the so-called gifted population [42]. With regard to gender differences, Tippey and Burnham [60], in their study of 287 gifted children, found that girls reported being significantly more afraid of death, danger, and animals than boys, whereas boys scored higher than girls on fear of bodily harm, imaginary creatures, and academic failure. This pattern of results corresponds to that observed in the typical child, however [61–63].

2.3. The Present Study

Due to the lack of methodological comparability between the abovementioned studies, divergent conclusions concerning the intensity of fears in high-IQ children have been reached. Differences in the choice of the study population (different inclusion criteria from one study to another, recruitment of children in different school contexts) and in the choice of material used (questionnaire, interview, tests) are all factors likely to explain the discrepancies in results observed. Thus, the aim of the present study was to evaluate the intensity of fears felt by children aged 5 to 12, divided into two groups (i.e., 5-8 years and 9–12 years), either high-IQ or normal-IQ children. Recent research in the field of emotional development suggests that children undergo significant changes in their emotional processing and regulation abilities during middle childhood and early adolescence [64,65]. During this period, children develop greater emotional awareness, understanding, and regulation strategies, which may impact the intensity and manifestation of their fears [64]. Therefore, dividing the children into two age groups, spanning early and middle childhood, allows us to capture potential differences in fear intensity corresponding to these developmental stages. Additionally, studies have shown that emotional competence, including the ability to identify, express, and regulate emotions, undergoes significant development during middle childhood and early adolescence [64,66]. These developmental changes may influence how children perceive and respond to fearful stimuli, further justifying the division into two age groups. For this purpose, we used a French adaptation of the Fear Survey Schedule for Children-Revised (FSSC-R; Inventaire des peurs de l'enfant, IPE-R, [67]). Based on the literature, we expect to observe differences in the intensity of fears reported by children, depending on their stage of development and cognitive particularity. We pose several operational hypotheses. The first concerns age: (1) We expect fears to be more intense overall in children aged 5-8 than in those aged 9-12. The second concerns intellectual efficiency: (2) We expect fears to be globally more intense in high-IQ children than in normal-IQ children. The following hypotheses concern the different types of fear: (3) We expect "fear of failure and criticism" to be more intense in 9–12-year-olds than in 5-8-year-olds, whatever their cognitive peculiarities; we expect "fear of the unknown" to be more intense in high-IQ children than in normal-IQ children of the same age; we expect "fear of injuries and animals" and "medical fears" to be more intense in children aged 5-8 than in those aged 9–12, and more so if they are normal-IQ rather than high-IQ; lastly, we expect fear of danger and death to be more intense than other types of fear, whatever the age and profile of the children.

3. Materials and Methods

3.1. Participants

One hundred and one children, aged 5 to 12, took part in the experiment. The sample size was determined based on the statistical literature in the social sciences, according to which: (1) for discriminant analysis, 20 subjects per group is sufficient; (2) the minimum number of subjects in the smallest group should be at least five times the number of predictors [68,69]. G*Power software (G*Power 3.1) was used to determine the appropriate sample size so as to detect a power of 0.95 and an α level of 0.05, resulting in a sample of at least 32 individuals. To elaborate on the power calculation, statistical power refers to the probability of detecting a true effect or difference when it actually exists, thus minimizing the risk of Type II errors (i.e., false negatives) [70]. A power of 0.95 indicates a 95% chance of detecting a significant effect if it truly exists in the population. Additionally, an α level of 0.05 signifies a 5% chance of committing a Type I error (i.e., false positive), which is a commonly accepted threshold in hypothesis testing [70].

Participants were divided into two age groups (5–8 years or 9–12 years) on the basis of work on the development of children's fears [14,71]. All participants resided in the Occitanie region of France, were enrolled in French public or private nursery or elementary schools, and were native speakers of French. Total IQ scores were available for all participants. Based on these scores, two groups were constituted (i.e., gifted vs. typical children). Two scenarios were encountered: (1) either the children had already been diagnosed by a psychologist using a Wechsler test (WPPSI or WISC); or (2) the legal guardians and their child gave their consent (see Respect for Ehics and Deontology) for an abbreviated IQ test [72] to be administered (see Materials).

