

Empirical Articles

Positive and Negative Thoughts in Ambiguous Anxiety-Related Stories: The Child's Perspective

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Abstract

Aim: To evaluate the presence/absence, frequency of cognitive products (positive, negative and neutral thoughts) in a Portuguese community sample of children aged 10 and 11 years.

Method: A total of 274 children participated in this study, 151 girls and 123 boys, from the 5th and 6th grades, aged 10 and 11 years. Cognitive products were accessed through children's cognitive responses to the Nine Ambiguous Stories.

Results: The answers to the nine stories produced 6,633 thoughts (positive - 2,570, negative - 4,063, neutral - 32). The number of positive and negative thoughts varied according to the stories. The absence of either positive or negative thoughts was observed in a very small number of children. The simultaneous presence of positive and negative thoughts per child occurred in all stories. More than half of the children showed more negative thoughts in all stories except for stories 2 and 6.

Conclusion: The results of this study contribute to the understanding of cognitive development of children, based on what is known and observed in the child and calls attention to the importance of the research of positive and negative content of thoughts shown by children and their impact on childhood anxiety.

Keywords: anxiety, child, cognition, developmental, positive and negative thoughts, cognitive products

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Introduction

The investigation of cognitive characteristics related to anxiety has been pointed out by many theorists as essential in understanding the aetiology, development and maintenance of anxiety disorders (e.g. Beck, Emery, & Greenberg, 1985; Daleiden & Vasey, 1997; Kendall, 1985; Vasey & MacLeod, 2001; Williams, Watts, MacLeod, & Mathews, 1997).

The information processing perspective and cognitive-behavioural theories are two major cognitive approaches on childhood anxiety and anxiety disorders (Prins, 2001). These two approaches are based on Beck's cognitive theory (Beck et al., 1985), thus they emphasize negative threat-related thoughts and biases in cognitive processes, such as thinking or interpretation, making judgements, attention and memory (Prins, 2001).

The information processing perspective (Daleiden & Vasey, 1997; Vasey & MacLeod, 2001) focuses on *how* affective information is cognitively processed by anxious children, resorting to experimental methods that allow the researcher to directly evaluate the cognitive processes, as the cognitive processes of attention and memory (Kindt, Bögels, & Morren, 2003; Kindt & Van Den Hout, 2001; Vasey, Daleiden, Williams, & Brown, 1995; Vasey, El-Hag, & Daleiden, 1996; Waters, Wharton, Zimmer-Gembeck, & Craske, 2008; Watts & Weems, 2006). Among many and frequently inconsistent results found in the literature, those presented by Kindt and colleagues (2003) are noteworthy. These authors reported that children generally present a bias towards threat that does not depend on the level of anxiety, which indicates that children, with both low and high levels of anxiety, selectively process threatening information, suggesting that this biased information processing is a normal phenomenon in children's development (see Kindt et al., 2003). The authors add that, contrarily to what is observed in adults, children information biases change along their developmental course, thus, the analysis of the biased cognitive processing towards threat should focus on what is observed in children considering their development.

On the other hand, the cognitive-behavioural theories highlight the impact that negative or maladaptive belief systems have in the origin and maintenance of anxiety disorders, suggesting that four dimensions/cognitive elements need to be considered when trying to understand the development of childhood anxiety: the cognitive structures or schemas; the cognitive content or cognitive proportions; the cognitive operations; and the cognitive products (see Ingram & Kendall, 1987; Prins, 2001). In this approach, the cognitive processes are indirectly assessed, and negative self-talk or negative thoughts characterise the outcomes of distorted cognitive processes, representing dysfunctional cognitive products (Alfano, Beidel, & Turner, 2002; Prins, 2001). Most research on cognitive processes and childhood anxiety has focused on this approach, and several studies have been developed to assess distorted cognitive processes, for example, interpretation and judgement biases (e.g. Barrett, Rapee, Dadds, & Ryan, 1996; Bögels & Zigterman, 2000; Chorpita, Albano, & Barlow, 1996; Creswell & O'Connor, 2011; Muris, Huijding, Mayer, & Hameetman, 2008; Muris, Meesters, Smulders, & Mayer, 2005; Muris, Merckelbach, & Damsma, 2000; Waters, Wharton, et al., 2008; Watts & Weems, 2006).

