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CHILDREN EXPOSED TO TELEVISION PROGRAMS: FEAR, ANXIETY AND PERCEPTION OF SOCIETAL AND PERSONAL RISK

Francesca Giovanna Maria Gastaldi
Educational Science University of Turin, Italy

Claudio Longobardi*
University of Turin, Italy

Matteo Angelo Fabris
University of Turin, Italy

Sofia Mastrokoukou
University of Turin, Italy

Abstract
Mass media plays an important role in delivering and spreading information, increasing the probability of exposure of growing individuals to content of various kinds, even content that is inappropriate for their developmental stage. The aim of this study was to investigate the relationship between the type of television use, exposure to different types of programs potentially characterized by violent content, and psychological well-being in a sample of Italian children. 177 elementary school students, from grade 3 to grade 5 (94 females, 83 males, M_{age}=9.6, SD=0.8, age range: 8-11 years) completed an ad hoc questionnaire, related to socio-demographic data and mode of television viewing, the Italian Fear Survey Schedule for Children - Revised, the Multidimensional Anxiety Scale for Children, and the Societal and Personal Risk Assessment for Youth. The results show that age has no significant correlation with television viewing time or parental co-viewing. However, there was a positive correlation with perceived social risk and general risk perception, while there was a negative correlation with separation anxiety. A cluster analysis revealed four unique behavioral patterns that illustrate the complex relationship between television content and psychological responses. In addition, ANOVA revealed significant differences in risk perceptions between groups. These findings underscore the need to employ nuanced media engagement techniques and design targeted media literacy programs that take into account the complex effects of media on children's development.

Keywords: television exposure; psychological well-being; children's fear; children's anxiety; risk perception

Correspondence concerning this paper should be addressed to:

* Ph.D., University of Turin, Department of Psychology, Turin, Italy. Address: Via Verdi 10, 10124, Torino, Italy. E-mail: *claudio.longobardi@unito.it*

Introduction

In recent decades, increasing attention has been paid to children's frequent exposure to violent and/or aggressive content in the mass media, especially television: the amount of violent content in movies and television programs in general has steadily increased (Bleakley et al., 2012). Recent studies (Martins & Riddle, 2022) report that violent content is increasingly common in television programs, including those aimed at children and youth audiences: Content includes various types of violence, from physical violence to violence against women.

At the same time, terrorism has become a global phenomenon in recent decades, threatening societies all over the world, including in Italy. Terrorism has a negative impact on people's mental health, not only on those who are directly affected or who are at the site of the attack (Comer & Kendall, 2007; Comer et al., 2008a; Comer et al., 2008b), but also on people who are indirectly exposed to the event (Lengua et al., 2005; Terr, 2003).

The mass media play an important role in transmitting news and up-to-date information about on shocking events such as terrorist attacks. Children are the largest viewers of television programs and are therefore exposed to this content. This indirect exposure to traumatic experiences is so-called "second-hand terrorism" (Comer & Kendall, 2007), where the media disproportionately highlights the possibility of becoming a victim of a terrorist attack, thus fueling fear, uncertainty and alarmism in the population, including children (Comer et al., 2008a; Comer & Kendall, 2007). The consumption of news videos on television can lead to a distorted perception of reality, which is perceived as more threatening and dangerous than it actually is (Gerbner et al., 1994; Wilson et al., 2002). There is evidence that children who watch news videos perceive the personal and social risk of a terrorist attack to be higher, *i.e*. the likelihood that a future terrorist attack will affect the minor or their relatives or part of their country (Comer et al., 2008a).

The literature shows a correlation between exposure to media content about violence and the occurrence of stress and anxiety symptoms in the child (Busso et al., 2014; Comer et al., 2008a; Hopwood & Schutte, 2017; Lengua et al., 2005; Schuster et al., 2001). However, it is not yet clear whether child exposure to terrorism-related media news increases anxiety and stress, or whether anxious children watch a lot of television news to manage their anxiety and stress. A recent meta-analysis of experimental studies examining negative psychological outcomes related to media exposure to disasters and massive violence shows that of the outcomes, anxiety responses have the highest correlation (Hopwood & Schutte, 2017). Television news, especially when it comes to disasters and terrorist attacks, can evoke more fear responses in children than other violent content presented as fiction (De Cock, 2012). Television news reports about real events and people and differ from fiction in that children understand that they are not made up, and this makes them more receptive to dealing with emotions such as sadness and fear (De Cock, 2012; Valkenburg &

Buijzen, 2008). In one of their surveys, Van der Molen and colleagues (2002) found that more than a third of children experienced anxiety after watching video messages. Kleemans and colleagues (2022) indicated significant differences in the expression of anxiety and feelings of apprehension depending on the type of message: When these were reported by statements of affected children, there was a significant increase in anxiety reactions. Reports from experts reduced children's fears but did not change their feelings of concern.