3.2. Respect for Ethics and Deontology

This study complies with the French code of conduct applied to behavioral science researchers [73]. For all participants, the agreement of each legal representative was obtained. Each child also provided free and informed oral consent [74] and was informed that he or she could stop the test at any time. The purpose of this study was clearly explained to participants, and care was taken to ensure that none of them would feel upset or hurt. We communicated our results to all participants. Their anonymity was respected and protected throughout. This study was approved on 24 July 2023 by the Comité d'Éthique de la Recherche of the Université Fédérale de Toulouse (File N° 2023_702).

3.3. Material

3.3.1. IQ Assessment for Children without a Wechsler Cognitive Assessment (WPPSI or WISC)

We used the abridged version of the WISC validated by Aubry and Bourdin [72]. This is a short test (taking less than thirty minutes) based on the administration of four subtests of the WISC-V to obtain an estimated total IQ with high reliability. The four subtests are as follows: Vocabulary, Similitudes, Matrices, and Cubes. The Vocabulary subtest assesses lexical knowledge and verbal concept formation. The Similitudes subtest assesses verbal concept formation and abstract reasoning. The Matrices subtest assesses fluid intelligence, classification, and relations between the whole and its parts. Lastly, the Cubes subtest assesses the ability to analyze and synthesize abstract visual stimuli. This procedure leads to low deviations from the regular ITQ and has proven psychometric qualities for identifying high-IQ children (composite reliability coefficient (rcc) > 0.88). For children under the age of 6, we used the same calculation procedure based on the results of the same four subtests from the WPPSI.

3.3.2. Evaluation of Fear Intensity

The Inventaire des Peurs de l'Enfant-Revised, or IPE-R, is one of the translations of the Fear Survey Schedule for Children developed in 1968 by Scherer and Nakamura [75]. FSSC-R is a reliable and valid instrument reported to have a five-factor fear structure with internal consistency (coefficient alpha) of 0.941 for boys, 0.951 for girls, and 0.954 for the combined sample [76]. This Quebec version by Turgeon et al. [67] comprises 79 items corresponding to the following five fear factors: "Fear of failure and criticism", "Fear of the unknown", "Fear of injuries and small animals", "Fear of danger and death", and "Medical fear". The internal consistency (coefficient alpha) of this scale is very high for the overall score (0.96). It is satisfactory for all subscales (fear of criticism = 0.88; fear of the unknown = 0.87; fear of injuries = 0.91; fear of danger = 0.88; medical fears = 0.70). In order to administer it to our population, and following a pre-test conducted with 10 children aged 5 to 11 who did not take part in the experiment, a few adjustments were made. Firstly, some of the items were retitled because the lexicon used was unfamiliar or referred to a situation not experienced by the youngest children. Item 40: "failing an exam" was altered to "failing an assessment/exercise". Item 54: "receiving a report card" to "receiving grades for assessments/checks/assignments". Item 65: "being given detention after school" to "being punished at school". Item 67: "thrillers" to "films that are scary or weird". Item 79: "taking an exam" to "taking an assessment/performing a graded exercise". In addition, some culturally loaded items were moved. Thus, items 15, 42, 43, and 65 were attributed to the fear of failure and criticism, items 12 and 17 to the fear of the unknown, item 2 to the fear of injuries and animals, and items 32 and 53 to the fear of danger and death. To help children position themselves on the continuum from not at all afraid to very afraid, a gendered fear label was created (see Figure 1). Items were scored as follows: 1 point for "not afraid", 2 points for "afraid", and 3 points for "very afraid". Any other type of response (e.g., no answer, I do not know) was not scored. In this way, a raw total was calculated for each dimension of fear, as well as an average relative to the number of items per dimension.



Figure 1. Brochure of emotional faces.

3.4. Procedure

During the second semester of the year 2023, the children participated in individual testing sessions conducted in their homes on two separate occasions. The purpose of the first appointment was to administer the four subtests of the WPPSI, or WISC abbreviated, in order to obtain an estimated IQ. This first phase of data collection took, on average, 30 min. The second appointment was used to administer the fear questionnaire. The children were given the drawings of emotional faces (Figure 1; girls or boys, depending on their gender), and the experimenter gave them the following instructions: "I am going to read you some sentences, one after the other. For each one, I would like you to tell me if it 'does not scare you' [the experimenter points to the corresponding face on the page], if it 'scares you a little' [the experimenter points to the corresponding face on the page], or if it 'scares you a lot' [the experimenter points to the corresponding face on the page], or if it 'scares you a lot' [the experimenter points to the corresponding face on the page], or the child's responded as the item was read out by the experimenter, who then annotated the child's response directly on the scoring grid. The test took an average of 15 min to complete. Detailed information regarding the experimental procedure is displayed in the flowchart (see Figure 2).



