

ORIGINAL ARTICLE

Developing and Validating the Perceived Parental Media Mediation Scale: A Self-Determination PerspectivePatti M. Valkenburg¹, Jessica Taylor Piotrowski¹, Jo Hermanns², & Rebecca de Leeuw³

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The aim of this study was to develop the Perceived Parental Media Mediation Scale (PPMMS). The PPMMS measures adolescents' perceptions about how frequently their parents restrict or actively discuss their media use, and in what style (i.e., autonomy-supportive, controlling, or inconsistent). In a first study among 761 preadolescents and early adolescents (10–14 years), we confirmed that the subscales of the PPMMS could be distinguished. In a second study, in which 499 adolescents were surveyed again, the test–retest reliability and validity of the PPMMS were established. The PPMMS met the standards of reliability, validity, and utility. Subscales correlated in the expected directions with general parenting styles, family conflict, prosocial behavior, and antisocial behavior.

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Over the past few decades, a rapidly growing number of studies have investigated how parents mediate their children's media use (An & Lee, 2010; Nathanson, 2001a). Although the mediation strategies that parents use are diverse, earlier studies have identified three common strategies (Nathanson, 2001a; Valkenburg, Krcmar, Peeters, & Marseille, 1999). The first strategy—restrictive mediation—refers to parents' efforts to restrict the time that their children spend with media or the content that they are exposed to. The second strategy—active mediation—denotes parents' attempts to explain media content to their children and to convey their opinions about certain media content. The third strategy—covieing or co-use—refers to the extent to which parents use media together with their children, without actively engaging in discussions.

A great number of earlier studies on parental media mediation have focused on the antecedents of different media mediation strategies. These studies have found, for example, that both restrictive and active mediation are more common among families with (a) younger children (e.g., Hoffner & Buchanan, 2002; Nikken & Jansz, 2006),

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(b) negative beliefs about media and their effects on children (Austin, Bolls, Fujioka, & Engelbertson, 1999; Nathanson, 2001a), and (c) an open family communication style (An & Lee, 2010; Buijzen & Valkenburg, 2005).

Other studies have focused on the effectiveness of parental mediation strategies. These studies have shown, for example, that active mediation can increase desirable media effects, such as learning from educational media (Huston & Wright, 1994; Salomon, 1977) and attitudes toward art and culture (Valkenburg, Krcmar, & De Roos, 1998), or reduce undesirable ones, including media-induced aggression (Nathanson, 2004), fear responses (Wilson & Weiss, 1991), parent–child conflict (Buijzen & Valkenburg, 2005), and alcohol use (Austin, Pinkleton, & Fujioka, 2000).

Although the parental mediation literature has been burgeoning in the past few decades, there are three gaps in this literature that still need to be filled. First, despite the fact that digital technologies (e.g., computer games and the Internet) have become fixtures in adolescents' lives, the majority of parental mediation studies have predominantly focused on television. Although there are many attempts to investigate parental mediation of computer games and the Internet (e.g., Lee & Chae, 2007; Livingstone & Helsper, 2008), there is, to our knowledge, no study that covered parental mediation in the broader context of children's media use (i.e., television, movies, computer games, and the Internet). An important reason for this omission may be that there is as yet no reliable and valid scale that covers parental mediation of a broader range of media. To create and validate such a scale was the first aim of this study.

Second, most studies on the antecedents and effectiveness of parental mediation are conducted among children younger than 12. One possible reason for the relative scarcity of research among adolescents is that researchers believe that parents lose their influence on children when they enter adolescence. Hence, investigating parental mediation efforts may be less valuable in this period (Nathanson, 2001b). Another explanation might be that it is more difficult to investigate parental mediation among adolescents because of a lack of suitable self-report scales for this age group. Most parental mediation studies, especially those dealing with younger children, have relied on parent reports. However, parents and children often do not agree on the prevalence and effectiveness of parental mediation (Austin, 1993; Byrne & Lee, 2011), and scales that are created for parents do not necessarily translate to adolescents. The creation of a scale tailored to adolescents was this study's second aim.

A third and final gap in the literature is that we do not yet know enough about the effectiveness of different parental mediation strategies in adolescence. This scarcity of knowledge is most evident when it comes to restrictive mediation in the newer media environment. For example, parental restriction of online activities has sometimes been shown effective in reducing online risks (Livingstone & Helsper, 2008) and sometimes not (Lee & Chae, 2007, 2012; Mesch, 2009). A plausible explanation for this inconsistency is that parental attempts to influence adolescents' media use may lead to psychological reactance, that is, an aversive affective reaction toward regulations that intrude into one's perceived freedom (Brehm & Brehm, 1981). A normal part of adolescent development is to reject the opinions of parents and

other authority figures in an effort to gain independence (Nucci, 2007; Smetana, 1995). However, the likelihood of potential reactance effects strongly depends on the communication strategy that is used (e.g., Byrne & Lee, 2011).

Reactance can be minimized or even avoided if the restriction occurs in an open, autonomy-supportive style, and it can be stimulated when the restriction occurs in an inconsistent or controlling way (Byrne & Lee, 2011; Deci & Ryan, 2000; Soenens, Vansteenkiste, & Niemiec, 2009). Earlier studies on parental mediation have asked parents or children to indicate the *frequency* with which restrictive and active mediation strategies occurred. None of these studies have attempted to investigate the *style* in which the parental mediation strategy occurred. The final aim of our study was to address this gap in the literature by creating a scale that not only measures *how often* parents restrict or actively discuss their children's media use but also *how* they apply these mediation strategies (Darling & Steinberg, 1993).

The Perceived Parental Media Mediation Scale

The aim of this study was to develop a new self-report scale to measure adolescents' perceptions of parental mediation, the Perceived Parental Media Mediation Scale (PPMMS). The PPMMS attempted to cover TV programs, movies, digital games, and the Internet. It focused on two parental mediation styles, restrictive and active mediation. The third style—covieing or co-use—was not included for two reasons. First, the effectiveness of coviewing or co-use is less convincingly demonstrated than that of the other two mediation styles (Nathanson, 1999, 2001a). Second, although parents and children can easily coview a TV program or a movie without active parent–child discussion, shared use of digital media (e.g., computer games and the Internet) without any discussion is less likely, not in the least because of physical constraints (e.g., small screen and the necessity to share a mouse; Livingstone & Helsper, 2008). Therefore, we believe that it is difficult to conceptualize co-use as a distinct media mediation style in the newer media environment.