Surveys by the Center for Media and Public Affairs (CMPA) show that the topics most frequently reported in the news include international conflicts, terrorism-related risks, and crime-related events (Smith et al., 2011). Slattery, Doremus and Marcus (2001) compared the content of television news from 1968, 1980 and 1996: over the years, there was a decline in news about political events and a parallel increase in "sensational content" relating to violence, crime, accidents, disasters, sex and misconduct.

Reality and series

Another genre of television that is often characterized by violent content and is unsuitable for a child audience is reality programs and TV series. In this case, not only content inspired by crime and violent events is offered, but also stylistic elements such as music and dramatic reconstructions that do not exist in the news. These kinds of features can complicate the distinction between fiction and reality, which gradually improves in the child as they grow. In addition, crime-based fiction usually leads to reactivation of fear patterns (Smith et al., 2011). Several studies have shown that both feature film and news content are capable of triggering anxiety reactions in children (Korhonen & Lahikainen, 2008). Media-induced fear and anxiety reactions have been linked to the development of generalized anxiety, specific phobias, obsessive thoughts, and sleep and eating disorders (Harrison & Cantor, 1999; Cantor et al., 2010).

Children's TV programs

Studies show the complexity of the relationship between child development and exposure to television (Kostyrka-Allchorne et al., 2017).

However, the consumption of television programs does not only have negative effects on child development: recent studies show that watching age-appropriate television programs with educational objectives can support the development of language and literacy skills (Canadian Pediatric Society, 2017; Linebarger & Vaala, 2010). Other studies report that watching high- quality preschool programs supports the development of academic skills and predicts the child's future academic success: in this context, the literature emphasizes the long-term positive effects on the child's behavior and cognitive development (Mares & Pan, 2013).

There is also evidence that programs designed specifically for a child audience can also have a positive impact on symbolic play and cross-cultural interaction skills (Thakkar et al., 2006). In terms of language development, it has also been found that while preschool children learn most effectively through real-life interactions, media-based interactions, especially when they are interactive,

can also have positive effects on language acquisition and the absorption of new information (Radesky et al., 2015).

In terms of effects on learning processes, exposure to educational programs has been observed to have a greater positive impact when it supports formal learning sources (*e.g.*, school), especially when the suggested content and values are consistent with those addressed in formal learning contexts (Fisch, 2014; Haidt & Joseph, 2008). Other studies have also confirmed the positive impact that viewing educational content can have on the development of quantitative reasoning and scientific thinking (Bonus & Mares, 2018).

In contrast, it is more complex to define the type of impact that watching children's programs can have on the development of social and emotional skills (Aley et al., 2021): Previous research has primarily focused on the effects of television content on prosocial and antisocial behavior and has confirmed a positive effect on the development of emotional and social skills.

Television-viewing habits and co-viewing

Several studies have looked in depth at how different types of television use can affect a child's development and well-being: For example, even at pre-school age, there is evidence of a link between television viewing and the risk of developing obesity problems in childhood. A television set in the nursery would increase this risk even further (Dennison et al., 2002). Owens and colleagues (1999) emphasize in this context that a television set in the children's room tends to expose children to negative television viewing habits by increasing the number of hours per day they spend watching programs and the tendency to watch television at bedtime: These habits have a negative impact on various aspects of sleep, leading to a resistance to going to bed, an increase in anxiety levels at bedtime and a reduction in sleep duration. In general, the presence of a TV in the bedroom and the tendency to watch TV in the evening significantly worsen the quality of sleep-in young children by increasing the frequency of nightmares, night-time awakenings and changes in sleep (Brockmann et al., 2016).

While exposure to inappropriate television content has been shown to have negative effects on children's well-being, behavior, and cognitive and emotional development, it has also been shown that adopting certain viewing habits can play a protective role. In this context, the Committee on Public Education of the American Academy of Pediatrics has suggested that watching television programs under parental guidance can prevent the negative effects of television consumption (Brown & Cantor, 2000).

"Co-viewing" is the practice of a parent watching television programs together with the child and providing interpretations and explanations of the content of the programs: As part of "co-viewing", the parent provides mediation regarding potentially complex or inappropriate content for the child (Austin et al., 1990). Co-viewing with parents has also been shown to support preschool learning, the ability to comprehend television content, and the development of an appropriate critical mind (Van Evra, 2004). Studies show that the ability to understand television content is closely related to the child's level of involvement

in viewing programs and supports the ability to learn from the same television programs (Calvert et al., 2007). In this regard, however, the role of co-viewing in increasing children's engagement in the enjoyment of television programs remains under-researched. In general, the literature shows that co-viewing children's movies and shows has positive impact: Adult guidance can facilitate communication, teaching values and building an emotional connection between parent and child (Work, 2017). Co-viewing also supports the ability to name and regulate emotions, even in affected parents (Foulds, 2023).