Figure 2. Detailed information regarding the experimental procedure.

4. Results

4.1. Design

Three-way ANOVAs were first conducted: 2 (normal-IQ vs. high-IQ) × 2-Ages (5–8 years vs. 9–12 years) × 5 Types of fear (Fear of failure and criticism; Fear of the unknown; Fear of injuries and animals; Fear of danger and death; Medical fears) with repeated measures on the latter factor. The dependent variable was the average intensity (in %). In accordance with Cohen's interpretative framework [70], the eta-squared partial effect sizes observed in our study are interpreted as small (0.01), medium (0.06), and large (0.14) effects. The eta-squared values represent the proportion of variance in the dependent variable explained by a predictor while controlling for other predictors in the model. A small effect size suggests that the predictor accounts for approximately 1% of the variance; a medium effect size indicates approximately 6% of the variance explained; and a large effect size corresponds to approximately 14% of the variance accounted for by the predictor (Cohen, 1988). These effect size interpretations provide meaningful insights into the practical significance of the relationships observed in our analyses. We did not conduct a post hoc power analysis, as it often fails to provide meaningful information beyond what is already indicated by the *p*-values and effect sizes [77,78].

4.2. Global Analyses

With regard to inter-subject effects, the analysis did not reveal any significant effects of Group (F(1, 97) < 1, ns.), Age (F(1, 97) < 1, ns.), or Group × Age interaction (F(1, 97) = 0.1.05, ns.). Age × Fear interaction was significant, however F(4, 388) = 7.01, p < 0.01, $\eta^2 p = 0.07$, and Group × Age × Types of Fear interaction was marginally significant, F(4, 388) = 2.16, p = 0.07, $\eta^2 p = 0.02$. As regards within-subject effects, the analysis highlighted a single significant effect of Fear, F(4, 388) = 112.62, p < 0.001, $\eta^2 p = 0.54$ (Fear of failure and criticism = 53.3 [1.32]; Fear of the unknown = 51.1 [1.13]; Fear of injury and animals = 52.7 [1.19]; Fear of danger and death = 72.7 [1.46]; Medical fears = 52.8 [1.59]). Tukey's post hoc analysis showed a significant difference between fear of danger and death and all other types of fear in all groups combined (all p's < 0.001). These results prompted us to carry out several subgroup analyses of our various operational hypotheses.

4.3. Subgroup Analyses

With regard to fear of failure and criticism, the effect of age was significant: F(1, 97) = 4.55, p < 0.04, $\eta^2 p = 0.04$. Tukey's post hoc test revealed a significant difference in fear intensity between high-IQ children aged 5–8 (48.2 [3]) and those aged 9–12 (58.2 [2.39]) (p < 0.05). With regard to fears of the unknown, of injuries and animals, and of danger and death, the results of the analysis revealed no significant effects. Lastly, with regard to medical fears, a significant effect of age was found: F(1, 97) = 3.86, p = 0.05, $\eta^2 p = 0.04$. Tukey's post hoc analysis showed a significant difference in the intensity of medical fears between normal-IQ children aged 5–8 (59 [3.21]) and those aged 9–12 (47.4 [2.97]) (p < 0.05). Table 1 and Appendix A summarize the descriptive data.

Table 1. Estimated marginal means—Group (1 = normal-IQ; 2 = high-IQ children) and Age (1 = 5-8 years; 2 = 9-12 years).