Cognitive products have also been evaluated in several studies through self-statement questionnaires, verbalizations prior to or during a task and thoughts recalled immediately after a task. The analysis of the outcomes focused on the positive or negative classification of the cognitive product, on its presence or absence, frequency and association with the children's anxiety (e.g. Alfano, Beidel, & Turner, 2006; Beidel, 1991; Bögels & Zigterman, 2000; Hogendoorn et al., 2012; Hogendoorn et al., 2010; Kendall & Chansky, 1991; Muris, Merckelbach, et al., 2000; Prins, 1985, 1986; Prins & Hanewald, 1997; Ronan & Kendall, 1997; Zatz & Chassin, 1985).

Several studies (e.g. Alfano et al., 2006; Kendall, 1985; Kendall & Chansky, 1991; Muris, Merckelbach, et al., 2000; Prins, 1985; Prins & Hanewald, 1997; Treadwell & Kendall, 1996) have pointed out a relation between anxiety and the prevalence of negative cognitive products. In this sense, the frequency of these products and their association with different levels of anxiety is considered, i.e., it has been suggested that children with low levels of anxiety have a considerably lower number of negative cognitive products when compared to children with high levels of anxiety; this phenomenon is known as "the power of nonnegative thinking" (Kendall, 1984). Thus, it seems that it is the low frequency of negative cognitive products, rather than the frequency of positive ones, that is related to psychological health (Prins, 2001).

On the other hand, some studies (e.g. Hogendoorn et al., 2012; Kendall & Treadwell, 2007; Treadwell & Kendall, 1996) have related psychological health to a certain balance between the frequency of positive and negative

cognitive products, as suggested and defined by the States-of-Minds Model (SOM) (Schwartz & Garamoni, 1989). Another relation with psychological health is the low frequency of positive cognitive products in groups of children with high levels of anxiety when compared to groups of children with low levels of anxiety or non-clinical (Bögels & Zigterman, 2000; Kendall, 1985; Prins & Hanewald, 1997; Spence, Donovan, & Brechman-Toussaint, 1999; Treadwell & Kendall, 1996; Zatz & Chassin, 1985).

In 2002, Alfano and colleagues reported that most research had focused on cognitive products, being the evaluation of cognitive processes less frequent (Alfano et al., 2002). However, it seems that this trend has been reversed, given that in recent years there has been a major focus on cognitive processes (e.g. Cannon & Weems, 2010; Castillo & Leandro, 2010; Hadwin, Garner, & Perez-Olivas, 2006; Muris et al., 2008; Waters, Craske, Bergman, & Treanor, 2008).

Moreover, the literature presents controversial results regarding the association between these cognitive products and the levels of child anxiety (e.g. Alfano et al., 2002; Hogendoorn et al., 2012; Prins, 2001; Stallard, 2009). This inconsistency may be due to the use of different methodologies, procedures and coding strategies, and to the use of theories originally derived from adults' psychology to understand the cognitive characteristics of childhood anxiety, not considering the child's actual perspective (e.g. Alfano et al., 2002; Kendall, 1985; Muris, Mayer, den Adel, Roos, & van Wamelen, 2009; Muris, Merckelbach, et al., 2000; Prins, 2001).

Thus, there is a need to develop studies that aim at investigating cognitive anxiety features, that are based on the child's knowledge and that take into account the child's cognitive development, context, and characteristics associated to the child's age (e.g. Alfano et al., 2002; Field, Cartwright-Hatton, Reynolds, & Creswell, 2008; Hadwin et al., 2006; Muris & Field, 2008). Moreover, there is also a need to access the positive cognitive products to understand their connection with the cognitive characteristics related to anxiety (e.g. Alfano et al., 2002; Hogendoorn et al., 2010, 2012; Prins, 2001).

Therefore, this study aims to evaluate the presence/absence, frequency of cognitive products in a community sample of children aged between 10 and 11 years. Specifically, our goal was to assess cognitive products in a non-clinical sample in order to observe the normative development of these children, understand whether certain characteristics are inappropriate, excessive and dysfunctional, or not (Field et al., 2008; Hale, Raaijmakers, Muris, Hoof, & Meeus, 2008; Verhulst, 2001), and thus, contribute to the clarification of the cognitive features associated with ambiguous stimuli that present situations of generalized anxiety, separation anxiety and social anxiety.

Method

Participants

A total of 478 children from a community sample of Terceira Island – Azores/Portugal and their parents were invited to participate in this study. The main researcher contacted all parents by telephone, provided information concerning the study and clarified their questions. Of the 478 children, 302 families (Child/Parents) agreed to participate in the study and, for each one, a day and time were scheduled for their participation. However, 24 of these families could not participate due to scheduling issues.