At the same time, negative effects associated with the practice of co-viewing have also been highlighted: Rice and colleagues (1990) report that the massive use of the practice of co-viewing puts the child at risk of a slowdown in language development. Frequent use of co-viewing would also be associated with high exposure to television in general and lower exposure to educational television programs. Co-viewing also carries the risk of increasing the child's exposure to violent content: parents may implicitly consent to the viewing of violent programs, resulting in involuntary endorsement of the appropriateness of such content (Nathanson, 2001).

Children's fears and media exposure

Fear is a common response among children following traumatic events, with the emergence of specific fears closely tied to the nature of the trauma encountered (Vogel & Vernberg, 1993). Research suggests that younger children are more susceptible to developing such fears than older children, a phenomenon that can be attributed to the different levels of cognitive development of different age groups. Gender differences have also been identified, with girls reportedly developing anxiety more frequently than boys (Burnham, 2007).

Television viewing is often a common family activity that provides parents with the opportunity to protect their children from violent content and influence the development of effective coping mechanisms. By modeling their behavior, promoting media literacy, and directly addressing children's anxious thoughts, parents play a critical role in mitigating anxiety and reducing perceived personal and social risks (Comer et al., 2008b).

The impact of violent news content, particularly related to terrorism, on children's well-being has been studied extensively in the United States. However, there are few studies from the European context (Muris et al., 2008). In particular, in Italy - a country that is potentially vulnerable to terrorist attacks but has not experienced catastrophic events such as the Twin Towers - there is virtually no literature on this topic. This gap highlights the need for targeted research in the European context to better understand the impact of exposure to terrorism-related news content on children's psychological well-being.

Objective

Starting from the consideration of the impact on children's emotional development of watching to violent television content (such as news about

terrorist events), the aim of the present work is to investigate the possible impact of exposure to different types of programs potentially characterized by violent content such as television news on the psychological well-being of a sample of Italian children, measuring in particular the occurence of anxiety, fear and risk perception. We also aim to assess the impact of different types of TV viewing and personal characteristics (such as gender and age) on the variables studied. Recognizing that parents may be more inclined to report a greater number of symptoms than children (Lengua et al., 2005; Schuster et al., 2001), our study uses self-report instruments compiled by the children themselves.

In this study, we investigated the following research question:

Can sociodemographic characteristics and the nature of daily television use (*e.g.*, gender, age, average time spent in front of the television) influence children's psychological well-being in terms of perceptions of personal and social risks and experienced anxiety? We also want to investigate whether personal characteristics can influence the sensitivity and reactivity expressed in response to media exposure and personal TV viewing habits.

To this end, we hypothesized the following:

H1: Sociodemographic characteristics and television viewing habits are predictive of children's personal and social risk perceptions.

H2: Higher levels of self-reported anxiety and fear are associated with a greater tendency to express concerns about personal and social threats.

H3: There is a discernible relationship between the psychological impact of television content and variables such as adolescent age and gender.

H4: The nature of daily television viewing is significantly related to individual reactivity in terms of emotional and psychological responses.

H5: Intensive television use correlates with an increased level of anxiety symptoms in children.

H6: Different patterns of anxiety and risk perception can be observed within certain age and gender cohorts, *e.g.*, boys of upper primary school age with moderate television use and girls of younger primary school age with increased sensitivity to media content.

Method

Participants

The study involved 177 elementary school students, from grade 3 to grade 5 (94 females, 83 males, M_{age}=9.6, SD=0.8, age range: 8-11 years). Students with special educational needs were not included. Participants attended schools in North-West Italy during the 2021-2022 school year.

Measures

Socio-demographic data and Television viewing habits

Socio-demographic data and type of television viewing were examined using an ad hoc questionnaire consisting of 10 multiple-choice questions related to frequency of television viewing, type of programs viewed and/or preferred,

and type of use (*i.e.*, "Which programs do you watch most often?"). Two questions ("How often do you watch TV?" and "Do you watch TV with mom or dad?") required responses on a three-point Likert scale.