In the PPMMS, restrictive mediation was defined as the frequency with which parents restrict the time that their children spend with media and certain content that they are exposed to (Valkenburg et al., 1999). Active mediation was defined as the frequency with which parents explain media content (e.g., the unrealistic character of fiction) and convey opinions about content they deem unsuitable for their children (Valkenburg et al., 1999).

The development of the PPMMS was inspired by several theories of parenting and human development, most importantly self-determination theory (SDT; Ryan & Deci, 2000). SDT was chosen because this theory on motivation has straightforward predictions about the parental strategies that can facilitate or forestall children's intrinsic motivation and their internalization of norms and rules (Grolnick, 2003; Joussemet, Landry, & Koestner, 2008). Such clear predictions are particularly important in adolescence, because adolescents, in their search for psychosocial autonomy, are more likely than any other age group to reject externally enforced norms and rules.

Parental mediation of adolescents' media use is more difficult than the regulation of behaviors in other domains. According to social domain theory (Smetana, 1995), the effectiveness of parental rule making is greatly influenced by the degree to which adolescents consider the authority of parents to be legitimate. In some domains, such as the moral (e.g., stealing and lying) or the conventional domain (e.g., not doing assigned chores and cursing), adolescents typically perceive parental authority and interventions as legitimate. However, as they grow older, they increasingly perceive parental interventions in the personal domain (e.g., friendships, clothes, and media use) as illegitimate (Smetana, 1995; Soenens et al., 2009). Personal domain issues typically deal with individual preferences and choices rather than with generally accepted norms of right and wrong (Nucci, 2007). As a result, adolescents less automatically accept parental authority regarding such issues (Smetana, 1995).

In their search for a firm, adult identity, adolescents are particularly interested in identity-related information about, for example, dating, sexuality, humor, and ways to cope with interpersonal problems. They are highly sensitive to the judgments of peers and typically experience uncertainty about how to behave in social situations. To learn social lessons on how to behave, they often rely on entertainment media and the Internet (e.g., Valkenburg, 2004; Valkenburg & Peter, 2011). Part of their search for autonomy is to test rules and limits and, therefore, they are typically interested in media entertainment that portray irreverent behavior, disregard of authority, and types of humor based on taboos and disgust (Valkenburg, 2004). These developmentally induced preferences often do not match with the prevailing norms in the family and, therefore, necessitate parental mediation strategies.

Choosing effective parental media mediation strategies is critical. After all, if adolescents perceive their parents' media mediation efforts as illegitimate, these efforts may—because of reactance effects—boomerang, that is, they may cause an increase rather than a decrease in the very behavior that is influenced (Brehm & Brehm, 1981). The PPMMS was developed to measure parental media mediation strategies that may circumvent such reactions (Byrne & Lee, 2011) and promote internalization of parental norms and rules. In earlier studies, investigators assumed that active mediation was more effective than restrictive mediation in reducing negative and stimulating positive media effects (e.g., Fujioka & Austin, 2003). In this study, we assume that both restrictive and active mediation can be effective, but only if the mediation is (a) autonomy-supportive, (b) without overt or covert control, and (c) consistent.

Autonomy-supportive media mediation

Of all theories that have attempted to understand parenting, SDT (Deci & Ryan, 2000) has placed the most emphasis on autonomy support in parenting. SDT considers autonomy, the perceived experience of volition in one's choices and behaviors, as a central condition necessary for human development (Soenens et al., 2009). One important postulate of SDT is that children, through familial socialization, gradually acquire, accept, and endorse the values and demands in society. Another postulate is that children are more likely to internalize such values and demands (i.e., make them

their own) when these are transmitted in an autonomy-supportive way rather than by forcing compliance (Grolnick, Deci, & Ryan, 1997). Although parents may force their children to carry out certain tasks, the genuine and long-term goal for their children is to carry out these tasks volitionally (Grolnick et al., 1997).

SDT considers the internalization of values, demands, and rules as an active, gradual process in which external forces are progressively transformed and integrated into a coherent self (Deci & Ryan, 2000). If internalization is optimal, external forces are gradually perceived as voluntary accepted entities that are congruent with the adolescent's self. However, this internalization process does not automatically function optimally. There are many activities that adolescents have to do that are not intrinsically interesting or enjoyable and, therefore, not likely to occur spontaneously (Grolnick et al., 1997). Most of these behaviors are, at least initially, externally motivated (e.g., to please their parent or avoid sanctions). As a result, SDT assigns an important role to the family in affecting the process of internalization through autonomy-supportive parenting (Soenens et al., 2009). The critical idea behind autonomy-supportive parenting is that a parent offers children structure and guidance, but is also willing to respect their children's choice when they are developmentally mature enough to make choices (Grolnick et al., 1997). A parent who supports their child's autonomy (a) takes their child's feelings and perspective seriously, (b) provides a convincing rationale for behavioral requests and rule makings, and, (c) if possible, encourages initiatives and offer choices (Joussemet et al., 2008).

A large body of evidence has shown that an autonomy-supportive parenting style, characterized by mutually contingent, sensitive, and responsive interactions with children, is associated with better social adjustment (e.g., Pettit, Bates, & Dodge, 1997). In the PPMMS, we attempted to transfer this knowledge about general autonomy-supportive parenting to media-specific parenting. We define autonomy-supportive media mediation as parents' restriction or active discussion about media in which a rationale is provided and in which the perspective of the adolescent is taken seriously. On the basis of theories and results found for general autonomy-supportive parenting, we expected that both autonomy-supportive restrictive and autonomy-supportive active mediation stimulate internalization of the requested rules and behaviors and, thereby, circumvent psychological reactance.

Autonomy-supportive parenting is especially important in the case of media-specific parenting. As discussed, adolescents consider media as a part of their personal domain (Smetana, 1995). Therefore, parental interventions in this domain may easily lead to reactance effects. Because reactance manifests itself through adolescents' attempts to restore their freedom (Brehm & Brehm, 1981), it is likely to disturb family communication. Therefore, we expected autonomy-supportive restrictive and autonomy-supportive active mediation to be negatively related to family conflict and antisocial behavior of adolescents, and positively to their prosocial behavior. Finally, we expected autonomy-supportive restrictive and autonomy-supportive active mediation to be positively related to a general autonomy-supporting parenting style.

Controlling media mediation

In contrast to being autonomy-supportive, parents can also provide structure to their children in a controlling way. In such a parenting context, children are pressured to think, feel, or behave in particular ways, which is intrusive of adolescents' thoughts, feelings, and development of the self (Ryan, 1982). Parental control is believed to result in reactance effects and nonoptimal forms of internalization. Two general types of control can be distinguished, overt and covert control. Overt control refers to parental strategies such as threatening to punish or withdrawing privileges. Covert control involves more insidious strategies, such as the induction of guilt or shame or the instilling of anxiety in the adolescent, which is consistent with the concept of psychological control (Barber & Harmon, 2002; Soenens et al., 2009).