In this way, after obtaining informed consent from children and their parents, a total of 278 children participated in the study. After data collection, four children were excluded, because two children had a diagnosis of significant developmental problems, and two other children did not complete the interview.

Thus, the final sample included 274 children, 151 girls and 123 boys, from the 5th and 6th grades (middle school), with ages between 10 and 11 years. All participants met the inclusion criteria, i.e. they were 10 or 11 years old and presented normative development.

Instruments

The data collection instruments included a socio-demographic questionnaire and the Nine Ambiguous Stories (male and female versions) (Bögels & Zigterman, 2000).

The Nine Ambiguous Stories developed by Bögels and Zigterman (2000) present nine potentially threatening situations for children, which are ambiguous in the sense that the outcome is uncertain. Three stories described generalized anxiety situations, three described separation anxiety situations, and three described social anxiety situations. The validity of the stories has been supported in previous studies (Bögels & Zigterman, 2000). Specifically, children from clinical samples (with separation anxiety disorder, social phobia, and generalized anxiety disorder) presented a significantly higher number of negative interpretations than children from normative samples (Bögels & Zigterman, 2000). Moreover, the ambiguity of the scripts was further validated by the fact that normative children gave positive, neutral and negative responses to the same stimuli (Bögels & Zigterman, 2000).

The Portuguese version of the Nine Ambiguous Stories (Bögels & Zigterman, 2000) was adapted and translated according to the standards recommended for the translation of instruments in cross-cultural research (Brislin, 1986). The original English version was translated into Portuguese by a bilingual translator, who was a psychologist and familiar with the cultural contexts of where the original instrument was developed, and the Portuguese context. A blind back-translation was performed by a second bilingual translator and psychologist, also knowledgeable of both cultural contexts. The two versions were compared and discussed by the authors.

Two audio recordings (one for girls and one for boys) of the Portuguese version of the Nine Ambiguous Stories were created and presented to the participants.

Procedure

The families (child and parents) met the main researcher at a pre-arranged location. The researcher presented the study's objectives and procedures, clarified questions and doubts. The anonymity of the participants as well as the confidentiality of any information provided by the child, were ensured. No incentives were given. Both parents and children signed the written informed consent form.

The interviews were conducted by the main researcher with each child, in a private space especially prepared for the study. During the interview, the researcher explained the procedure and applied the socio-demographic questionnaire and the Nine Ambiguous Stories. To control potential biases, the child listened to the audio-recording of the nine stories and was asked to imagine that the situation described in the story happened to him/her. After each story, the researcher asked "What would you think if you were in this situation?" and wrote down what the child said (*verbatim*). The verbal thought-listen procedure was used as, according to Alfano and colleagues (2002), it allows the production of a higher proportion of positive and negative cognitions, and may be most practical for childhood assessment.

Data Analysis

The children's answers to the question "What would you think if you were in this situation?" report their cognitive products. In this work, these cognitive products will be called thoughts.

Following Bögels and Zigterman's (2000) procedure, the children's responses were divided into units of cognitive responses (thoughts), according to the criterion that any stated idea constitutes the unit, despite being grammatically correct or not (Cacciopo & Petty, 1981). Then thoughts were coded according to their positive, neutral or negative valence, following the definitions proposed by Cacciopo and Petty (1981) and the procedure proposed by Bögels and Zigterman (2000). Positive thoughts are ideas that mention desirable attributes or positive associations, acknowledge the value of the situation or stimulus, or include positive affection regarding the stories. Negative thoughts are stated ideas involving the stories (e.g., self or message), regarding specific undesirable attributes or negative associations, challenges to the validity of the stimulus situation, or reflecting negative affection regarding the stories. Neutral/irrelevant thoughts are statements that neither favour nor oppose the stories. In this sense only thoughts that do not add information to what was presented in the stimulus were coded as neutral thoughts.

It is important to highlight that the classification of an answer as desirable or undesirable, as negative or positive association, and as positive or negative affection was based on knowledge of children's normal development and, consequently, of the appropriate or inappropriate, expected or unexpected characteristics regarding this age group.

The coding was presented per story, in order to analyse the cognitive characteristics of children that are related to the ambiguity of each specific situation, considering that fears and anxiety are influenced by context and assuming that they may be partially inferred by understanding each situation's unique task demands (Barrios & Hartmann, 1997).