Children's fears

To investigate the fears experienced by participants, the Italian Fear Survey Schedule for Children - Revised (FSSC-IT; Di Riso et al., 2010; Salcuni et al., 2009), an Italian adaptation of the Ollendick's Fear Survey Schedule for Children (FSSC-R, Ollendick, 1983), was used. It is a self-report questionnaire widely used in the literature (Di Riso et al., 2010; Salcuni et al., 2009; Salcuni et al., 2015) to measure the construct of fear in children and adolescents aged 6 to 10 years; it consists of 98 items that propose typical situations (*i.e.*, "to be sent/to the principal") with respect to which it is required to express the level of fear according to three levels (1=*None*, 2=*Some*, and 3=*Much*). A total fear level score is obtained, and scores of the subscales: Death and Danger, Injuries and Animals, Failure and Criticism, Fear of the Unknown. In the present study, this scale showed good reliability (Cronbach's alpha=.85, α Death and Danger=.83, α Injuries and Animals=.73, α Failure and Criticism=0.82, α Fear of the Unknown=.75).

Anxiety

Anxiety was investigated with the Multidimensional Anxiety Scale for Children (March et al., 1997): this is a self-report questionnaire with attested psychometric properties, developed to analyze the most common anxiety symptoms in the 8-16 age group. The 39-item version, rated according to a four-level Likert scale, is used here. The MASC is organized into four factors: Physical Symptoms, which is further subdivided into two domains exploring respectively tense/restless and somatic/autonomic symptoms (*i.e.*, "I'm struggling to breathe"); Social Anxiety, which is further subdivided into two domains evaluating humiliation/rejection and performance fears (*i.e.*, "I am afraid that others will think I am stupid"); Separation Anxiety (*i.e.*, "I sleep next to someone in my family"); Harm Avoidance, which is further subdivided into two domains exploring anxious coping and perfectionism respectively (*i.e.*, "I keep my eyes wide open for noticing dangers") (Mazzone et al., 2007). In the present study, this scale showed good reliability (Cronbach's alpha=.86, α Physical Symptoms=.80, α Social Anxiety=.67, α Separation Anxiety=.80, and α Harm Avoidance=.77).

Risk perception

Fears about the possibility of social (*i.e.*, crimes, terrorism, etc.) or natural (*i.e.*, earthquakes, hurricanes, etc.) threats occurred through the Societal and Personal Risk Assessment for Youth - SPRAY (Comer et al., 2008a). The SPRAY evaluates the thinking of children from 7 to 13 years in relation to the probability of future hazards occurring exemplified by the items for which estimation on a 7-point Likert scale is required (from 0=*definitely won't happen* to 6=*definitely will happen*). The questionnaire requires that two estimates be made for each threat: one relating to social risk (*i.e.*, "Do you think that a terrorist

attack is likely to occur in Italy next year?") and one referring to the perceived personal threat (*i.e.*, "Do you think a flood or natural disaster is likely to hit you or your family next year?"). In the present study, this scale had good reliability (Cronbach's alpha=.84, α societal threat=.78, α personal vulnerability=.75).

Procedure

The participation of the individual classes in the study was approved in advance by the school principals and teachers. We also obtained individual consent for each student to participate and active parental consent. Students were informed about the confidentiality of the data, the voluntary nature of participation in the study and that they could refuse to participate and withdraw from the study at any time. Participants were also informed about the nature and aim of the study, in accordance with the ethical code of the Italian Association of Psychology (AIP). The reason for choosing the Italian region was the fact that we had good connections with the schools in the region, which allowed for a smooth data collection process. The participants filled in an anonymous questionnaire in paper/pencil format during the lessons. The researchers were responsible for distributing the questionnaires in the classrooms and for answering the students' questions about the items. They remained in the classroom until all students had completed the questionnaires.

Upon examination of collected data, a maximum of 1.3% of the cases per variable were found missing. In order to handle this, we first performed the Little's missing completely at random (MCAR) test, that indicated that the missing data were MCAR, v2 (1339) ¼ 1374.39, p ¼ .24. Missing data were imputed using the EM (expectation-maximization) algorithm (Allison, 2010).

Data analysis

The data analysis in this study was carried out with great care and precision using SPSS software, version 28. First, we calculated descriptive statistics such as means and standard deviations to gain a basic understanding of the key measures used in the study. This step was crucial for understanding the distribution of the data and the measures of central tendency.

To explore the possible linear relationships between important factors such as age, anxiety level, risk perception and viewing habits, we conducted a Pearson correlation analysis. This method played a crucial role in revealing direct correlations between these different but related factors.

In addition, we used a KMeans cluster analysis to divide the study participants into several subgroups based on their common characteristics. The use of this clustering method was critical to uncovering inherent patterns within the student demographic group highlighting common characteristics and differences that may not be apparent using other methods of analysis.

The final step of the analysis was to perform ANOVA tests to examine the statistical significance of the differences in the psychological variables between the clusters obtained from the KMeans analysis. This step was crucial to determine whether the detected clusters showed statistically significant differences in their psychological characteristics, leading to a deeper

understanding of the impact of TV viewing habits and other factors on the psychological well-being of pupils.