					Confidence Interval at 95%	
Type of Fear	Age	Group	Mean	Standard Error	Inf	Sup
failure and criticism	1	1	52.7	2.67	47.4	58.0
		2	48.2	3.00	42.3	54.2
	2	1	54.1	2.47	49.2	59.0
		2	58.2	2.39	53.4	62.9

					Confidence Interval at 95%	
Type of Fear	Age	Group	Mean	Standard Error	Inf	Sup
unknown	1	1	50.5	2.28	46.0	55.0
		2	52.1	2.56	47.0	57.2
	2	1	50.0	2.11	45.8	54.2
		2	51.7	2.03	47.7	55.8
injuries and animals	1	1	53.4	2.40	48.6	58.1
,		2	53.1	2.69	47.7	58.4
	2	1	52.7	2.22	48.3	57.1
		2	51.7	2.14	47.5	56.0
danger and death	1	1	74.0	2.96	68.1	79.8
0		2	68.0	3.32	61.4	74.6
	2	1	75.5	2.74	70.1	80.9
		2	73.5	2.64	68.3	78.8
medical	1	1	59.0	3.21	52.7	65.4
		2	52.7	3.60	45.6	59.9
	2	1	47.4	2.97	41.5	53.3
		2	51.9	2.87	46.2	57.6

Table 1. Cont.

5. Discussion

The aim of this study was to contribute to the debate concerning the intensity of fears in high-IQ children, since numerous scientific papers [56,58,59,79] and clinical observations [37,60,80,81] have emphasized that these children present a particular psycho-affective profile that can lead to greater anxiety and more intense fears.

Our first developmental hypothesis postulated that the intensity of fears would be higher overall in children aged 5–8 than in those aged 9–12. The analysis partially validated this hypothesis since, although the main effect of age was not significant, it did interact with the type of fear. We return to this point in the discussion below.

By considering these alternative justifications based on recent research in emotional development, we expected to observe differences between the two age groups, corresponding to two distinct stages of development (the end of the pre-operational stage vs. the stage of concrete operations) for all types of fear. It is difficult to compare our results to those in the literature because few studies have examined a global fear score (i.e., including all existing childhood fears). Among these few studies, consistent with our results, those of Visagie et al. [23] and Burkhardt et al. [22] likewise showed no significant differences in the level of fear depending on age when all childhood fears are grouped together. Differences are observed, however, when other variables are added (e.g., skin color or visual impairment). Nevertheless, in our study, the type of fear interacted well with the age factor, which seems to corroborate the state-of-the-art finding that the types of fears are closely related to the child's cognitive and emotional development and evolve throughout childhood [25].

Second, we expected that fears would be more intense overall in high-IQ children than in normal-IQ children. Contrary to our expectations, we did not find any group effect when all fears were taken into consideration (i.e., average score). In other words, normal-IQ and high-IQ children of the same chronological age do not differ in the average intensity of their fears. This result is consistent with the conclusions of Peyre et al. [55], who found no emotional differences (particularly with regard to fears) between typical and gifted 5–6-year-old children. On the other hand, our results do not support Burnham's [82] conclusions that the fears of gifted children are more intense than those of typical children (respectively, 179.02 (SD = 34.34) vs. 163.33 (SD = 33.70). However, in this case, the interpretation of the results is also limited since the majority of studies that have explored the intensity of fears in gifted children do not focus on the analysis of the overall fear

score. For example, the study by Tippey and Burnham [60] carried out with gifted children aged 7 to 11 years old explored the factor scores and items of the fear questionnaire used in order to discriminate between the sexes or the ethnic origin. However, in our study, the type of fear was found to interact with the group and the age, which means that the intensity of certain types of fear varied according to the cognitive particularities of the children. This is what we are going to discuss now.

Turning to the different types of fear, we expected that "fear of failure and criticism" would be more intense in children aged 9–12 than in children aged 5–8 years. This hypothesis is verified in high-IQ children only. While the intensity of fear of failure and criticism was significantly higher in high-IQ children aged 9-12 than in those aged 5–8, no difference was observed between the two groups of normal-IQ children. To our knowledge, no study has explored this type of fear from a developmental point of view in high-IQ children. Machů and Morysová [58] found a lower intensity of fear linked to academic results in gifted children aged 8 to 12 compared to their typical counterparts, but this result cannot be extended to a population of younger children. This is unfortunate because although the evaluation tool differed from ours, the same themes of "bad grades", "exams and assessments", and "academic failure" were highlighted. The fact that the oldest high-IQ children (9–12 years old) are those who manifested more intense fears of criticism and failure can be explained by their overexcitability and some of their physiological reactions linked to stress, which become more pronounced [50] at the entry into adolescence since the adolescent goes through significant and previously unexperienced changes [83].