In this study, overtly controlling restriction was defined as parents' attempts to forbid or restrict media use by getting angry or threatening to punish the child. Covertly controlling restriction was defined as parents' attempt to forbid or restrict media by communicating their disappointment or instilling guilt in the adolescent. For active mediation, which involves parent–child discussions, we did not distinguish between overtly and covertly controlling mediation because it is unlikely that parents threaten their children with punishment or instill guilt and anxiety to convince them about their opinions. We defined controlling active mediation as parent–child discussions in which the opinions of adolescents do not count and are not respected. We expected all types of controlling media mediation to be positively related to controlling parenting styles and family conflict (Barber & Harmon, 2002). We also expected that these types of media mediation are positively related to adolescents' antisocial behavior and negatively to their prosocial behavior.

Inconsistent media mediation

Inconsistent parenting can lead to several undesired consequences. It can increase reactance among adolescents to follow the rules or change behavior (Gardner, 1989). It may stimulate parent–child conflict and is an important contributor to problem behavior (Gardner, 1989). Enduring inconsistent parenting may eventually lead to a so-called reinforcement trap or coercive circle where short-term acquiescing and avoidance of conflict by permissive behavior is bought at the expense of adolescents' long-term adjustment to behavioral norms (Patterson, 1979). In this study, inconsistent parental mediation focused on inconsistent restriction, which we defined as parents' tendency to be erratic and unpredictable in their restriction of the time that their children spend with media or the content to which they are exposed. We expected inconsistent restrictive mediation to be positively associated with general inconsistent parenting, family conflict, and antisocial behavior and negatively with prosocial behavior.

The current study

The aim of this study was to create a Parental Media Mediation Scale for adolescents who met the criteria of reliability (i.e., internal consistency and test–retest reliability),

validity (i.e., cross-population and construct validity), and utility (i.e., a reliable and valid scale with the smallest number of items in order to minimize the burden on respondents). The PPMMS was inspired by a scale developed by Soenens et al. (2009) to measure adolescents' perceptions about their parents' prohibition of certain friendships.

Following Soenens et al. (2009), we first presented adolescents with a number of items to investigate the *frequency* with which their parents restrict or actively discuss their media use (e.g., "How often do your parents forbid you to watch certain programs?"). We refer to the items in these frequency scales as the main items. Directly following each of these main items, adolescents were asked: "If your parents would do this, how would they discuss this with you?" We then presented adolescent with follow-up items tapping into the style of mediation (i.e., autonomy-supportive, overtly controlling, covertly controlling, and inconsistent). The Appendix of this article shows how the main and follow-up items for restrictive and active media mediation were presented to the adolescents.

We expected stronger correlations with the validation constructs for autonomy-supportive, controlling, and inconsistent mediation (i.e., the follow-up scales) than for the main restrictive and active mediation scales. In our view, a plausible reason for the inconsistent results in earlier parental mediation studies might be that the *frequency* items have not been interpreted in a consistent manner. For example, when asked to report their perceptions about the frequency of parental restriction, some adolescents may envision an autonomy-supportive restrictive style, whereas others may imagine a controlling or inconsistent restrictive style. Mixing up these diverging perceptions of restrictive mediation into one overall frequency scale may have led to insensitive scales and, possibly, invalid correlations with other constructs.

The PPMMS was created in two steps. In a first survey study among 761 preadolescents and early adolescents, we investigated whether the two main scales (i.e., the frequency of restrictive mediation and active mediation) and the follow-up scales (the styles of restrictive and active mediation) clustered into subscales. In a second study, in which 499 of the adolescents of the original sample were surveyed again, we optimized the PPMMS (e.g., replaced the items that did not optimally load on the intended factors) and investigated its cross-population validity, construct validity, and test-retest reliability.

Method

Sample

After receiving approval from the sponsoring institution's Institutional Review Board, a large, private survey research institute in the Netherlands (TNS-NIPO) collected the data. Adolescents were recruited through TNS-NIPO's existing online panel (approximately 60,000 households) that is representative of the Netherlands. In January 2012, 761 adolescents between the ages of 10 and 14 years participated in an online survey (50% boys and 50% girls; M age = 11.88, SD = 1.45). In May 2012,

we recontacted all respondents who had fully completed the wave 1 survey (i.e., $N = 673$). Of the recontacted sample, 499 agreed to participate in a second survey (i.e., 74% recontact agreement; 52% boys and 48% girls; M age = 11.87, $SD = 1.45$). To compensate the participating families for their time and effort, families were given bonus points that could be used for a variety of prizes provided by the survey company.

The PPMMS

In wave 1, we presented adolescents with 12 main items: 5 restrictive and 7 active mediation items. The main items were based on Valkenburg et al.'s (1999) parental television mediation scale as well as a measure used by Sargent et al. (2004) to capture parental strictness on movie viewing. The restrictive main items measured adolescents' perception of the frequency with which their parents restrict their *time* spent with media and the *content* they are exposed to. The active mediation main items measured adolescents' perceptions about how often their parents explain things in the media and how often their parents convey their opinions about the content of media. Response categories for the main items were (1) never, (2) almost never, (3) sometimes, (4) often, and (5) very often.

Directly after each main item, we presented adolescents with the follow-up items to identify *how* their parents restrict or actively mediate their media use, worded as follows: "And if your parents would tell you this (e.g., that you are not allowed to play computer games that are meant for older children), how would they discuss this with you?" Each main restriction item was followed by four items to identify the extent to which parental restriction for the specific behavior was (a) autonomy-supportive (e.g., My parents would explain to me why it is better to not play those games or My parents would try to understand why I want to play these games), (b) overtly controlling (e.g., My parents would become angry if I still want to play those games), (c) covertly controlling (e.g., My parents would become disappointed if I still want to play those games), or (d) inconsistent (e.g., Although my parents say that I am not allowed to play those games, I know that after I while I can play those games again). Each main active mediation item was followed by two items to identify whether active mediation was controlling (e.g., My parents would think they are right and I cannot do anything to change that) or autonomy-supportive (e.g., My parents would be curious to know about how I feel about this). Response categories for the follow-up items were (1) not true at all, (2) not true, (3) neutral, (4) true, and (5) completely true. The exact procedure of administering the main and follow-up items can be found in the Appendix.