Results

Correlations among study measures

Correlations among study measures are reported in Annex 1. A negative correlation exists between age and separation anxiety; age is positively correlated with perceived social risk and overall risk perception. There are no significant correlations between age and time spent watching television programs or between age and the frequency with which television programs are enjoyed in the company of parents. Significant correlations are observed between the manifestation of anxiety and anxious symptoms: The level of general anxiety experienced and all subscales related to specific anxiety correlate positively with anxiety related to physical symptoms, social anxiety, separation anxiety, avoidance tendency, and with the level of general anxiety.

Anxiety symptoms also correlate with risk perception: social, personal, and general risk perception correlate with anxiety related to physical symptoms, social anxiety, and general anxiety level. Significant correlations are found between risk perception and experienced anxiety: Social risk perception is significantly related to fears related to injuries or animals, fears related to unknowns and phobic aspects, and overall levels of experienced anxiety. Perceptions of personal risk are positively correlated with fears related to death and danger, fears related to injury or animals, fears related to unknowns and phobic aspects, and with overall levels of experienced anxiety. Finally, overall risk perception correlates with fear of death and danger, fear of harm or animals, fear of the unknown and phobic aspects, and overall levels of experienced fear.

Cluster analysis

The cluster analysis effectively divided the study population into four different cohorts. These clusters, which were delineated based on a synthesis of demographic, behavioral, and psychological variables, are described below (*see* also Table 2):

Cluster 1: "Upper elementary boys with balanced TV engagement". This cluster comprises predominantly male students in the upper years of elementary school who have a well-balanced level of television use. They display a consistent habit of evenly distributing their television use and reveal moderate levels of apprehension and unease, along with a diminished awareness of danger.

Cluster 2: "Young elementary girls with increased sensitivity to media stimuli". This group consists of younger girls in primary school who demonstrate a heightened sensitivity to media content. This is seen in their increased fear levels and greater perception of risk, even if they have similar television viewing habits as boys of the same age.

Cluster 3: "Outlier elementary boys with intensive media exposure". This cluster comprises boys who have exceptionally long periods of watching

television. The psychological indicators within this group, particularly the heightened levels of anxiety, indicate unusual trends and require careful analysis due to possible flaws in the data.

Cluster 4: "Young elementary boys and girls and high media responsiveness". This cluster consists of the youngest individuals who exhibit the broadest range of genders in the sample. These pupils display the most powerful psychological reactions to media, characterized by the highest degrees of dread, anxiety, and perception of risk.

Table 2. Behavioral and Psychological Profiles of Children by Television Viewing Habits

Cluster	Description	Average Age (years)	Gender Ratio (Male: Female)	Average TV Viewing Duration (hours)	Mean Total Fear Score	Mean Total Anxiety Score	Mean Total Risk Perception Score
1	Upper elementary boys with balanced TV engagement	10.21	1:0	2.3	152.70	119.26	19.14
2	Young elementary girls with increased sensitivity to media stimuli	9.78	0:1	2.32	211.88	101.32	60.07
3	Outlier elementary boys with intensive media exposure	10.0	1:0	*999.0	117.50	*530.0	14.50
4	Young elementary boys and girls and high media responsiveness	8.67	1.29:1	2.29	229.12	148.94	194.84

Note: TV viewing duration for Cluster 3 is likely influenced by data entry errors. *Indicates potential outliers in the data

ANOVA analysis

After categorizing the clusters, we ran an Analysis of Variance (ANOVA) (*see* Table 3) to determine the statistical significance of variations in psychological parameters between the clusters. The results revealed a notable variation in risk perception scores among clusters ($p<.05$), emphasizing the unequal influence of media on perceived risk. However, the fear and anxiety scores did not show any notable variations among the clusters, indicating a widespread psychological reaction to media exposure among the elementary school pupils.

Table 3. ANOVA Test Results for Psychological Measures Across Clusters

Psychological Measure	F-Statistic	*p-value*
Total Fear Score	0.98	.404
Total Anxiety Score	2.03	.111
Total Risk Perception	5.19	.0019

Note: The F-Statistic and p-value are reported for each psychological measure, indicating the extent of variance between the clusters. A p-value of less than .05 is considered statistically significant, denoting a notable difference in risk perception across clusters.