Regarding "fear of the unknown", we expected higher scores among high-IQ children than among normal-IQ children of the same age. Our results did not show any significant differences between the two groups of children, which does not seem to support the conclusions of studies that have pointed to more metaphysical questions about the world and about life among gifted children [50,51]. However, these studies did not explore early childhood. Thus, what might be significantly distinct in adulthood might not yet be so in children under 12 years of age. We also expected that "fear of injuries and animals" would be more intense in children aged 5-8 years than in those aged 9-12 years, and more so if they were normal-IQ rather than high-IQ children. Again, the data suggest that the intensity of fears of this type does not vary significantly by age or group. Our results corroborate those highlighted by Burkhardt et al. [22] in children aged 7 to 13 years and contradict the early work carried out on typical children by (1) Jersild and Holmes [84], who emphasized that young children were more frightened by animals than older children, and (2) Machů and Morysová [58], who reported a lower intensity of fear in gifted children aged 8 to 12 compared to their typical counterparts. Note that in our questionnaire, items related to animals and injuries were grouped together. To check this bias, we extracted the items specifically related to fear of animals and conducted an additional analysis, which did not find any significant difference whatsoever. Regarding fear of danger and death, we expected it to be more intense than other types of fear, regardless of the age and profile of the children. Our results show that the fear of danger and death is significantly more intense than all other fears (Fear of failure and criticism, Fear of the unknown, Fear of injury and animals, Fear of danger and death, and Medical fears), both in the normal-IQ child and in high-IQ children. Thus, it seems that fears linked to danger and death are among the most frequently reported, from early childhood to the end of adolescence, as shown by previous work carried out, among others, by Burnham and Gullone [85], Guillemette [86], King, Mulhall and Gullone [87], and Ollendick [76]. This result corroborates the literature in that the fear of danger becomes the fear of irreversibility and, thus, the fear of death. Present throughout this period, it reaches a peak around 9 years of age and depends on the understanding of its definitive, inevitable, and universal nature [14]. Finally, with regard to medical fears, we found interesting differences, but only in normal-IQ children since the youngest exhibited a much higher fear intensity than their older counterparts. Interestingly, the intensity of high-IQ children's medical fears did not differ by age, unlike

that of normal-IQ children. Would children with high IQs have been more exposed to the medical or paramedical environment due to their cognitive characteristics? If so, would that be enough to explain these differences? The literature does not enlighten us on this result because the medical items are not analyzed independently. For example, Machů and Morysová [58] reported no differences between the groups on the simple item "I am afraid of doctors".

The main limitation of our study concerns the selection of our sample of high-IQ children. While we relied on the quantitative definition, i.e., the fact that these children demonstrate superior performance to their peers in one or more specific domains [88], it should be remembered that there is no single recognized definition of the concept of giftedness [42]. That is why we named our sample high-IQ children and not gifted children based on the work of Peyre et al. [55]. Gifted children are, first and foremost, children with their own developmental trajectories, and it would be unwarranted to label them as part of a homogeneous group sharing the same particularities. That is why our study could have further refined the characterization of high-IQ children by distinguishing between different profiles of high potential, as proposed by Nusbaum et al. [89]. Nusbaum's work suggests that high-potential individuals can exhibit various cognitive profiles, including laminar or homogeneous profiles characterized by exceptional performance across multiple domains and complex or heterogeneous profiles marked by strengths and weaknesses in different cognitive areas. By incorporating this nuanced understanding of high potential, our study could have provided deeper insights into how different cognitive profiles may influence the intensity and expression of fears in high-IQ children. Failure to consider these variations may have limited the scope of our findings and the generalizability of our conclusions. In addition to the previously mentioned limitations, it is important to acknowledge that the fear inventory used in our study, namely The Inventaire des Peurs de l'Enfant-Revised (IPE-R), may not perfectly capture the full spectrum of fear expression among children. The ambiguity of individual differences in how people express fear poses a challenge to accurately assessing and interpreting fear responses [90–92]. While fear inventories like the IPE-R provide valuable insights into children's fears, they may not comprehensively capture the nuanced and multifaceted nature of fear experiences. Additionally, cultural and contextual factors can influence the expression and interpretation of fear, further complicating the assessment process [11]. Finally, a last limitation of our study is the conceptualization and operationalization of fear as a trait-like construct. While our study focused on assessing fear as a relatively stable characteristic, it is essential to acknowledge that fear, like all emotions, can also be influenced by momentary situational and environmental factors [93]. Recent research has highlighted the dynamic and context-dependent nature of emotions, suggesting that fear can vary in intensity and expression based on specific situational cues and environmental contexts [94]. By predominantly examining fear as a trait-like construct, our study may have overlooked the transient and contextually driven aspects of fear experiences in children. Therefore, future research should explore alternative methodologies, such as qualitative interviews or observational studies, to gain a more holistic understanding of fear expression in children, taking into account individual differences and cultural nuances. For these reasons, selecting a sample that considers multifactorial definitions of giftedness could shed additional light, limit selection bias, and enable us to extend our conclusions to giftedness. Moreover, future research should adopt more ecological methodologies, such as ecological momentary assessment or ambulatory monitoring, to capture the fluctuating nature of fear in real-time and diverse situational contexts [95]. Incorporating such approaches would provide a more comprehensive understanding of how fear manifests and fluctuates in response to varying situational and environmental influences.

