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# Parents' and children's violent gameplay: role of co-playing


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## Abstract

**Purpose** – The purpose of this study was to explore the role of co-playing as a moderator of the relation between parents' and children's play of violent video games. **Design/methodology/approach** – The study uses dyadic parent/child survey data to estimate the conditional effects in the model, both direct and indirect. **Findings** – The positive effect of parent's violent video game play of children's playing behaviors is attenuated by parent/child co-playing. Parent's knowledge of the Entertainment Software Rating Board ratings leads to higher levels of co-playing, thereby indirectly attenuating violent video game play in children as driven by parent's play. **Research limitations/implications** – The paper extends the literature on consumer socialization and the impact of co-playing, and identifies an antecedent for co-playing in this context. **Practical implications** – The paper reveals that knowledge of the self-regulatory ESRB rules plays a valuable (indirect) role in mitigating violent video game play by children through an increase in co-playing, which attenuates the positive effect of parent' play on children's play. **Originality/value** – The study incorporates data from both parents and children to investigate the relationship between parents' and children's violent video game play, while empirically investigating the uncertainty in the literature concerning the moderating impact of co-playing.

## Keywords

Violent video games, co-playing, consumer socialization, parents, children

## Disciplines

Family, Life Course, and Society | Personality and Social Contexts | Social Control, Law, Crime, and Deviance | Sociology of Culture

## Comments

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### ABSTRACT

**Purpose** – The purpose of this study was to explore the role of co-playing as a moderator of the relation between parents' and children's play of violent video games.

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**Findings** – The positive effect of parent's violent video game play of children's playing behaviors is attenuated by parent/child co-playing. Parent's knowledge of the Entertainment Software Rating Board ratings leads to higher levels of co-playing, thereby indirectly attenuating violent video game play in children as driven by parent's play.

**Research limitations/implications** – The paper extends the literature on consumer socialization and the impact of co-playing, and identifies an antecedent for co-playing in this context.

**Practical implications** – The paper reveals that knowledge of the self-regulatory ESRB rules plays a valuable (indirect) role in mitigating violent video game play by children through an increase in co-playing, which attenuates the positive effect of parent' play on children's play.

**Originality/value** – The study incorporates data from both parents and children to investigate the relationship between parents' and children's violent video game play, while empirically investigating the uncertainty in the literature concerning the moderating impact of co-playing.

### KEYWORDS

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## **Parental Co-playing and Children's Violent Video Game Play**

Video game play is a very popular pastime for both adolescents and adults. For example, industry-based research indicates that 155 million Americans play video games more than 3 hours per week and 4 out of 5 households own a video game console (Entertainment Software Association, 2015). Research has also shown that adults, including parents, play games (the latter with their children and view game play as a form of family entertainment). Specifically, in a study of 3000 children and parents, 92% of parents reported playing games with their children (Vorhaus and Silverman, 2015). Importantly, it has been suggested that “co-playing” has beneficial effects beyond just family enjoyment. For example, Vorhaus and Silverman (2015) concluded that co-playing affords parents opportunities to “recognize and appreciate their own ability to bond with children through playing console games as well as their ability to monitor and control content their children access” (p. 3). Moreover, co-playing not only allows parents to control content access it also provides a means for parents to mediate the negative aspects of video game play in children (Anderson et al., 2010; Walker et al., 2015). However, research has yet to identify the impact of parents’ play and co-playing on their children’s play levels. Accordingly, the present study investigates the impact parents’ play of violent video games has on their children’s play levels, and the moderating role of co-playing on this relationship. Further, since previous research has suggested that parental use of the ESRB rating system has benefits (Laczniak, et al., 2017), we also investigate the possibility that it will influence parents’ co-play in a meaningful way.

Given the magnitude of video game play within households and evidence suggesting violent video games have negative consequences for children (discussed below), this study aims to answer three important research questions. First, does a parent’s violent video game play

increase or decrease their children's play of violent games? Second, does co-playing games mitigate children's violent video game play? Third, does a parent's knowledge of the Entertainment Software Rating Board (ESRB) ratings system influence their co-playing? The present study draws upon research on consumer socialization (Mochis 1987), violent media effects (Anderson et al., 2010), and parental mediation (Nikken and Jansz, 2006) to develop and investigate research questions that deal with these topics.

## **BACKGROUND**

Evidence has consistently demonstrated that children's violent video game play has negative consequences (Anderson et al., 2010; Huesmann, 2010). Specifically, in 2015 the American Psychological Association Task Force on Violent Media (2015) released a report on violent video games that stated (p. 1) "research demonstrates a consistent relation between violent video game use and heightened aggressive behavior, aggressive cognitions, and aggressive affect and reduced prosocial behavior, empathy and sensitivity to aggression." This conclusion is based on studies that provide empirical evidence of these relationships (c.f. Anderson, Gentile, and Buckley, 2007; Bushman and Anderson, 2002; Gentile et al., 2004). Most significant in this stream of research was a meta-analysis of violent video game play and negative outcomes, which provided overwhelming evidence of the positive linkages between violent video game play and aggressive cognitions, increased aggressive affect, aggressive behaviors and desensitization towards violence in general (Anderson et al., 2010).