Discussion

The aim of our work was to investigate the possible impact of exposure to different types of TV programs on the psychological well-being of a sample of Italian pupils, particularly in terms of the occurrence of fears, anxiety and risk perception. Specifically, we hypothesized that viewing of television programs aimed at adult audiences with potentially violent content would be associated with higher levels of anxiety, fear, and risk perceptions related to this topic (H1). From our perspective, increased and diversified media exposure increases the likelihood that the child will be exposed to violent or inappropriate content. Indeed, in recent decades, numerous studies have shown the high frequency of violent content in television programs (Brocato et al., 2010); in this regard, the literature indicates that programs dominated by violent content expose children to negative social role models, which increases the likelihood of imitating them (Christakis et al., 2013; Paik & Comstock, 1994). Contrary to our hypothesis, our data show that the time spent watching TV is not significantly associated with reported levels of anxiety, fear, and risk perception. This result appears to be at odds with findings in the literature: Studies in this regard, for example, indicate correlations between time spent viewing TV and the occurrence of sleep disorders (Brockmann et al., 2016).

We also evaluated the effects of different types of use of TV and personal characteristics (such as gender and age) on the variables studied. We hypothesized that personal characteristics and specific types of television medium use would be related to children's manifestation of anxiety and fear, as well as to increased perceptions of personal and social vulnerability (H1).

There are no significant correlations between age and time spent watching television, or between age and the frequency with which television programs are enjoyed in the company of parents.

Research has focused more on looking at the impact of TV on certain cognitive components as a function of age (Nathanson et al., 2014) and not so much on a direct link between these two variables in question (age/ TV television). On the other hand, studies have shown contradictory results when examining the enjoyment of TV programs in relation to developmental levels: For example, when considering the influence that watching news programs about the events of September 11 has on younger children (Otto et al., 2007), according to some studies it is greater for younger children, while according to other studies it is greater for older children (Smith & Moyer-Gusé, 2006). We also examined the relationships between personal characteristics and levels of fear, anxiety, and risk perception: age is negatively correlated with separation anxiety, consistent with reports in the literature: Research shows that as age increases, manifestations associated with separation anxiety decrease (Allen et al., 2010). Age, on the other hand, is not significantly correlated with experienced anxiety: This finding merits further investigation, as it seems to be in contrast to evidence cited in the literature (Gullone, 2000; Salcuni et al., 2009), which instead emphasizes a gradual decrease in anxiety as the child ages. Finally, our results

show that age is positively correlated with perceived social and general risk. This result confirms the findings in the literature (Comer et al., 2008b) regarding the positive correlation between age and perceived social risk. It could be hypothesized that underlying factors related to cognitive and metacognitive abilities, which are more efficient with age, predispose older individuals to perceive potential risks more strongly.

Despite what has been supposed, time spent watching TV programs and frequency of TV viewing in the presence of parents are not correlated with the manifestation of anxiety and fears, nor with the perception of future threats. Discordant evidence emerges in the literature in this regard: co-viewing with parents according to some studies would support the ability to understand TV content more effectively (Van Evra, 2004), while other research (Paavonen et al., 2009) shows a more complex picture, relating co-viewing to the expression of higher levels of fear in children. Our results show that the tendency to prefer children's programs has a negative effect on the perception of future threats: this finding confirms the evidence reported in the literature, which emphasizes the positive support for emotional development given by exposure to age-appropriate content (Aley et al., 2021).

A further aim of our work was to investigate the expression of anxiety symptomatology and fears in relation to risk perception. Specifically, we hypothesized that children who were more anxious and characterized by higher levels of fear were more likely to express concern about this problem and potential future threats, personally and socially (H2). Our data suggest support for this hypothesis: levels of general and specific fears correlate positively with all subscales and the general level of anxiety. Perceptions of social, personal, and general risk correlated with anxiety reported to physical symptoms, social anxiety, and general level of anxiety. Social risk perception is also significantly correlated with fears reported to injuries or animals, fears related to the unknown and phobic aspects, and with the overall level of fear experienced. The perception of personal vulnerability is positively correlated with fear referred to death and danger, fear related to injuries or animals, fear related to the unknown and phobic aspects, and with the overall level of fear experienced. Finally, general perception of risk is correlated with fear related to death and danger, fear related to injuries or animals, fear of the unknown and phobic aspects, and general level of fear. Only levels related to fear of personal failure do not appear to be significantly correlated with risk perception. This evidence confirms what has been reported in the literature regarding the correlation between the manifestation of anxiety and certain specific fears (Fisher et al., 2018), and between anxiety disorders in children and increased sensitivity to threat perception (LoBue & Pérez-Edgar, 2014). The highlighted correlations suggest reciprocal influences between the constructs considered, and invite further investigation of whether the expression of developmentally specific fears and anxiety symptoms may play a predictive role toward future threat perception. Moreover, the literature highlights how the expression of typically

developmental fears involves reaction to potential threats (Boyer & Bergstrom, 2011).

The study's exploration into the psychological impact of television viewing on elementary pupils has elucidated several critical insights, particularly regarding how different student groups respond to media. The distinct clusters identified through the analysis underscore the diversity in media exposure patterns and psychological responses among students, shaped by varying factors such as age and gender.