6. Conclusions

In conclusion, our study contributes valuable insights into the realm of childhood fears, particularly within the context of high intellectual potential. Our findings partially support the hypothesis that fear intensity varies with age, with significant interactions between fear types and age groups. Additionally, we observed differences in fear intensity related to criticism and failure among high-IQ and normal-IQ children, particularly among older children. However, contrary to expectations, no significant differences were found in fears related to the unknown and injuries between high-IQ and normal-IQ children. Furthermore, fear of danger and death emerged as one of the most intensely experienced fears across all groups, underscoring its universal significance. These findings underscore the importance of considering children's cognitive profiles when understanding and addressing their fears. Looking ahead, future research should adopt ecological methodologies to capture the dynamic and context-dependent nature of childhood fears while also exploring multifactorial definitions of giftedness to inform targeted interventions and support strategies for the emotional well-being of high-IQ children.

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Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the Université Fédérale de Toulouse (File N° 2023_702).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Pseudonymized data are accessible on the nakala.fr database: https://doi.org/10.34847/nkl.e003uv6l.

Conflicts of Interest: The author declares no conflicts of interest.

Appendix A

		Age	Unknown	Failure and Criticism	Injuries and Animals	Danger and Death
Unknown	Pearson correlation coefficient (r)	-0.014	_			
	dof	99	—			
	<i>p</i> value	0.891	_			
Failure and criticism	Pearson correlation coefficient (r)	0.203 *	0.734 ***	—		
	dof	99	99	_		
	<i>p</i> value	0.042	< 0.001	_		
Injuries and animals	Pearson correlation coefficient (r)	-0.045	0.761 ***	0.615 ***	—	
	dof	99	99	99	_	
	valeur <i>p</i>	0.656	< 0.001	< 0.001	_	
Danger and death	Pearson correlation coefficient (r)	0.108	0.500 ***	0.508 ***	0.628 ***	—
	dof	99	99	99	00 0.001	_
	<i>p</i> value	0.282	< 0.001	< 0.001	99 <0.001	_
Medical	Pearson correlation coefficient (r)	-0.202 *	0.596 ***	0.478 ***	0.637 ***	0.495 ***
	dof	99	99	99	99	99
	<i>p</i> value	0.042	< 0.001	< 0.001	< 0.001	< 0.001

Table A1. Correlation matrix Age (5–8 vs. 9–12) and Type of fear.

Note: * p < 0.05, *** p < 0.001.