As suggested above, many adults are playing video games as well. Recent research has shown that adult video game play is prevalent and continues to increase. For example, a 2015 nationwide study conducted by the Pew Research Center indicated that 49% of adults say that

they have played video games and 10% consider themselves as “gamers” (Duggan, 2015). It is interesting to note that the study also found that less than half (40%) of adults believe that violent video game play leads to aggression, with only 32% of self-classified gamers having this belief. It seems reasonable to conclude that if most parents do not believe that violent content has negative consequences, they are not likely to restrict their own play of non-violent games. Such a conclusion certainly coincides with the fact that almost half of the top 20-selling video games by unit in 2014 consisted of an M for Mature rating (40%) (Entertainment Software Association 2015). Such findings suggest that parents’ play of violent video games will be associated with more play of such game by their offspring (both at home and in other venues). Such expectations are consistent with the consumer socialization literature that suggests that children learn by modeling their parents’ behaviors (Moschis, 1987; Carlson and Grossbart, 1988; Shim, 1996; Caruana and Vassallo, 2003; Marquis, 2004).

It is important to consider if parent’s co-play of violent video games negates, to some extent, the play levels of their children. Co-playing (specifically in this case intergenerational play) entails shared media activities driven by a common interest (Nikken and Jansz, 2006; Valkenburg et al., 1999). It has been suggested that co-playing, which often involves associated parent-child conversations about the games, may provide a way for parents to decrease the negative consequences of children’s play (Gentile et al., 2012). Interestingly, and in relation to violent video game play, research has also found that parental co-play with girls decreased resulting aggressive behaviors exhibited by girls after game play (Coyne et al., 2011). Moreover, it seems that parental co-play with children is a relatively widespread phenomenon. In a 2015 survey of 4000 U.S. households commissioned by the Entertainment Software Association (2015), three out of five parents with game-playing children reported that they play video games

with their children at least once per week. The report also listed the top 5 reasons why parents play video games with their children: (1) it's fun for the entire family, (2) they are asked to do so, (3) it provides a good opportunity to socialize with their child, (4) it's a good opportunity to monitor game content, and (5) they enjoy playing video games as much as their child does (Entertainment Software Association, 2015, p. 9).

However, if parents are to have an impact on children via conversation and communication, they must be able to converse with knowledge and authority. One tool at parents' disposal is the Entertainment Software Rating Board (ESRB) rating system. This rating system incorporates age-appropriate guidelines based on game content (including violence, sexually explicit content, and the inclusion of profanity). The ESRB noted that these guidelines could be used to restrict children's play of video games containing inappropriate content (Entertainment Software Rating Board). Specifically, the guidelines contain the following rating system: E (appropriate for everyone), E10+ (appropriate for everyone 10 years and older), T (appropriate for teens), M (mature), and AO (adults only) (Stroud and Chernin, 2008). The usefulness of the ESRB rating system for parents was indicated in a study by Laczniaik et al. (2017) who found that parental use of the ESRB helped decrease their children's violent video game play with concomitant reduction in problematic behaviors at school.

### **Video Game Socialization**

Family socialization theorizing purports that parents transmit values, attitudes, and habits to their children (Yang et al., 2014; Yang and Laroche, 2011; Bao et al., 2007; Cotte and Wood, 2004). This follows the notion that children learn through parental modeling and imitation of behaviors (Moschis, 1987; Carlson and Grossbart, 1988; Marquis 2004; Dotson and Hyatt, 2005). Parents can either directly teach children about specific phenomenon or encourage them

to learn vicariously through the observation of others (Cotte and Wood, 2004). Intergenerational influence, in particular, focuses on the transmission of these habits, skills, knowledge from parents to children (Shindler et al., 2014).

Such tendencies are reflected in parents' attempts to directly interact with children in the marketplace. For example, Grossbart, Carlson, and Walsh (1991) explored parents' propensities to shop with children, a behavior they referred to as "co-shopping". Co-shopping between parents and children may occur particularly for non-trivial items such as clothing, computer games, or electronics (Beyda, 2010), with increasing expenditures on electronic-related items (Sullivan and Heitmeyer, 2008). While Grossbart, Carlson, and Walsh (1991) acknowledge that some co-shopping transpires for reasons other than for "subtle and overt consumer socialization purposes" (p.156), it also represents one way in which parents may overtly influence children's marketplace beliefs and activities. Co-shopping, which typically begins with food shopping (Carey et al., 2008), provides an opportunity for children to observe parents' shopping techniques, which provides parents opportunities to directly respond to questions and product requests from children as well as convey shopping skills to children (Grossbart et al., 1991).

Grossbart, Carlson, and Walsh (1991) also found that co-shopping tendencies coincided with parental propensities to watch television with children, i.e. co-viewing. These authors speculated and tested the notion that both co-viewing and co-shopping afford parents multiple opportunities to participate in monitoring and mediating children's exposure to the marketplace. Indeed, results of their study revealed that mothers who were higher in tendencies to co-shop were also higher in co-viewing, i.e. watching television programming and commercials with children. Again, both of these constructs appear to provide a format for parents to initiate and



guide children's interactions with the marketplace at least within the contexts of shopping and television viewing.