Procedure and approach

The PPMMS had to meet the standards of reliability, utility, and validity. The reliabilities of our scales were investigated by using the alpha coefficient (Cronbach, 1951) to assess internal consistency and test–retest reliabilities for the items that were administered in both wave 1 and wave 2. To meet the standard of utility, we used

factor analyses in wave 1 and wave 2 to arrive at restrictive and active mediation scales that preferably consisted of no more than four items each. Minimizing the number of main items was especially important given that each main item had several follow-up items associated with it.

To investigate the cross-population validity, we followed a procedure described by Noar (2003) in which we assessed whether the hypothesized dimensional structure of the PPMMS held for two random subsamples of adolescents. Lastly, to assess construct validity, we investigated how the PPMMS subscales correlated with constructs that we expected to be related to the PPMMS. Therefore, we included measures of general parenting styles (autonomy-supportive parenting, parental rejection, and chaotic parenting), family conflict, prosocial behavior, and antisocial behavior.

Construct validity measures

General parenting styles

To measure general parenting styles, we used three subscales from the Motivation Model of Parenting (Skinner, Johnson, & Snyder, 2005): the autonomy-supportive (three items), chaos (three items), and rejection (four items) subscales. The autonomy-supportive scale reflects a parenting style that encourages freedom of expression and action (e.g., “My parents accept me for myself”). The chaos scale reflects an inconsistent and erratic parenting style (e.g., “When my parents make a promise, I don’t know if they will keep it”). Rejection items reflect hostility and harsh parenting (e.g., “My parents make me feel like I’m not wanted”). Response categories were (1) never, (2) almost never, (3) sometimes, and (4) often. Internal consistency for each subscale was sufficient ($\alpha_{AS} = .62$, $\alpha_{CH} = .62$, and $\alpha_{RE} = .77$). For each subscale, item scores were averaged to create scale scores ($M_{AS} = 3.69$, $SD = 0.41$; $M_{CH} = 1.91$, $SD = 0.64$; and $M_{RE} = 1.47$, $SD = 0.57$).

Family conflict

Five items selected from the conflict subscale of the Family Environment Scale (FES; Moos & Moos, 1994) to measure family conflict. These items were available in a validated Dutch translation of the FES (Jansma & Coole, 1996). Respondents were asked to indicate how often certain behaviors occur at home. The behaviors in this family conflict scale are as follows: (1) family members criticize each other, (2) family members hit each other, (3) verbal fights occur in family, (4) family members curse, and (5) family members become so angry they start throwing things. Response categories were (1) never, (2) almost never, (3) sometimes, and (4) often. The scale demonstrated acceptable psychometric properties. Item scores were averaged to create scale scores ($\alpha = .78$, $M = 2.04$, $SD = 0.55$). Higher scores indicated more family conflict.

Prosocial behavior

We used the five-item measure of prosocial behavior from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) to assess the amount of prosocial

characteristics that the respondent shows. These items were available in a validated Dutch translation of the SDQ (van Widenfelt, Goedhart, Treffers, & Goodman, 2003). Sample items include “I often offer to help someone (parents, teacher, children)” and “I help someone who is hurt, upset, or feeling sick.” Response categories were (1) not true, (2) somewhat true, and (3) completely true. Item scores were averaged to create scale scores ($\alpha = .76$, $M = 1.6$, $SD = 0.39$). Higher scores indicate more prosocial behavior.

Antisocial behavior

Six items were used to measure adolescents' antisocial behavior. These items were adapted from the Direct & Indirect Aggression Scale (Björkqvist, Lagerspetz, & Kaukiainen, 1992). English translations of the items are “In the past six months, I have . . . (1) called another adolescent names, (2) pushed another adolescent in a rough way, (3) kicked or hit another adolescent, (4) threatened to beat up another adolescent, (5) fought with another adolescent, and (6) tripped another adolescent on purpose. Response categories were (1) never, (2) 1 time in the past 6 months, (3) 2–3 times in the past 6 months, (4) about 1 time per month, (5) about 1 time per week, and (6) about every day. Item scores were averaged to create scale scores ($\alpha = .85$, $M = 1.46$, $SD = 0.68$). Higher scores indicate more antisocial behavior.

Results

The creation of the PPMMS occurred in two steps. The first data wave, which involved a survey among 761 preadolescents and early adolescents, was used to explore and select the best main items for both the restrictive and active mediation strategies and to investigate whether the follow-up items (measuring mediation *styles*) clustered into distinguishable subscales. The second data wave ($n = 499$) was used to optimize the PPMMS (i.e., to replace main items that did not load optimally on the factors they were hypothesized to belong) and to investigate the test–retest reliability and validity of the PPMMS.

Exploratory factor analysis of main and follow-up items, wave 1

We started with an exploratory factor analysis (EFA) on the 12 *main items* (5 restrictive and 7 active mediation items). This EFA led to a two-factor solution that explained 51% of the variance. One main restrictive mediation item had to be removed because it did not load as well on the restriction factor as the other items. Three main active mediation items were removed because they either loaded on the wrong factor or high on both factors. The remaining eight main items loaded separately on their hypothesized restrictive and active mediation factors (57% of variance explained).

We then ran an EFA on the *follow-up* items of each of the eight final main items. This resulted in a five-factor solution that explained 58% of the variance. The results partly mirrored the expected dimensional structure. Autonomy-supportive active mediation and inconsistent restrictive mediation occupied separate factors.

The remaining items did not cluster perfectly. First, the follow-up items measuring overtly and covertly controlling restrictive mediation loaded on one factor and, therefore, could not be distinguished. Because these results are consistent with those of Soenens et al. (2009), we decided to continue with only one type of controlling restrictive mediation in wave 2. We chose for overtly controlling restrictive mediation because (a) the resulting scale led to a higher α (.76 vs. .71) and (b) its pattern of correlations with the construct-validity measures was more pronounced.

Finally, the follow-up items meant to measure autonomy-supportive restrictive mediation did not load together. As discussed, in wave 1, autonomy-supportive restrictive mediation was operationalized by items about (a) parents' explanation of why they restrict their children's media use and (b) parents' understanding of their child's media use. For similar reasons as for controlling mediation, we decided to continue with one type of autonomy-supportive items in wave 2—the items meant to measure explanation of why parents restrict their children's media use. Because of space constraints and because the main and follow-up items used in the first wave were adjusted in the second wave, we do not present a table on all items that were included in the first wave. A report that lists these items, their factor loadings, and the psychometric results of the main and follow-up scales in wave 1 and wave 2 can be found on www.ccam-ascor.nl.

