

Aggressive Behavior Mediating the Relationship between Peer Norms and Adolescent Violent
Video Game Engagement

Linsey L. Manten
Universiteit Utrecht

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Linsey L. Manten, 5645271
Utrecht University Faculty of Social Sciences

Author Note:

Linsey L. Manten, Faculty of Social Sciences, Utrecht University

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Correspondence regarding this study must be addressed to Linsey L. Manten, Faculty of Social Sciences, Utrecht University.

Email: l.l.manten@students.uu.nl

Abstract

Due to the possible negative effects of violent video games (VVG) on adolescents research has begun to focus on possible predictors of VVG engagement. Up until now, most research has focused on individual factors. However, there are scientific indications that environmental factors should also be studied. Driven by the little amount of research on the role of peers in relation to adolescent media behavior, this study was designed to investigate the indirect relationship of descriptive and injunctive peer norms on aggressive behavior. Within this relationship the individual's aggressive behavior was studied as possible mediator. Using data from a panel study with 943 adolescents, aged 10 to 14 years, regression analyses tested whether descriptive and injunctive peer norms are indirectly, via the individual's aggressive behavior, related to adolescent VVG engagement. Results suggest an indirect relationship for both types of peer norms on adolescent VVG engagement. These findings provide an addition to the existing research on environmental predictors of adolescent media behavior and practical implications.

Key words: Descriptive peer norms, injunctive peer norms, violent video games, aggression

Aggressive Behavior Mediating the Relationship between Peer Norms and Adolescent Violent Video Game Engagement

Over the last few decades, video games have become a booming business and life without them can hardly be imagined. Nowadays, video games can be considered a social activity as adolescent life has widely embraced their presence (Ferguson & Olson, 2013). In the Netherlands 43% of all boys and 11% of all girls between the ages of 12 and 16 play video games on a daily basis (Stevens, et al., 2018). Considering that fourteen out of the twenty best-selling video game titles of 2018 by units sold are violent video games (ESA, 2019) it is likely that a considerable portion of adolescents engage in violent video games (VVG).

Due to the popularity of VVG a lot of research has been conducted on its possible effects. A scientific debate has arisen as results tend to differ concerning the effects of VVG on, especially, adolescent aggressive behavior (Mathur & VanderWeele, 2019). On the one hand Bushman, Rothstein and Anderson (2010) and followers claim there are significant effects of VVG on adolescent aggressive behavior. While on the other hand Ferguson and Kilburn (2010) and followers are convinced that there are no effects. In order to shape a complete and unbiased image of this effect, independent studies need to be considered. A recent meta-analysis which considers both sides and also includes independent studies on this subject has found small but positive effects of VVG on adolescent aggressive behavior (Greitemeyer & Mügge, 2014). Therefore it is important to stay attentive of the possible effects of VVG.

In contrast to the amount of knowledge on the possible effects, little research has concerned itself with the possible predictors of adolescent VVG engagement. The predictors are equally important to study as these have to be imbedded in interventions used to reduce the effects of VVG engagement. Research up until now has mostly investigated the effects of the individual's factors on VVG engagement, such as gender (Lau, Stewart, Sarmiento, Saklofske & Tremblay, 2018) and aggressive behavior (Breuer, Vogelgesang, Quandt & Festl, 2015). However, there is far less knowledge on the role of environmental factors as predictors. Although, there are longitudinal indications that environmental factors, such as family warmth, could reduce the possible negative effects of adolescent VVG engagement (Liau, Choo, Li, Gentile, Sim & Khoo, 2014). Therefore, it is important to consider more environmental predictors of adolescent VVG engagement.

The aim of this study is to investigate the relationship between peers, as the environmental predictor, and adolescent VVG engagement. Remarkably, the role of peers in relation to adolescent

VVG engagement has hardly been researched. Yet peers play a crucial role during adolescence (Brown & Larson, 2009) as they can help shape adolescent behavior (Brechwald & Prinstein, 2011). One of the ways through which this shaping of behavior can take place is through peer norms. Peer norms have been recognized as a predictive device for the individual's behavior for a long time now (Cialdini, Reno & Kallgren, 1990). They include the perception of which behavior is shown by peers and which behavior is socially accepted (Cialdini, et al., 1990). The *social norm theory* describes the process of how peers can shape the behavior of the individual through peer norms.