Consequently and with regards to video game play, it can be assumed that with the rise in video game play among families, parents have the opportunity to observe directly children's playing habits and other aspects of the video game playing experience. Such an opportunity provides parents the possibility of overtly impacting their children's video game play. This opportunity is consistent with the idea of exerting parental control through socio-oriented communication, which stresses conformity to parental authority (Kim et al., 2009). However, parent's co-play of games may also provide children with an implicit message that game contents are appropriate for them, providing license for them to engage in such activities without parental supervision. Thus, it seems prudent to investigate the effects of parental co-playing of video games with children. Thus, the following research questions emerge:

**RQ1:** Does a parent's play of violent video games increase their children's play of such games (including their play outside of the home – away from their parents)?

**RQ2:** Does co-playing attenuate the effect on parents' play of violent video games on their children's play levels?

As noted above, a recent study (Laczniak et al., 2017) determined that parent's use of the ESRB rating system aided their ability to restrict children's play of violent video games. Laczniak et al. (2017) speculated that the ESRB allowed parents to make inferences regarding the amount of inappropriate content in video games which then provided parents with the motivation to restrict their children's access to such games. Extending this speculation to co-playing, parents may find it useful to co-play when game contents are targeted at a segment that is older than their children. Such a finding would provide policy makers with an additional reason to develop programs, which are targeted at reinforcing parents' use of the ESRB rating

system. Parental background and knowledge as an important precursor to how parents engage and interact with children is a relevant relation that is found across many disciplines and encompasses a broad span of parent/child interactions and outcomes (Breiner et al., 2016). In addition, parents vary on the degree to which their knowledge background impacts the parent/child relation (Breiner et al., 2016). Consequently, we investigate this relation via exploring parental knowledge of the ESRB as influencing parents' co-playing of videogames with children.

**RQ3:** Does a parent's knowledge of the ESRB ratings system influence co-playing?

A graphical representation of the conceptual model appears in Figure 1.

INSERT Figure 1

## **METHOD**

### **Sample**

A paid cross-sectional national sample via an online survey was used to obtain dyadic responses (from parents and their children) accessed through a nationwide market research company panel. The survey targeted adult caregivers who lived with children ages 8-12. It should be noted that if more than one child fell within the age range of 8-12, participants were asked to focus on the oldest child in that age range. The survey included a parent portion to be completed by the adult caretaker and a child portion that was to be completed by the child residing in the household. The survey focused on young people in late childhood (ages 8-9) and early adolescence (ages 10-12). These age ranges were chosen because they deal with various developmental challenges and cognitive changes concerning media such as growing independence, exposure to risky behaviors, and peer influence, and are vulnerable to outside influences (Pea et al., 2012).

The final sample yielded 207 usable parent/child dyads. The average age of the respondents was 41.8 and 9.7 years for the parents and children, respectively. A majority of the child respondents were male (57%) and the first born in their families (65.7%). Just over 87% of parent respondents reported to be White/Caucasian. Sixty-three percent of the parent respondents were female, and just under 75% of the respondents reported annual family incomes between \$50,000 and \$150,000. Complete sample statistics can be found in Table 1.

INSERT Table 1

## Measures

### Violent Video Game Play Level

Parents' violent video game play was assessed by a single item "I play violent video games" anchored by (1) Never and (5) Always. The child item is a scale measure reported by the child consisting of a 4-point Likert scale anchored by (1) Never and (4) Always, "How often do you play video games that are violent?" The items for all constructs can be found in Table 2.

Means, standard deviations, and correlations are reported in Table 3.

INSERT Table 2

INSERT Table 3

### ESRB Ratings Knowledge

To assess parents' knowledge of the ESRB rating system, a series of questions was developed to assess specific knowledge levels (i.e. there is a rating system, what the ESRB is, specific knowledge of the ESRB rating system). Since a child may not necessarily be aware of their parents' ESRB knowledge, the construct was measured from the parent's perspective.

Parents reported their knowledge of each level via a five-item scale consisting of 5-point Likert-type scales anchored by (1) "Not at all" and (5) "Completely".

## Co-playing

Two items were used to measure a parent's involvement with co-playing games with their children. The items used 5-point Likert-type scales that were anchored by (1) "strongly disagree" and (5) "strongly agree" and consisted of the following questions: "I play video games with my children" and "I like to play video games with my children."

## Playing Forbidden Games at a Friend's House

Finally, in order to assess whether children play forbidden games at a location other than their own home, children answered a single item, "I play video games I shouldn't play at a friend's house" on a 4-point Likert scale anchored by (1) "Never" and (4) "Always."

## Control Variables

Several control variables are included in the model for both variables measuring manifestations of children's play of violent games. First, while both boys and girls play such games, generally boys have been observed to play more often and longer per session (Lehnart et al., 2008). We account for birth order in the model to address the possibility that younger siblings may be introduced to games at a younger age than firstborn children (Price, 2008; Carlson and Kangun, 1988). The child's age is also explicitly controlled for in the model with the expectation that on average, younger children will have less exposure and less access to violent games. Finally, we account for the gender of the parent/caretaker participating in the study. As for boys and girls, men on average play more games than women, which may impact the effect of their play levels on their children (Bonanno and Kommers, 2005; Winn and Heeter, 2009).