EFA of the main items of the PPMMS, wave 2

In the second data wave ($n = 499$ adolescents), we readministered the eight main items from the first wave (four restriction and four active mediation items). However, to ensure that (a) the PPMMS covered main items about different media, (b) the main restrictive mediation scale consisted of items measuring content *and* time restriction, and (c) the main active mediation scale consisted of items to measure parents' tendency to explain *and* to convey their opinions about media content, we added five new main items (three new restrictive and two new active mediation items). Thus, in wave 2, seven main restrictive and six main active mediation items were administered.

To meet the criterion of cross-population validity, we randomly selected approximately half of the wave 2 sample ($n = 243$) to submit to an EFA and the other half ($n = 256$) to submit to a CFA. Following Noar (2003), we started with two EFAs on the seven main restrictive and six main active mediation items separately. The best four main items from each EFA were selected using both high factor loadings and breadth of the construct as criteria for inclusion. The process of selecting these best four items is detailed below.

The seven main restriction items loaded on one factor (49% of variance explained). First, the lowest loading item (“How often do your parents tell you that are not allowed to go online for too long”) was dropped. Next, correlations indicated that two items were highly correlated with one another ($r = .74$) and were quite similar in wording and content. The item with the lower loading (“How often do your parents forbid you to watch certain TV programs or movies”) was dropped. Finally,

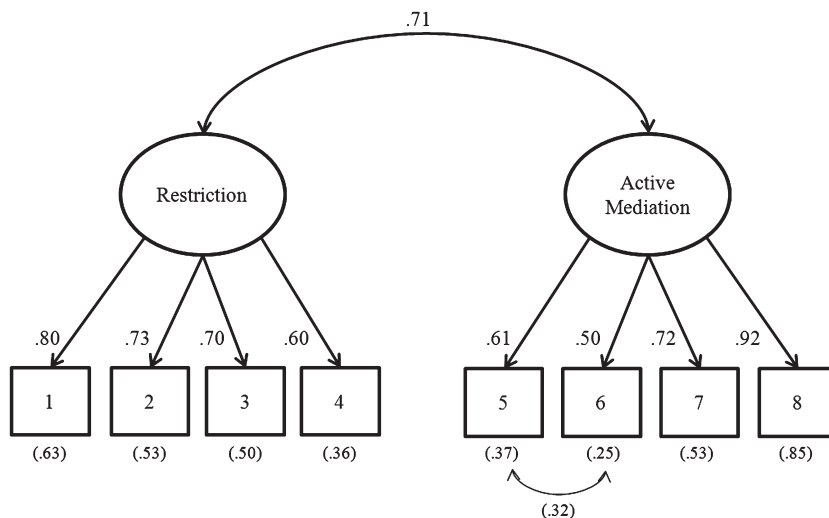


Figure 1 Confirmatory factor analysis for main restrictive and main active mediation items in Perceived Parental Media Mediation Scale (PPMMS).

to ensure that the main restriction items were balanced in terms of types of media and restriction behaviors (i.e., restriction of time and content), one additional item was dropped (“How often do your parents tell you that you are not allowed to visit certain Websites”) leaving four main restriction items (see Figure 1 and the Appendix).

The six main active mediation items also loaded on one factor (59% of variance explained). As with the main restrictive items, the best four items were selected by reviewing factor loadings as well as the content of the items. First, the lowest loading item (“How often do your parents explain that things in the media are better portrayed than they are in real life”) was dropped. Next, we reviewed the item correlations as well as the item content to ensure that the items included different media, and reflected items measuring both parental explanation of and opinions about media content. Two items were quite similar in terms of content and were highly correlated ($r = .66$). The item with the lower loading (“How often do your parents tell you that the language in the media is too rude”) was removed, resulting in four main active mediation items (see Figure 1 and the Appendix).

Confirmatory factor analysis of the main items of the PPMMS, wave 2

To confirm the structure of the main restrictive and active mediation items found in the exploratory analyses, a CFA was conducted with the remaining half of the wave 2 sample ($n = 256$). In determining model fitness, we relied on the standard fit indices, the χ^2 , comparative fit index (CFI), and root mean square error of approximation (RMSEA). Although a nonsignificant χ^2 is desirable, significant small values can still indicate a satisfactory fit (James, Mulaik, & Brett, 1982). CFI values between .90 and .95 and RMSEA values between .05 and .08 indicate acceptable model fit, and CFI

values larger than .95 and RMSEA values smaller than .05 indicate good model fit (Kline, 2005). We also compared the hypothesized two-factor model with a one-factor model using the expected cross-validation index (ECVI). Support for the one-factor model would suggest that mediation is best represented by a one-dimensional construct. For ECVI, lower values indicate super fit (Hatcher, 1994).

The two-factor model for the main restrictive and active mediation items resulted in acceptable fit, χ^2 ($df = 19$, $n = 256$) = 60.6, $p < .005$, CFI = .95, RMSEA = .09, and ECVI = .37. Modification indices indicated that model fit would improve if the error terms between two items in the active mediation scale were correlated. These items are structurally similar, and as a result, these items likely have shared measurement error. When allowing the errors to correlate, the two-factor model for the main items resulted in improved fit, χ^2 ($df = 18$, $n = 256$) = 37.1, $p < .005$, CFI = .98, RMSEA = .06, and ECVI = .29. Lastly, we compared the two-factor model with a one-factor model. A one-factor model resulted in poor fit, χ^2 ($df = 20$, $n = 256$) = 140.3, $p < .001$, CFI = .84, RMSEA = .15, and ECVI = .68. The two-factor model had a lower ECVI, indicative of better fit when compared with the one-factor model. Estimates for the interfactor correlation, factor loadings, and error path coefficients for the two-factor model with eight main restrictive and active mediation items are presented in Figure 1. The item numbers in Figure 1 match the numbering of the main items listed in the Appendix.

Dimensional structure of the follow-up items, wave 2

In wave 2, we again conducted an EFA on the follow-up items of the eight main items that were identified in the wave 2 EFA and CFA. Recall that in wave 2 we administered three follow-up items for the main restrictive mediation items (i.e., autonomy-supportive, controlling, and inconsistent restrictive mediation) and two follow-up items for the main active mediation items (i.e., autonomy-supportive and controlling active mediation). Results from the wave 2 EFA on the follow-up items suggested a five-factor solution explaining 69% of the total variance. The factor loadings confirmed the expected structure (see Table 1). Please note that some follow-up items in Table 1 are similar, but these follow-up items belong to different main items.