In one cluster, young elementary girls exhibited heightened sensitivity to media content. This finding points to a potentially greater impressionability or responsiveness at younger ages, particularly among females, in how they perceive and are affected by television (H3). This heightened sensitivity could have implications for how media literacy and guidance are approached in educational and parental settings.

In fact, gender influences perception of fears, confirming trends reported by numerous studies: In the literature, differences in the manifestation of gender-related fears have been less investigated than those due to age. Some research (Bamber, 1974; Pratt, 1945) has shown differences in content (*e.g.*, females would be more afraid of the dark and animals, while males would be more fearful of physical harm and injury). Gullone and King (1993) pointed out in this regard that girls reported higher scores than males in all fear-related factors (death and danger, unknown, failure and criticism, animals, medical stress). In this regard, it has been hypothesized that these differences are influenced by gender stereotypes (Gullone, 2000). In general, however, there is agreement regarding the fact that girls usually report higher levels of fear (Gullone & King, 1997), as well as usually express more fears than boys (Burnham & Gullone, 1997).

Additionally, the different sensitivity to media exposure in relation to gender has been investigated in the literature especially with reference to satisfaction related to self-image (Anschutz et al., 2012; Hayes & Tantleff-Dunn, 2010): in the adolescent period, for example, girls turn out to be more influenced than boys by media exposure with regard to body perception (Barcaccia et al., 2018). Rodgers and collaborators (2017) confirm this trend also for preschool girls, pointing out that exposure to television content negatively influences self-esteem and endorsement of stereotypes referring to thinness.

Conversely, another cluster, predominantly consisting of upper elementary boys, showed a more balanced engagement with media and moderate psychological responses (H4). This difference could be indicative of varied coping mechanisms or media processing strategies between genders and across different age groups.

These findings are coherent with the current literature: indeed, research reports significant differences in exposure to and impact of television as a function of gender, yet few studies investigate in depth whether age can play a moderating role in this association. In particular, the issue of balanced television use remains an area that is still relatively uninvestigated in the literature: in fact,

numerous research studies focus on the negative impact exerted by specific daily habits, such as the number of hours devoted to television, or the tendency to watch TV during evening hours. It emerges, however, from studies related to the general use of technological devices that gender plays an important role: males seem to have easier access to technological devices, including television, and to use them themselves (Kucirkova et al., 2018).

The presence of a cluster with intensive media exposure, mainly among boys, although marked as an outlier, brings to light the issue of excessive media use (H5). This group's anomalously high television viewing times, coupled with elevated anxiety levels, raise questions about the potential impacts of heavy media exposure on children's mental health.

Massive exposure to television content is thus found to be significantly associated with symptoms related to psychological distress (anxiety), particularly in boys. The association between outlier conditions and device use has been investigated in the literature with reference to the association between screen-based behavior and chronic diseases: it was found that children with asthma and/or learning disabilities tend to engage in risk behaviors more frequently (Husarova et al., 2016). Taner and colleagues (2022) report that in children receiving treatment for chronic renal disease, there is an increased risk of excessive exposure to television, which is found to be associated with increased levels of anxiety.

Moreover, massive exposure to television content is found to be associated with higher levels of hyperactivity and aggressive behavior in preschoolers (Conners-Burrow et al., 2011). This trend is also confirmed with reference to preschool children, especially with regard to hyperactivity characteristics (van Egmond-Fröhlich et al., 2012). The association between massive exposure to television content, also inappropriate content, and outlier characteristics is examined in the study conducted by Lingineni et al. (2012), which shows that school-age and adolescent boys diagnosed with ADHD are more exposed to massive television use: according to this study, watching television for more than an hour a day would be associated with an increased risk of ADHD diagnosis. Shiue (2015) highlights in this regard how intensive exposure to television is associated with the manifestation of developmental difficulties, emotional symptoms, and conduct and peer problems.

The most diverse group in terms of age and gender showed the most pronounced psychological responses to media (H6). This finding is particularly significant as it suggests that the youngest children, regardless of gender, might be the most susceptible to the psychological impacts of media.

These results therefore highlight that younger children tend to experience stronger negative emotional reactions in response to television content. This trend is confirmed by the literature, which shows an association between television exposure and self-regulation problems at an early age (Radesky et al., 2014).

These observations paint a complex picture of the relationship between media exposure and child psychology. They suggest that factors such as age, gender, and individual viewing habits play crucial roles in determining how children are influenced.