## MODEL

The child's violent video game play level is represented in the following equation,

$$CVP_i = \gamma_0 + \gamma_1 PVP_i + \gamma_2 C_i + \gamma_3 PVP_i \times C_i + \gamma_4 K_i + \sum_j X_{ij} \gamma_j + \varepsilon_{CVP}, \quad (1)$$

where CVP represents children's' violent video game play levels, PVP represents parents' violent video game play levels, C is co-playing, K is parents' knowledge of the ESRB ratings, and X represents the control variables. From Equation 1, the effect of PVP on CVP, conditional on co-playing, is

$$\frac{\partial CVP}{\partial PVP} = \gamma_1 + \gamma_3 C. \quad (2)$$

The equation for the second outcome variable, children's play at a friend's house of forbidden games, is similar in structure to Equation 1,

$$FG_i = \delta_0 + \delta_1 PVP_i + \delta_2 C_i + \delta_3 PVP_i \times C_i + \delta_4 K_i + \sum_k X_{ik} \delta_k + \varepsilon_{FG}, \quad (3)$$

where FG represents children's playing of forbidden games at a friend's house. The conditional effect of PVP on FG is

$$\frac{\partial FG}{\partial PVP} = \delta_1 + \delta_3 C. \quad (4)$$

Co-playing is a function of ESRB knowledge in the model,

$$C_i = \beta_0 + \beta_1 K_i + \varepsilon_C. \quad (5)$$

The research questions can be assessed as follows. Corresponding to RQ1, we anticipate that parents' play level, while possibly attenuated by co-playing, will generally have a positive impact on the child's play level. Evidence for this effect, on both measures of child play, can be found by examining the simple effect of the parent's play on the child's play, i.e. with co-playing

at its mean. The relevant parameter for child's violent video game play is  $\gamma_1$  from Equation 1, and for playing forbidden games at a friend's house,  $\delta_1$  from Equation 3.

Second, the moderating effect of co-playing described in RQ2 can be assessed. Evidence that co-playing attenuates the effect of the parent's play on the child's play would result from observing negative parameters for the interaction terms in Equations 1 and 3. Specifically, for the child's play levels, the relevant parameter from Equation 1 is  $\gamma_3$ , and for the child playing forbidden games at a friend's house,  $\delta_3$ .

Finally, ESRB knowledge is expected to be a driver of co-playing, as suggested in RQ3. Evidence in support of this effect would be provided if the parameter  $\beta_1$  in Equation 5 is positive and significant.

### **Social desirability**

As noted, parents report an extremely high level of co-play of video games with their children (92%; see Vorhaus and Silverman, 2015). The high percentage of parents reporting a behavior that would reflect on them favorably was incentive for us to test for social desirability (SD) in our co-playing measure. We used a short version (10 item) of the Crowne-Marlowe social desirability scale (see Strahan and Gerbasi, 1972) to assess whether SD influence might impact parental responses to our co-playing index. We found no evidence of co-playing being affected by parents' reporting of a socially acceptable response.

### **Common method bias**

Common method bias was assessed empirically following Lindell and Whitney's (2001) marker variable approach, with correlations adjusted as prescribed based on the lowest absolute correlation ( $\rho = -.06$  for co-playing and children's violent video game play levels). All

correlations indicated as significant in Table 3 were significant after the adjustment at the  $\alpha = .05$  level, indicating a lack of bias.

## RESULTS

Following the approach of Preacher and Hayes (2008), 5000 bootstrapped samples were drawn to assess all effects. The parameter estimates and finite sample confidence intervals are reported in Table 4.

INSERT Table 4

### Effect on Children's Play of Violent Video Games

The simple effect of the parents' play on the child's play is positive and significant ( $\gamma_1 = .718$ , 95% CI [.360, 1.084]), as suggested in RQ1. The interaction term related to the impact of parents' violent video game play levels and co-playing is significant ( $\gamma_3 = -.116$ , 95% CI [-.201, -.028]), suggesting the effect of parents' violent video game play is conditional on co-playing, addressing RQ2. This moderated effect is represented by Equation 2, with the floodlight analyses shown in Figure 2 (Spiller et al. 2013). Figure 2a illustrates that the effect of the parents' play on the child's play is conditional on co-playing. As shown in the figure, parents' play always positively impacts child's play, i.e. the 95% confidence interval lies above zero for all levels of co-playing. However, the line has a downward slope, indicating that the positive effect is attenuated as co-playing increases. Specifically, the difference in the effect of the parents' play on the child's play at -1sd from the mean of co-playing, relative to the conditional effect at +1sd from the mean of co-playing, is statistically significant (the difference in  $\gamma_1 + \gamma_3C$  at -1sd and +1sd in co-playing is  $.425 - .188 = .237$ , 95% CI [.057, .411]; the co-playing levels indicated by the arrows in Figure 2a).