The five-factor model for the follow-up items found through the EFA was confirmed in a CFA. It resulted in an acceptable fit, χ^2 ($df = 160$, $n = 256$) = 272.32, $p < .001$, CFI = .96, RMSEA = .05, and ECVI = 1.46. A one-factor model resulted in poor fit, χ^2 ($df = 170$, $n = 256$) = 1662.3, $p < .001$, CFI = .43, RMSEA = .19, and ECVI = 6.83. The five-factor model had a lower ECVI, indicative of improved fit when compared with the one-factor model. The final version of PPMMS, including its instruction to adolescents, is presented in the Appendix.

Reliability of the PPMMS

Recall that the wave 2 sample of adolescents was randomly split into two groups to facilitate cross-population validity via EFA and CFA analyses. Using these same groups, we investigated the internal consistency of the final main restrictive and

Table 1 EFA Rotated Factor Loadings for PPMMS Follow-Up Items

Main Item #	Follow-Up Items (My parents would ...)	Factor Loadings				
		1	2	3	4	5
Factor 1: Autonomy-supportive active mediation						
7	... be curious how I feel about this.	.84				
8	... want to know what I think.	.83				
5	... be curious how I feel about this.	.83				
6	... encourage me to voice my own opinion.	.82				
Factor 2: Autonomy-supportive restriction						
3	... explain to me why it's best not to watch such shows or movies.		.87			
2	... explain to me why it's better to not play those games.		.83			
1	... explain to me why it's better not to watch such shows or movies.		.80			
4	... tell me why they don't want me to play games too much.		.68			
Factor 3: Controlling active mediation						
7	... think they are right and I cannot do anything to change that.			.86		
8	... have an opinion on this and this cannot be changed.			.78		
6	... value their opinion more than mine.			.78		
5	... only tell me how they would feel about it and are not interested in the opinion of others.			.75		
Factor 4: Controlling restrictive mediation						
1	... get mad if I still want to watch these shows or movies.				.80	
2	... get angry if I still want to play those games.				.80	
3	... threaten to punish me if I want to watch such shows or movies after all.				.75	
4	... threaten to punish me if I keep on gaming.				.66	
Factor 5: Inconsistent restrictive mediation						
1	... tell me that I am not allowed to, but I know that the next time I want to watch these shows or movies, I will be allowed to.					.83
3	... tell me that I am not allowed to, but I know that the next time I want to watch these shows or programs, I will be allowed to					.79
2	... say that I am not allowed to, but I know that after a while I can play those games again.					.78
4	... tell me I am not allowed to, but I know that most of the time I can just keep on doing it.					.54

Note: Factor loading below .40 not shown in table ($n = 243$). Item numbers correspond to main items listed in the Appendix. EFA = exploratory factor analysis; PPMMS = Perceived Parental Media Mediation Scale.

Table 2 Means (SDs) and Alphas for Main and Follow-Up Scales of the PPMMS at Wave 2

	Exploratory Sample ($n = 243$)			Confirmatory Sample ($n = 256$)		
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α
RM: Main scale	2.50	0.86	.75	2.46	0.93	.80
RM: Autonomy support	3.81	0.94	.88	3.77	0.96	.89
RM: Control	2.35	0.86	.77	2.26	0.88	.79
RM: Inconsistency	1.94	0.71	.76	1.97	0.79	.82
AM: Main scale	2.73	0.86	.80	2.64	0.86	.80
AM: Autonomy support	3.47	0.88	.91	3.40	0.95	.90
AM: Control	2.37	0.86	.84	2.39	0.85	.83

Note: The exploratory and confirmatory samples did not differ in their means on any of the subscales. AM = active mediation; PPMMS = Perceived Parental Media Mediation Scale; RM = restrictive mediation; SD = standard deviation.

active mediation items scales, as well as the five scales based on the follow-up items. All scales resulted in good internal consistencies (all α s > .75). None of the mean scores of the two main and five follow-up scales differed significantly between the two samples. The means, standard deviations, and alpha coefficients of all the scales can be found in Table 2.

In addition to internal consistency, we calculated test–retest reliability using data from wave 1 and wave 2. Because only six (three restriction and three active mediation) main items of the final PPMMS were administered in both wave 1 and wave 2, test–retest analyses were based on three-item scales. We used intraclass coefficients (ICCs) to assess the test–retest reliabilities, because, unlike Pearson correlations, ICCs do not only assess covariation but also agreement between the judgments at the two time intervals. Two-way fixed effects ICCs (Weir, 2005) between the first and second wave were significantly positive for both main scales ($r_{\text{restriction w1, w2}} = .48$ and $r_{\text{active mediation w1, w2}} = .40$). The test–retest reliabilities of the follow-up scales were in the same range ($r_{\text{overly controlling restriction w1, w2}} = .41$; $r_{\text{inconsistent restriction w1, w2}} = .47$; $r_{\text{autonomy-supportive active mediation w1, w2}} = .40$; and $r_{\text{controlling active mediation w1, w2}} = .43$). The test–retest reliability of autonomy-supportive restriction could not be calculated because in the first wave this subscale consisted of two types of items (i.e., about parental explanation of why they restrict their children’s media use and about parents’ understanding of their child’s media use).

Construct validity of the PPMMS, wave 2

To assess construct validity of the PPMMS, the final two main and five follow-up scales were correlated with three general parenting styles (autonomy support, chaos, and rejection), family conflict, and with adolescents’ prosocial and antisocial behavior. As Table 3 shows, the main restriction scale was not related to the parenting styles, prosocial behavior, or antisocial behavior. It was positively correlated with family conflict. Results for the follow-up restriction scales supported

Table 3 Wave 2 Correlations between PPMMS Main and Follow-Up Scales and Validation Constructs

	Parenting: Autonomy Support	Parenting: Parenting: Chaos	Parenting: Parenting: Rejection	Family Conflict	Prosocial Behavior	Antisocial Behavior
RM: Main scale	-.04	.05	.03	.12*	-.04	.03
RM: Autonomy support	.27*	-.22*	-.27*	-.13*	.23*	-.16*
RM: Control	-.06	.17*	.11*	.18*	-.07	.12*
RM: Inconsistency	-.17*	.23*	.27*	.15*	-.14*	.20*
AM: Main scale	.07	.01	-.05	.13*	.10*	-.06
AM: Autonomy support	.36*	-.24*	-.29*	-.23*	.23*	-.17*
AM: Control	-.18*	.29*	.23*	.22*	-.13*	.12*

Note: AM = active mediation; PPMMS = Perceived Parental Media Mediation Scale; RM = restrictive mediation.