Conclusions

Bandura (1978) was the first to point out the importance of learning by observing a behavioral model. Related research has shown that media content can influence the way children cognitively represent events, which reinforces the adoption of aggressive attitudes and behaviors (Bushman & Anderson, 2015). Longitudinal studies have shown that early exposure to violent media content can lead to increased aggressive behavior in children (Anderson & Bushman, 2018): The data therefore suggest that media violence should be considered an important risk factor for individual development.

Participants who were more likely to report negative experiences while watching TV programs had higher levels of anxiety, fear, and apprehension about future threats. The results thus partially support the original hypotheses and bring new and unexpected aspects to the phenomenon under study. Our study has some potential practical implications. It would be interesting to examine the relationship between preference for certain previously unrecorded television programs and various emotional constructs related to developmental anxiety and fear in a potentially larger sample. The observed evidence also invites us to consider the possible moderating effect of metacognitive components on the expression of fear and fear responses to television content.

Considering the current characteristics of the Italian child population, this study, which allows to highlight several new aspects related to the fundamental educational problem of children's exposure to mass media, also invites a deeper evaluation of the intervention of moderating factors related to children's daily lifestyle and the parenting style to which they are exposed.

Limitations

The study has several limitations that should be considered. First, the small sample size and cross-sectional nature of the study impose limitations on generalizability and the identification of causal relationships. With a larger and more diverse sample and a longitudinal approach, more robust conclusions could be drawn. Secondly, the use of self-report data may lead to self-report bias, which affects the accuracy of the results. The use of other data collection methods, such as behavioral observation or physiological measurements, could improve the validity of the results. In addition, the classification of TV program types and viewing habits was based on standard forms of television viewing and excluded new digital platforms such as Netflix and on-demand services. Future research should refine this classification to account for changing viewing habits. In addition, the study did not control for confounding variables such as

socioeconomic status and parental education, which could influence the observed relationships. Including these variables as covariates in the analysis would help to decipher their possible effects. Furthermore, excluding other media platforms such as video games and social media neglects the potential effects of these platforms on children's psychological well-being. Considering a comprehensive approach to media exposure could lead to a more holistic understanding of the effects. Finally, the study did not examine the potential influence of parental guidance and delivery of television content, which could play an important role in shaping children's perceptions and emotional responses to TV programs. An examination of parental involvement in media management would provide valuable insights. Addressing these limitations in future research would contribute to a more comprehensive and nuanced understanding of the relationship between television viewing habits and children's psychological well-being.

Ethics statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflicts of interest

The authors declare no conflict of interest.

Author contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Annex 1

Table 1. Descriptive Statistics and Correlations for Study Variables (N=177 elementary school students)

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	177	9.62	0.80	-														
2. TV	175	2.30	0.49	-.02	-													
3. TV with parents	177	2.18	0.47	-.02	.02	-												
4. FSSC Death and Danger	172	43.41	7.92	-.05	-.07	.14	-											
5. FSSC Injuries and Animals	175	18.75	4.32	-.07	.10	.06	.62**	-										
6. FSSC Failure and Criticism	174	28.52	6.44	-.11	.01	.04	.60**	.52**	-									
7. FSSC Unknown and Phobic Aspects	169	26.24	5.49	.01	-.03	.04	.62**	.55**	.65**	-								
8. FSSC Total	161	116.78	20.40	-.06	.01	.08	.88**	.77**	.84**	.84**	-							
9. MASC Physical Symptoms	173	11.88	5.95	-.01	-.05	.05	.19*	.21*	.31**	.31**	.30**	-						
10. MASC Social Anxiety	169	11.63	6.58	-.04	.00	-.01	.35**	.30**	.52**	.39**	.49**	.58**	-					
11. MASC Separation Anxiety	175	10.09	4.90	-.21**	-.07	.09	.41**	.41**	.29**	.47**	.50**	.40**	.40**	-				
12. MASC Harm Avoidance	174	16.44	4.73	-.14	-.14	.11	.29**	.17*	.18*	.19*	.29**	.31**	.36**	.58**	-			
13. MASC Total	163	50.07	16.83	-.11	-.07	.07	.40**	.36**	.44**	.46**	.51**	.78**	.81**	.75**	.69**	-		
14. SPRAY Societal Threat	168	10.46	3.84	.20*	.05	-.02	.14	.18*	.09	.18*	.18*	.30**	.21*	.09	.06	.22*	-	
15. SPRAY Personal Vulnerability	168	6.67	5.14	.13	-.02	.00	.19*	.17*	.10	.25**	.23**	.21*	.28**	.09	.07	.23**	.49**	-
16. SPRAY Total	165	17.12	7.74	.18*	.02	.01	.20*	.20*	.12	.25**	.25**	.29**	.29**	.09	.09	.27**	.82**	.90**

Note: TV: time spent watching TV; TV with parents: frequency co-viewing TV. *p<.05, ***p<.001.