INSERT Figure 2

### **Effect on Children's Play of Forbidden Games at a Friend's House**

The simple effect of the parents' play on playing forbidden games at a friend's house is positive and significant ( $\delta_1 = .362$ , 95% CI [.010, .751]), addressing RQ1. The impact of parents' play of violent video games on children's play of forbidden games at a friend's house is conditional on co-playing, as suggested by the statistically significant interaction term corresponding to the impact of parents' violent video game play levels and co-playing ( $\delta_3 = -.084$ , 95% CI [-.175, -.002]), addressing RQ2. This moderated effect is represented by Equation 4, with the floodlight analysis shown in Figure 2b. In this case, the attenuation of the effect as co-playing increases actually results in no statistically significant effect of parents' violent video game play on children's play of forbidden games at a friend's house, once co-playing crosses a threshold. As shown in Figure 2b, the 95% confidence interval lies above zero only when co-playing is less than the Johnson-Neyman point (Spiller et al., 2013) of 1.89 (-1.62sd in co-playing). In other words, as a particular threshold of co-playing is reached, the positive impact of parents' violent video game play on child's play is negated.

### **Effect on Co-playing**

ESRB knowledge has a positive impact on co-playing ( $\beta_1 = .306$ , 95% CI [.167, .447]). Therefore, as a parent's knowledge with the ESRB ratings increases, co-playing becomes more prevalent. This finding addresses RQ3.

## **DISCUSSION**

The purpose of this study was to explore the role of co-playing as a moderator of the relation between parents' and children's play of violent video games. As noted, since parents cite high levels of video game playing with children (over 90% of surveyed parents in one study



report playing video games with their children, Vorhaus and Silverman, 2015), it is quite possible that children may use such occasions to mimic parents by playing the same type of games (e.g., violent or not) being played by parents.

In such scenarios, co-playing can represent an important opportunity for parents to interact with children during game play thereby providing bonding opportunities with children and possibilities for exerting supervision and influence over children's video game play. Yet, what is not known is whether and how co-playing may actually operate as a mechanism to counter children's violent video game play even in those instances where parents acknowledge playing violent video games themselves. Substantial literature exists which corroborates the negative consequences that can arise in children who play violent video games (cf. Anderson et. al 2010). Therefore, we endeavored in this study to better ascertain the role that co-playing might assume in mitigating children's play of these games. Moreover and in order to determine the efficacy of existing intervention platforms that might be useful in assuaging children's violent video game play, we also studied how parental knowledge of the ESRB might enhance co-playing between parents and children if, indeed, co-playing serves as a means to reduce children's violent video game play.

Consequently, we sought to investigate three research questions arising from the above discussion. These questions were, RQ1: *Does a parent's play of violent video games increase their children's play of such games (including play of these games outside of their home and away from their parents' influence)?* RQ2: *Does co-playing attenuate the effect of parents' play of violent video games on their children's play levels of violent videogames?* and RQ3: *Does a parent's knowledge of the ESRB ratings system influence co-playing?*

With respect to research questions RQ1 and RQ2, findings indicate that parents' play of violent video games positively impacts children's play of violent video games, though, co-playing between parents and children attenuates the effect of parents' play on children's play. In other words, parents' play of violent video games has a positive effect on children's play of these games but co-playing can reduce the impact of parents' play on children's play of violent video games. Moreover, in cases when children play forbidden games at a friend's house, the positive impact of the parent's play only exists at lower levels of co-playing, again suggesting the positive effects of moderate to higher levels of co-playing.

Our results appear then to support the proposition that co-playing may assume a positive and significant influencing role in mitigating not only the effect of parents' play of violent video games on children's play of these games but also on children's play outside of the home of video games that are forbidden by the parents. Given our findings about the possible efficacious nature of co-playing, the question that then arises is what knowledge or prior background of parents might aid in increasing co-playing of video games between parents and children?

Prior work by Laczniak, et al. (2017) suggest the potential utility of parental use of the ESRB for not only selecting which video games to play but also regarding how parental use of the ESRB may bolster parental attempts to decrease children's video game play. Yet, Laczniak, et al. (2017) did not directly assess the relation between parental knowledge of the ESRB and co-playing of video games between parents and children. Consequently, we addressed this link in our third research question, RQ3, *“Does a parent's knowledge of the ESRB ratings system influence co-playing?”*

Our findings indicate that parental ESRB knowledge positively impacts co-playing. In other words, as parents' professed understanding of the ESRB as a rating system for video games

increases so does their agreement with statements regarding their play of video games with their children. Thus, parental attainment of knowledge about the ESRB may lead to enhancing an important mitigating factor for influencing children's play of video games both inside and outside of the home, i.e., co-playing of video games between parents and children. Implications of these findings for those in industry as well as policy makers dedicated to age appropriate video game play is that co-playing can suppress the influence of parents' violent video game play on children's play of these games.