$ \begin{array}{c c c c c c c c c c } & 0.075 & & & & & & & & & & & & & & & & & &$			Group	Unknown	Failure and Criticism	Injuries and Animals	Danger and Death
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Unknown	Pearson correlation coefficient (r)	0.075	—			
p value 0.459 $-$ Failure and criticism Pearson correlation coefficient (r) 0.034 0.734 *** $ dof$ 99 99 $ -$ Injuries and animals p value 0.739 <0.001 $-$ Injuries and animals p value 0.739 <0.001 $-$ Danger and death Pearson correlation coefficient (r) -0.034 0.761 *** 0.615 *** $-$ Danger and death Pearson correlation coefficient (r) -0.118 0.500 *** 0.508 *** 0.628 *** $-$ Medical Pearson correlation coefficient (r) -0.118 0.500 *** 0.601 $-$ Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 *** Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 *** Medical Qoff 99 99 99 99 99 99 99 99 99 99		dof	99	_			
Failure and criticism Pearson correlation coefficient (r) 0.034 0.734 *** $-$ Injuries and animals p value 0.739 <0.001 $-$ Injuries and animals Pearson correlation coefficient (r) -0.034 0.761 *** 0.615 *** $-$ Injuries and animals Pearson correlation coefficient (r) -0.034 0.761 *** 0.615 *** $-$ Danger and death Pearson correlation coefficient (r) -0.118 0.500 *** 0.508 *** $-$ Medical Pearson correlation coefficient (r) -0.118 0.500 *** 0.628 *** $-$ Medical Pearson correlation coefficient (r) -0.118 0.500 *** 0.601 $-$ Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 *** Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 ***		<i>p</i> value	0.459	_			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Failure and criticism	Pearson correlation coefficient (r)	0.034	0.734 ***	—		
p value 0.739 <0.001 $-$ Injuries and animalsPearson correlation coefficient (r) -0.034 0.761^{***} 0.615^{***} $ dof$ 999999 $ dof$ 999999 $ p$ value 0.733 <0.001 $-$ Danger and deathPearson correlation coefficient (r) -0.118 0.500^{***} 0.508^{***} 0.628^{***} dof 99999999 $ dof$ 999999 $ dof$ 999999 $ p$ value 0.239 <0.001 <0.001 $-$ MedicalPearson correlation coefficient (r) dof -0.017 0.596^{***} 0.478^{***} 0.637^{***} 0.495^{***} -0.017 0.596^{***} 0.478^{***} 0.637^{***} 0.495^{***}		dof	99	99	_		
Injuries and animals Pearson correlation coefficient (r) -0.034 0.761 *** 0.615 *** $ dof$ 99 99 99 $ 0.733$ 0.001 $-$ Danger and death Pearson correlation coefficient (r) -0.118 0.500 *** 0.508 *** 0.628 *** $-$ Medical Pearson correlation coefficient (r) -0.118 0.500 *** 0.508 *** $-$ Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.637 *** 0.495 *** Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.637 *** 0.495 *** Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.637 *** 0.495 *** dof 99 99		<i>p</i> value	0.739	< 0.001	—		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Injuries and animals	Pearson correlation coefficient (r)	-0.034	0.761 ***	0.615 ***	_	
p value 0.733 <0.001 $-$ Danger and deathPearson correlation coefficient (r) -0.118 0.500 *** 0.508 *** 0.628 *** $ dof$ 99999999 $ p$ value 0.239 <0.001 <0.001 $-$ MedicalPearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** dof 999999999999 p value 0.865 <0.001 <0.001 <0.001		dof	99	99	99	_	
Danger and deathPearson correlation coefficient (r) -0.118 $0.500 ***$ $0.508 ***$ $0.628 ***$ $-$ dof9999999999 $ p$ value 0.239 <0.001 <0.001 <0.001 $-$ MedicalPearson correlation coefficient (r) -0.017 $0.596 ***$ $0.478 ***$ $0.637 ***$ $0.495 ***$ dof 99999999999999 p value 0.865 <0.001 <0.001 <0.001 <0.001		<i>p</i> value	0.733	< 0.001	< 0.001	_	
dof 99 99 99 99 $ p$ value 0.239 <0.001	Danger and death	Pearson correlation coefficient (r)	-0.118	0.500 ***	0.508 ***	0.628 ***	—
p value 0.239 <0.001 <0.001 <0.001 - Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 *** dof 99 90		dof	99	99	99	99	
Medical Pearson correlation coefficient (r) -0.017 0.596 *** 0.478 *** 0.637 *** 0.495 *** dof 99 99 99 99 99 99 99 90		<i>p</i> value	0.239	< 0.001	< 0.001	< 0.001	_
dof99999999 p value 0.865 < 0.001 < 0.001 < 0.001	Medical	Pearson correlation coefficient (r)	-0.017	0.596 ***	0.478 ***	0.637 ***	0.495 ***
p value 0.865 <0.001 <0.001 <0.001 <0.001		dof	99	99	99	99	99
		<i>p</i> value	0.865	< 0.001	< 0.001	< 0.001	< 0.001

Table A2. Correlation matrix Group (high-IQ vs. normal-IQ) and Type of fear.

Note: *** *p* < 0.001.

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