To validate the encoding process the main researcher and two judges (clinical psychologists with knowledge in the area of childhood anxiety) coded 20% of the material. Firstly, 10% was coded by the main researcher and the two judges to establish the specifics of the codification for each story. Secondly, the main researcher coded the other 10% of the material, which was re-coded by the two judges independently. Any disagreement in the coding was solved by returning to the material, and resorting to a fourth independent judge. The agreement rate of the three coders after coding 20% of the material was assessed using SPSS (IBM SPSS Statistics for Windows, Version 20.0) and the intra-correlation coefficients (ICC) were above 0.97 with $p < .018$ for the three types of thoughts (positive, negative and neutral) in all nine stories. Significance of positive vs. negative thoughts' distribution between stories was assessed with Chi-square tests of independence. Interaction between types of thoughts and stories was considered significant when $p < .05$.

Results

The coding of the open-ended answers given by the 274 children to the nine stories resulted in a total of 6,633 thoughts; of these 2,570 were classified as positive, 4,063 as negative, and 32 as neutral (Table 1). Given the low number of neutral thoughts, they will not be the subject of future analyses.

Table 1

Number of Positive/Negative Thoughts per Story

Story	Negative	Positive
Story 1	601	406
Story 2	277	379
Story 3	346	298
Story 4	484	216
Story 5	609	286
Story 6	193	366
Story 7	608	181
Story 8	524	246
Story 9	421	192

The frequency of thoughts (positive and negative) differed significantly between stories ($\chi^2(8, N = 274) = 432.79$, $p < .001$). Negative thoughts were significantly higher than positive thoughts in stories 3, 4, 5, 7, 8, and 9. Positive thoughts were significantly higher in stories 2 and 6. No significant differences in positive vs. negative thoughts were observed for story 1.

The number of children that presented no positive or negative thoughts, that present only positive or negative thoughts, and also the number of children that presented both positive and negative thoughts, is presented in [Table 2](#).

Table 2

Number (%) of Children Regarding the Frequency of Positive/Negative Thoughts

Story	No positive nor negative thoughts	Only negative thoughts	Only positive thoughts	Positive and negative thoughts
Story 1	1 (0.4%)	86 (31.4%)	66 (24.1%)	121 (44.2%)
Story 2	6 (2.2%)	55 (20.1%)	141 (51.1%)	72 (26.3%)
Story 3	3 (1.1%)	98 (35.8%)	91 (33.2%)	82 (29.2%)
Story 4	1 (0.4%)	143 (52.2%)	66 (24.1%)	64 (23.4%)
Story 5	2 (0.7%)	120 (43.8%)	50 (18.3%)	102 (37.2%)
Story 6	12 (4.4%)	49 (17.9%)	152 (55.5%)	61 (22.3%)
Story 7	0 (0.0%)	157 (57.3%)	49 (17.9%)	68 (24.8%)
Story 8	0 (0.0%)	124 (45.3%)	53 (19.3%)	97 (35.4%)
Story 9	1 (0.4%)	132 (48.2%)	66 (24.1%)	75 (27.4%)

As can be seen, the number of positive and negative thoughts were not independent of the stories ($\chi^2(24, N = 274) = 337.77$, $p < .001$), which means that there was a greater number of children that gave positive thoughts in stories 2 and 6 ($p < .05$). The absence of either positive or negative thoughts was observed in a very small number of children. The simultaneous presence of positive and negative thoughts per child occurred in all stories. Finally, an equal number of positive and negative thoughts were given in all the stories for at least 7% of the children.

Discussion

In order to add some information to the study of positive and negative cognitive products and their relation with anxiety, and given the many inconsistencies and questions described in the literature, the aim of this study was to analyse the cognitive products (positive and negative thoughts) of a group of children from a community sample.

The present work, due to its goal of providing knowledge to fill a gap in the literature and given its methodology, does not allow for a linear comparison with other studies in this area, nevertheless some controversial and inconclusive results and their possible association with those obtained in this study will be discussed.

The high number of both positive and negative thoughts obtained in this study is in line with [Alfano and colleagues \(2002\)](#) considerations about the proportion of positive and negative cognitions that child produce when we use the Thought-Listening method to assess their cognitive products. The authors also stated that this method can be considered one of the most useful techniques to access the cognitive products that children develop and present ([Alfano et al., 2002](#)). Moreover, methods that are based on children's responses to structured questions that present hypothetical questions, which are used in several studies in this area, have been discussed, given their limitations in the assessment of anxiety-related cognitive characteristics of children. These responses may reflect the prototype of thoughts regarding the cognitive characteristics associated with anxiety, but they do not represent the child's actual thoughts (see [Alfano et al., 2002](#)). In addition, these self-statements are frequently extensions and adaptations of those used in questionnaires for adults, being that the children's understanding of the items may be very different from that of an adult (see [Schmiering & Rapee, 2002](#)). In this way, it seems important to discuss the responses resulting from the child's speech, assuming the positive and negative thoughts as products of their cognitive processes.