### **Theory Implications**

We believe that previous theorizing within the domain of young adolescents' maturation may provide important clues on why concern about children's video game play may be warranted, especially for children of certain ages. For example, Pechmann, Levine, Loughlin, and Leslie (2005) offer a useful and insightful overview of research drawn from neuroscience, psychology, and marketing focusing on adolescents. Their review, in particular, establishes how the physical (e.g., brains) and psychosocial development of young adolescents differs significantly from younger children, older adolescents, as well as adults. Based on a number of studies, these authors conclude that young adolescents are normally prone to negative dispositions and tend to act impulsively because of their developmental stage. Moreover and because of such factors, young adolescents are more likely to adhere to advertising for certain prohibited (for them) product categories like cigarettes and alcohol (Pechmann, et al. 2005).

While these authors do not make a tie from these young adolescent characteristics to playing violent video games and aggressive outcomes, these similarities seem to be readily apparent within the context of violent video game play. Specifically, because of natural tendencies toward negative moods as well as acting impulsively, young adolescents may be

particularly prone to aggressive displays as a result of playing violent video games. Anecdotal evidence of such a relation was obtained by one of the authors while recently teaching a PhD seminar which included material on violent video games. Several students in the seminar who were either video game players themselves or had spouses who were game players noted how the games become increasingly more difficult and therefore more “aggravating” to play as the game and game parameters (e.g., level of difficulty) develop over time. In addition, if one plays a game in a group online and uses earphones to interact with others, players are subjected to insults, profanity, etc. from other players. Consequently, playing of the game may result in enhanced opportunities to manifest aggressive impulses for individuals who may be already in a negative and impulsive state because of their developmental stage. Such aggressive reactions could arise from playing the game and experiencing the violent images and contexts resident in the game as well as because of the negative interactions with other game players that might be characteristic of playing in an online scenario.

### **Parenting/Managerial/Policy Implications**

We also believe that our results indicate that providing parents with the tools necessary to mitigate adverse playing conditions that could occur for video game players (as suggested above) may be an appropriate and even needed approach for parents, industry, and policy makers to consider. Our results indicate that parents’ play of violent video games positively affects children’s play of video games both within the primary household as well as outside of the home. Hence, given this finding parents might weigh whether their enjoyment of these games outweighs or justifies the deleterious effects of their own play on their children.

In addition, our study has established the viability of co-playing as a suppressor of the relation between parents’ and children’s game play. Consequently, co-playing can and should be

encouraged especially because of brain development issues pertinent to young adolescents as previously discussed (see Pechmann et al., 2005). Specifically, young adolescents may be particularly susceptible to deleterious outcomes attributable to video game play and co-playing may aid in countering these effects.

From an industry perspective, video games could superimpose the ESRB rating for the game on the game screen (Laczniak et al., 2017). This displayed alert in the game itself could serve to remind parents/caregivers as to the appropriateness of the game for the children who are playing the game and perhaps also provide an impetus to intervene with children via such avenues as co-playing. Since ESRB knowledge is an antecedent to co-playing (as shown in our study as RQ3 was supported), building knowledge of the ESRB in parents also may be a useful managerial alternative. This might be accomplished by game packaging displaying and explaining the ESRB categories. In addition, a brief synopsis and display of the ESRB categories as part of the game's introduction might be serve as a precursor to players being able to access and play the game. The purpose of these game changes would be to instigate ESRB knowledge which we find leads to co-playing. As noted, co-playing has beneficial outcomes in terms of serving as an attenuator of the relation between parents and children's violent video game play.

Video game developers could also emphasize on packaging and ads for the games that the ESRB represents a self-regulatory effort by the video game industry to aid parents in selecting games that are age appropriate (Laczniak et al., 2017). That is, by becoming proactive about informing parents regarding industry efforts to aid parents in choosing video games for children, parental negative connotations regarding video games might be mitigated. These efforts might include how parental co-playing of the games could have a positive impact on lessening the negative effects of playing video games by young adolescents.

Finally, at the Federal level, policy makers could capitalize on their role in developing the ESRB. The ESRB originated because of a congressional challenge to the video game industry to decrease children's play of inappropriate video games (see Laczniak et al., 2017). Consequently, policy makers could promote via PSAs the ESRB, its intended function as an aid for parents, and remind caregivers about the beneficial aspects of playing video games with children.

## **LIMITATIONS, FUTURE RESEARCH, AND CONCLUSION**

Several limitations exist in this study. First, our measure of the co-playing of video games did not explicitly focus on co-playing *violent* games. Yet, the findings indicate that co-playing in general attenuated the effect of the parent's play of violent games on the child's play of violent games. Research investigating potential differential effects in the types of games being co-played could produce additional insights.

Several of the constructs in the model were operationalized using single-item measures. While multi-item scales allow for the calculation of reliability and validity metrics, there is no sacrifice in terms of predictive validity through the use of single-item measures (Bergkvist and Rossiter, 2007).

This study relies on the considerable literature linking violent video game play by children to negative outcomes, but does not directly measure any negative outcomes. Rather, in establishing the importance of our findings we implicitly suggest an indirect effect of parent's play of violent games to negative behaviors in their children, via the mediating process of the child's play of violent games. Although we are unaware of any evidence or theory in opposition to our assumption, it could be possible that the negative outcomes resulting for children's play of violent games is driven by antecedents of child's play of violent games other than the parent's

play. Future research could directly assess this issue by collecting data on negative outcomes and testing the indirect effects of the parent's play on those outcomes.