* $p < .05$.

our expectation that the style in which a parent engages in restrictive mediation matters. As expected, autonomy-supportive restriction was positively associated with an autonomy-supportive parenting style and prosocial behavior and negatively with chaotic parenting, parental rejection, family conflict, and antisocial behavior. Controlling restriction was, as expected, associated positively with chaotic parenting, parental rejection, family conflict, and antisocial behavior. Lastly, as expected, inconsistent restriction was positively associated with chaotic parenting, parental rejection, family conflict, and antisocial behavior, and negatively with autonomy-supportive parenting and prosocial behavior.

Results for the active mediation items also supported our expectation that the style in which a parent engages in active mediation matters. As expected, the main active mediation scale was not or not consistently related to the validation constructs. However, as expected, autonomy-supportive active mediation was positively associated with general autonomy-supportive parenting and prosocial behavior, and negatively with chaotic parenting, parental rejection, family conflict, and antisocial behavior. Controlling active mediation was positively associated with chaotic parenting, parental rejection, family conflict, and antisocial behavior, and negatively with autonomy-supportive parenting and prosocial behavior.

Discussion

The aim of this study was to develop a new scale to measure adolescents' perceptions of parental mediation that is based on established insights in the general parenting literature. We based the PPMMS largely on SDT (Deci & Ryan, 2000; Ryan & Deci, 2000), which is currently one of the most widely cited theories of human development. Given that SDT provides straightforward predictions and explanations

of the effectiveness and ineffectiveness of certain influence strategies, it is no surprise that SDT also seems to be rapidly gaining popularity in the (interpersonal) communication literature (e.g., Dailey, Richards, & Romo, 2010; Gustafson et al., 2008; Wirth, Hofer, & Schramm, 2012).

Parental mediation involves media-related parenting. One could, therefore, reasonably presuppose that parental mediation theories would borrow insights from general parenting theories. Remarkably, however, an integration of parenting theories into the field of parental mediation has largely been lacking. There have been attempts to relate parental mediation scales to parenting styles and family communication patterns (e.g., An & Lee, 2010; Buijzen & Valkenburg, 2005; Rosen, Cheever, & Carrier, 2008). However, there has not been a real amalgamation of the general and media-specific parenting literatures, let alone an attempt to integrate the general parenting literature into a parental mediation scale that meets the standards of reliability, validity, and utility.

Our study suggests that the style of restrictive and active mediation is more important than the frequency with which these parental mediation activities occur. Restrictive mediation may be as effective as active mediation, provided that it occurs in an autonomy-supportive way. Our results are consistent with SDT and general parenting theories, which agree that parents who enforce rules may be more successful when they stimulate their children's autonomy, that is, by taking their child's perspective seriously and providing a convincing rationale for their rule.

Our study also suggests that active mediation may not always be as effective as assumed in earlier parental media research. Our construct validity analyses suggest that active mediation may be ineffective when it occurs in a controlling way. Parents can talk endlessly about media content, but when they avoid a real discussion with their child, their efforts seem to be in vain. This result is in line with previous findings on controlling parenting styles. In adolescence, controlling parenting can easily lead to psychological reactance, especially when it involves personal domain issues, that is, issues that specifically deal with adolescents' preferences and choice, such as their friendships and media preferences (Smetana, 1995). In the case of personal domain issues, autonomy-supportive parenting strategies are especially important because such strategies are probably the only ones that can circumvent reactance and foster the internalization of values and rules in adolescents (Byrne & Lee, 2011; Deci & Ryan, 2000; Soenens et al., 2009).

PPMMS reliability

Results indicate that the internal consistencies for all main and follow-up scales of the PPMMS were satisfactory. Their test–retest reliabilities were lower than those found for general parenting styles, which are typically in the range of $r = .70$ to $r = .85$ (e.g., Salari, Terreros, & Sarkadi, 2012). An explanation may be that parental mediation, when compared with general parenting, is more strongly subject to situational changes in adolescents' media use. For example, adolescents who acquire a new digital game may initially be very preoccupied with this game, which may

provoke more restrictive mediation of their concerned parents. After some time, when the novelty of the game has worn off, these “addictive” behaviors may decrease again as does the necessity for restrictive mediation. Such situational changes in adolescents’ media use may explain the relatively low stability coefficients for the parental mediation scales.

PPMMS validity

Our analyses indicated that the PPMMS is a valid measure. All relationships between main and follow-up scales of the PPMMS and the validation constructs (i.e., parenting styles, family conflict, and prosocial and antisocial behavior) were in the expected directions. As expected, the correlations for controlling restrictive and controlling active mediation were diametrically opposed to those found for their autonomy-supportive counterparts, which contributes to the confidence in the construct validity of the PPMMS. Adolescents who believed that their parents restrict and discuss their media use in an autonomy-supportive way experienced less family conflict, exhibited less antisocial behavior, and more prosocial behavior. This result is consistent with earlier findings that autonomy-supportive parenting can minimize parent–child conflict and antisocial behavior (e.g., Barber & Harmon, 2002; Pettit et al., 1997; Soenens et al., 2009).

Interestingly, in some cases, the correlations for inconsistent restrictive mediation were even stronger than for controlling restrictive mediation. For example, when compared with controlling restrictive mediation, inconsistent restrictive mediation was equally or even more strongly related to parental rejection, family conflict, and to prosocial and antisocial behavior. This result, which is consistent with earlier research (e.g., Gardner, 1989; Pollak, 2012), suggests that inconsistent parenting may be just as aversive for child adjustment as is controlling parenting.

As anticipated, we found weaker correlations with the validation constructs for the main restrictive and active mediation scales than for the follow-up scales. This confirms our expectation that it is not restrictive or active mediation per se that counts, but rather the style in which these mediation strategies occur. The relative weak correlations for both main scales may be due to the fact that the items of these scales are not sensitive enough. As discussed, if adolescents are asked to report how often their parents restrict their behavior, some of them may imagine situations in which their parents restrict in a controlling way, whereas others may call to mind occasions in which parents restrict in an autonomy-supportive way. This possible mix-up of divergent perceptions into one frequency-based scale may explain the weak correlations between the main scales and the validation constructs.

PPMMS utility

An important aim of this study was to create a reliable and valid scale with a minimum burden for respondents. Many scales that have been developed for adolescents are too long to be included in a multiconstruct survey. Lengthy scales are an important hindrance in survey research, and especially in online survey research, in which

“straight-lining” (i.e., selecting the same response options for items of the same scale) is an even more important pitfall than in offline survey research. Because the PPMMS consisted of main and follow-up items, it was even more important to end up with a minimum number of main items. The utility criterion was met. We were able to create a relatively short 28-item scale while ensuring reliability and validity.