The results of this study presented a higher number of negative thoughts in most of the stories. This seems to be somewhat unexpected if we consider the results of some studies (e.g. [Prins, 1985](#); [Prins & Hanewald, 1997](#)), given that this is a non-clinical sample. However, the results from several studies regarding the relation between negative thoughts and levels of child anxiety have been quite inconsistent ([Bögels & Zigterman, 2000](#); [Hogendoorn et al., 2012](#); [Kendall & Chansky, 1991](#); [Spence et al., 1999](#); [Treadwell & Kendall, 1996](#)). Moreover, these findings may result from biased information processing, which might be a normal phenomenon in child development (see [Kindt et al., 2003](#)), that leads to anxiety-related cognitive products during the normative development of children from this age group.

Despite the higher number of negative thoughts, a high number of positive thoughts was also found, highlighting their importance in the assessment of children's cognitive characteristics. In this sense, the research by [Hogendoorn and colleagues \(2012\)](#) and their suggestions emphasize the importance and the need to explore positive thoughts and their role in the study of cognitive characteristics related to anxiety, particularly the contents involved in this type of thoughts, and whether they are representations of the child's development, as they reflect the child's day-to-day life, and what impact they may have on childhood anxiety.

The results of this study contribute to the knowledge on the presence/absence, frequency of negative and positive thoughts that, according to [Kendall and Chansky \(1991\)](#), are characteristics of the cognitive activity that need to be investigated in order to understand this activity in children. In this sense, this study provided some information on those characteristics, revealing that only a small number of children presented no thoughts. Inversely, a large

proportion of children presented both positive and negative thoughts indicating that the cognitive ability of children in this age group has varied response patterns.

The presence of positive and negative thoughts was further analysed, revealing that approximately 7% of the children presented an equal number of positive and negative thoughts. Moreover, we observed a majority of negative thoughts in seven stories (out of nine) and a majority of positive thoughts in two stories. These results are considered relevant because they not only confirm the need to adapt the methodologies to childhood research, but also denote the importance of the type of stimulation used in the assessment of children's thoughts related to anxiety (Barrios & Hartmann, 1997).

One limitation of the study is the use of a convenience sample, which does not allow for a generalization of the results obtained. This limitation needs to be taken into consideration when interpreting the obtained results.

However, it seems relevant to point out that the results of this study provide important information to the understanding of anxiety-related cognitive development of children, based on what is known and observed. It further alerts towards the importance of the research of positive and negative content of thoughts shown by children and their impact on childhood anxiety. For this reason, this research will provide important knowledge to use in the design and review of programs aimed at the intervention and treatment of childhood anxiety.

Thus, it is pertinent to highlight the need for future investigations to explore the specific contents of positive and negative thoughts, which is lacking in the literature, to enable the understanding not only of the cognitive products related to children's anxiety, but also of the underlying cognitive processes. The understanding of the connections between cognitive processes, products and their contents is also needed, given their potential impact on the work developed in the research field and also within the clinical practice. For example, they are of special relevance in the Cognitive Behavioural Therapy (CBT), since this type of intervention is based largely on the children's participation, i.e., children are encouraged to restructure cognitions that may be promoting anxiety, specifically threatening interpretations of the reality, and to search for additional information before determining a situation as threatening (see Muris, Kindt, et al., 2000). The literature has presented the need for a better understanding of these characteristics, given that the CBT has presented low efficacy, being at times ineffective, in part due to the lack of understanding of the cognitive characteristics of children (Cartwright-Hatton, 2006; Cartwright-Hatton, McNicol, & Doubleday, 2006; Field et al., 2008). It is also essential to consider the child's perspective in the analysis of the case, rather than having the theories for adults as an informative basis (Cartwright-Hatton, 2006; Cartwright-Hatton, McNicol, & Doubleday, 2006; Field et al., 2008).

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Competing Interests

Three authors are members of Psychology, Community and Health's Editorial Team (RVO) or Editorial Board (IL, JM) but played no editorial role for this particular article or intervened in any form in the peer review procedure.

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