We believe this study has extended and clarified the role of co-playing in mitigating the potential negative aftereffects that may be attributable to children's playing of violent video games. Children's play of such games may result in deleterious outcomes for themselves as well as others because of age-related differences in brain development (Pechmann, Levine, Loughlin, and Leslie (2005). We hope that our research will aid parents in understanding these consequences as well as the tools available to them that could help parents in assuaging the negative effects on children of playing violent video games.

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**Table 1** Sample statistics (N = 207)

Parents' age in years (standard deviation)	41.8 (6.7)
Children's age in years (standard deviation)	9.72 (1.5)
Household Income	
\$15,000 – 24,999	1.9%
\$25,000 – 34,999	6.8%
\$35,000 – 49,999	12.1%
\$50,000 – 74,499	23.7%
\$75,000 – 99,999	23.2%
\$100,000 – 149,999	24.6%
\$150,000 – 199,999	6.3%
Greater than \$200,000	1.4%
Parents' gender	
Male	36.7%
Female	63.3%
Children's gender	
Male	57.0%
Female	43.0%
Parents' ethnicity	
White/Caucasian	87.0%
African American	4.3%
Latino/Hispanic American	4.3%
Asian American	2.4%
Other	1.9%
Children's birth order	
Firstborn	65.7%
Not firstborn	34.3%

**Table 2** Constructs and items

<b>Parents' violent video game play</b>
I play violent video games.
<b>ESRB knowledge</b>
How knowledgeable are you that there is a video game rating system?
How knowledgeable are you about ESRB (Entertainment Software Rating Board)?
How knowledgeable are you of the ESRB rating system?
<b>Co-playing</b>
I play video games with my children.
I like to play video games with my children.
<b>Child's violent video game play</b>
How often do you play video games that are violent?
<b>Child's play of forbidden games at a friend's house</b>
I play video games I shouldn't play at a friend's house.

**Table 3** Descriptive statistics and correlations of study variables (N = 207)

	Variable	Mean	Standard deviation	Correlations			
				2	3	4	5
1	Parents' violent video game play	2.00	1.21	.35*	.40*	.44*	-.09
2	ESRB knowledge	3.34	1.04		.31*	.09	-.17*
3	Co-playing	3.55	1.02			-.06	-.17*
4	Children's violent video game play	1.55	.63				.17*
5	Children's play of forbidden games at a friend's house	1.37	.53				