The intended broadness of the PPMMS inevitably conflicted with our utility criterion. Although the final scale did include main items on TV programs, movies, and digital games, it did not include items on adolescents’ Internet use. For example, while we did initially include two items about Internet restriction, we ultimately removed them to shorten the scale. However, these two removed items did load on the same factor as the remaining restriction items of the final scale. Depending on the space in future survey studies, researchers may choose to extend our main items or replace them with the items that more clearly reflect the aim of their particular study.

Strengths, limitations, and future research

Our study has made a first step in establishing nuances in the effectiveness of existing parental mediation styles that are similar to those found in general parenting styles. By demonstrating such nuances, the PPMMS may lead to a more differentiated conceptualizing of parental mediation. Now that we know that the effectiveness of parental mediation may depend on the particular style of parental mediation, it will be difficult to ignore this knowledge in future parental mediation research.

A short scale like the PPMMS can never cover all media-related parenting behaviors. The PPMMS has focused primarily on restrictive and active mediation of age-inappropriate media content. We did not, for example, include items measuring parental encouragement of educational media content. We see the PPMMS as a first step. Future researchers should expand and differentiate our scale, exploring other main and follow-up items. Future research should also investigate how adolescents’ perceptions of parental mediation relate to parents’ actual behavior and to parents’ perceptions of their own behavior. Earlier studies on parental mediation have shown that parents and children can differ greatly in their perspectives on mediation (e.g., Buijzen, Rozendaal, Moorman, & Tanis, 2008). Greater attention to these potential discrepancies would be a worthwhile direction for future research.

Another avenue for future research is to examine *how* adolescents’ media use is precisely related to parental media mediation. As early as the 1960s, Bell (1968) argued that parenting is a transactional process and that children in part influence their own socialization. And yet, despite the wealth of literature on parent mediation, we still do not know whether media-related parenting styles lead to changes in children’s media use (and its effects) or whether children’s media use elicits certain autonomy-supportive or controlling parenting styles. Future longitudinal studies should seek to address this gap in the literature by focusing on the transactional relationships between parental mediation styles and children’s media use.

Finally, our scale may be used as a starting point for investigating other issues in the media, such as smoking, alcohol use, or gender-role stereotypes, all of which

can be influenced by parental mediation. Only by paying attention to all of these media-related issues separately we can arrive at a full understanding of how exactly parents can effectively mitigate negative media effects and encourage positive ones.

Appendix: The Perceived Parental Media Mediation Scale

How do your parents handle your media use?

We would like to know how your parents handle your media use, for example, when you watch TV or movies, or play games. Some parents pay a great deal of attention to the media their teens use, other parents pay less attention. In the questions below, we use the word “parents.” When you read parents, you might think of your father, your mother, or another adult who is mostly involved with your media use.

1. (Main restriction) How often do your parents forbid you from watching certain television shows or movies because they have too much violence in them?

Response options for main items: (1) never, (2) almost never, (3) sometimes, (4) often, and (5) very often.

And if your parents forbid/would (if response to main item = never) forbid you from watching such shows or movies, how would they discuss this with you?

They would . . .

1.1 . . . get mad if I still want to watch these shows or movies (CR).

1.2 . . . explain to me why it’s better not to watch such shows or movies (ASR).

1.3 . . . tell me that I am not allowed to watch these shows or movies, but I know that the next time I want to watch these shows or movies, I will be allowed to (IR).

Response options follow-up items: (1) not true at all, (2) not true, (3) neutral, (4) true, and (5) completely true.

2. (Main restriction) How often do your parents tell you that you are not allowed to play computer games because they are meant for older children?

And if your parents tell/would tell you this, how would they do this?

They would . . .

2.1 . . . get angry if I still want to play those games (CR).

2.2 . . . explain to me why it’s better to not play those games (ASR).

2.3 . . . say that I am not allowed to play those games, but I know that after I while, I can play those games again (IR).

3. (Main restriction) How often do your parents tell you that you are not allowed to watch TV shows or movies because they are meant for older children?

And if your parents tell/would tell you this, how would they do this?

They would . . .

3.1 . . . threaten to punish me if I want to watch those shows or movies after all (CR).

3.2 . . . explain to me why it's best not to watch such shows or movies (ASR).

3.3 . . . tell me that I am not allowed to watch such TV shows or movies, but I know that the next time I want to watch these shows or programs, I will be allowed to (IR).

4. (Main restriction) How often do your parents limit the amount of time you are allowed to spend playing computer games?

And if your parents do/would do this, how would they discuss this with you?

They would . . .

4.1 . . . threaten to punish me if I keep on gaming (CR).

4.2 . . . tell me why they don't want me to play games too much (ASR).

4.3 . . . tell me I am not allowed to, but I know that most of the time I can just keep on doing it (IR).

5. (Main active mediation) How often do your parents tell you that fighting and shooting in the media (for example, in movies and games) is different than it is in real life?

And if your parents tell/would tell (if response to main item 5 = never) you this, how would they discuss this with you?

They would . . .

5.1 . . . only tell me how they would feel about it and are not interested in the opinion of others (CAM).

5.2 . . . be curious how I feel about this (ASAM).

6. (Main active mediation) How often do your parents tell you that what you see in movies and commercials is different than real life?

And if your parents tell/would tell you this, how would they discuss this with you?

They would . . .

6.1 . . . value their own opinion more than mine (CAM).

6.2 . . . encourage me to voice my own opinion (ASAM).

7. (Main active mediation) How often do your parents tell you that the people you see in the media (for example, on TV or in movies) are too harsh or rude to each other?

And if your parents tell/would tell you this, how would they discuss this with you?

They would . . .

7.1 . . . think they are right and I cannot do anything to change that (CAM).

7.2 . . . be curious how I feel about this (ASAM).

8. (Main active mediation) How often do your parents tell you that there is too much violence (fighting, shooting) in the media (for example, in movies or games)?

And if your parents tell/would tell you this, how would they discuss this with you? They would . . .

8.1 . . . have an opinion on this and this cannot be changed (CAM).

8.2 . . . want to know what I think (ASAM).

 Note: CR = Controlling restriction; ASR = Autonomy-supportive restriction; IR = Inconsistent restriction; CAM = Controlling active mediation; ASAM = Autonomy-supportive active mediation.

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