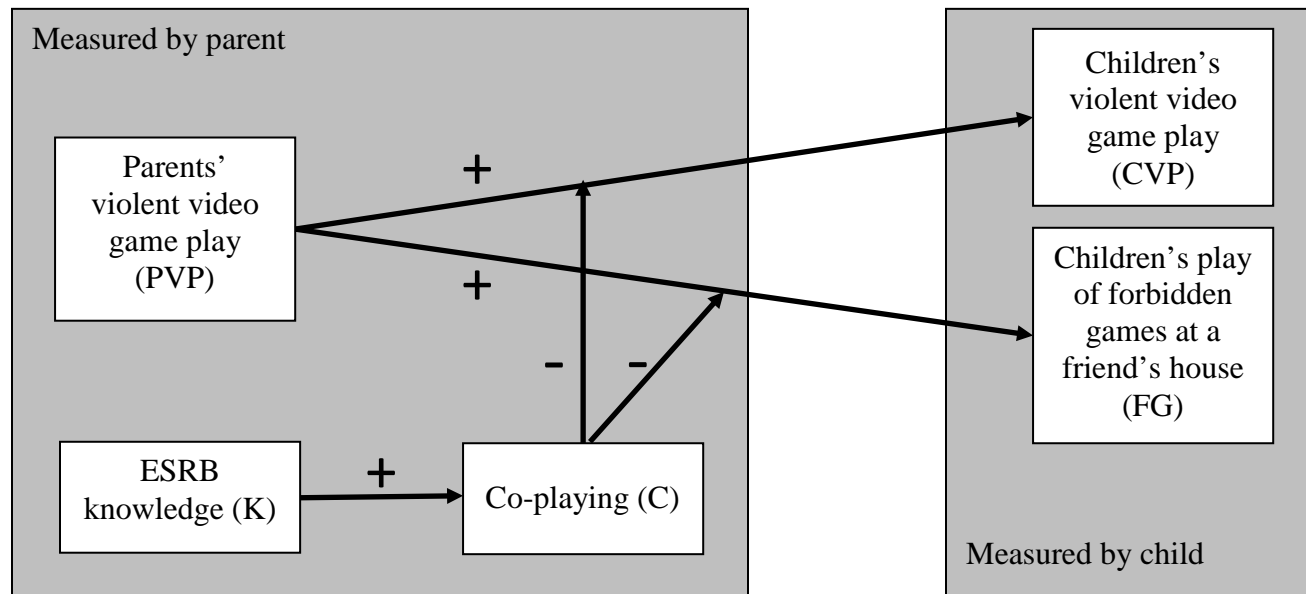
\* significant at 0.05 level

**Table 4** Parameter estimates

Parameter	Parameter estimate	Bootstrapped lower 2.5% of confidence interval	Bootstrapped upper 2.5% of confidence interval
Effect on co-playing			
ESRB knowledge ( $\beta_1$ )	.306*	.167	.447
Effect on child's violent video game play			
Parents' violent video game play ( $\gamma_1$ )	.718*	.360	1.084
Co-playing ( $\gamma_2$ )	.035	-.116	.182
Parents' violent video game play x Co-playing ( $\gamma_3$ )	-.116*	-.201	-.028
ESRB knowledge ( $\gamma_4$ )	.018	-.058	.094
Children's gender (male = 1)	.035	-.114	.194
Children's birth order (firstborn = 1)	-.195*	-.375	-.027
Children's age	.041	-.008	.097
Parents' gender (male = 1)	-.090	-.257	.069
Effect on children's play of forbidden games at a friend's house			
Parents' violent video game play ( $\delta_1$ )	.362*	.010	.751
Co-playing ( $\delta_2$ )	.045	-.091	.184
Parents' violent video game play x Co-playing ( $\delta_3$ )	-.084*	-.175	-.002
ESRB knowledge ( $\delta_4$ )	-.058	-.138	.017
Children's gender (male = 1)	.022	-.141	.177
Children's birth order (firstborn = 1)	.135	-.013	.292
Children's age	.029	-.017	.074
Parents' gender (male = 1)	-.117	-.287	.063

\* significant at 0.05 level

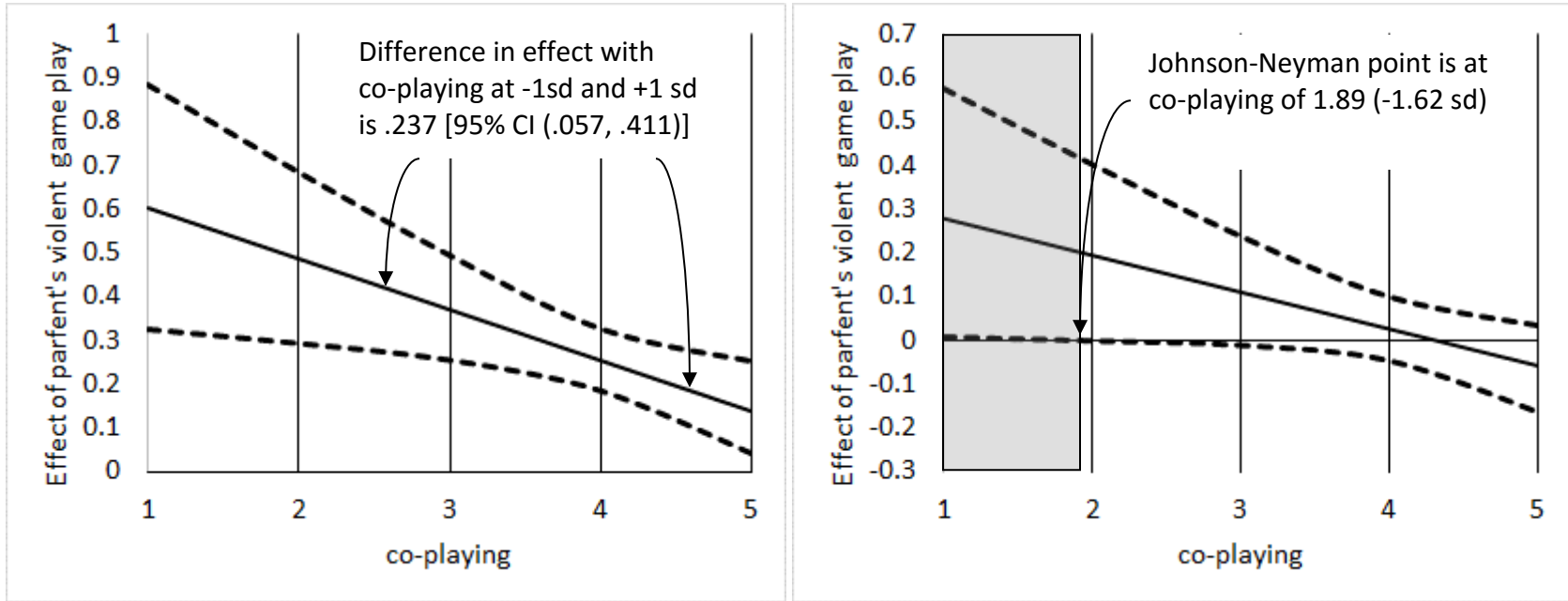
**Figure 1** Proposed conceptual framework\*



\*The direct effects of parent's violent video game play and ESRB knowledge on the child's violent video game play and the child's playing of forbidden games at a friend's house are suppressed in the diagram.



**Figure 2** Floodlight analysis of conditional effect of parents' violent video game play on outcomes



a. effect of parents' violent video game play on child's violent video game play, conditional on co-playing

b. effect of parents' violent video game play on child's play of forbidden games at a friend's house, conditional on co-playing

(the dotted lines represent 95% confidence intervals)