The *social norm theory* recognizes the relationship between peer perceptions of behavior and the adjustment of the individuals' behavior. According to this theory, people have a general tendency to adapt their own behaviors in accordance with their perceptions of behaviors that are prevalent, accepted, or desired among valued social referents (Cialdini & Trost, 1998). Thus an individual would adjust their own behavior to the behavior they believe the significant people in their surroundings approve of or express. These perceptions are referred to as social norms (Cialdini & Trost, 1998).

This theory differentiates between two types of social norms, namely descriptive and injunctive norms. First, descriptive peer norms concern the beliefs about the prevalence of behavior (e.g., "How often do your friends show aggressive behavior?") (Cialdini, et al., 1990). Adolescents' conformity with descriptive peer norms can be explained in terms of role-modeling and imitation (Van de Bongardt, Reitz, Sandfort & Dekovic, 2015). Adolescents imitate and model behaviors they observe the significant people in their surroundings undertake (Bandura, 1986). When adolescents observe certain behavior of their peers, they are likely to perceive this behavior to be approved of by those peers. This, in turn, results in them being more likely to behave in a similar manner.

Second, injunctive peer norms include the perceived approval of behavior (e.g., "How OK do your friends think it is to behave aggressively?") (Cialdini, et al., 1990). Adolescents' conformity with injunctive peer norms depends on the degree to which these norms are in confirmation with the adolescents' own values regarding the particular types of behavior. When the approval of peers is in accordance with the individual's own positive attitude towards certain behavior, the individual is more likely to express that behavior (White, Hogg & Terry, 2002). So

when individuals do not approve of certain behavior themselves, they are more unlikely to show that behavior despite the perceived level of approval from their peers.

Furthermore, peer norms play an important role in determining an individuals' media behavior and the media effects. For example, the effects of perceived peer norms are significant in relation to risky online behavior (Baumgartner, Valkenburg & Peter, 2011; Sasson & Mesch, 2014) and could reduce the effects of parental media restriction (Sasson & Mesch, 2014). In this case, adolescents weigh peer norms heavier in determining their own media behavior than the opinions and restrictions of their parents. This is also described by the *social norm theory* as adolescents consider the opinions of their peers to be of a higher value than those of their parents. Similar effects have been found in relation to other media platforms and uses.

In general, the effects of descriptive peer norms seem to be somewhat greater than those of injunctive peer norms (e.g. Baumgartner, et al., 2011; Stok, de Ridder, de Vet & de Wit, 2014). For example, the effects of descriptive peer norms were greater than those of injunctive peer norms in case of adolescent online sexual behavior (Baumgartner, et al., 2011; Van de Bongardt, et al., 2015). However, literature on social norms hardly provides an explanation for the difference. One explanation could be that peer approval of certain behavior is clearer determined through descriptive peer norms as the behavior can be observed (Manning, 2009). The peers' general approval of behavior is more evident when directly observed compared to getting to know the peers' thoughts on the behavior. When the norms are more clear, the likeliness that an individual will behave accordingly is greater (Manning, 2009). In addition, Van de Bongardt and others (2015) suggest that the explanation lies in descriptive peer norms including more components. Descriptive peer norms include both peer attitudes and peer behavior whereas injunctive peer norms only include the peer attitudes. Since descriptive peer norms would include more components, thus making the norms clearer, the effects on adolescent behavior could be greater (Van de Bongardt, et al., 2015).

Another important characteristic of peer norms is that both types have primarily indirect effects on adolescent behavior. Namely, adolescents' perception and their evaluation of these norms help decide whether conformity to these norms is functional (Van de Bongardt, et al., 2015). If individuals perceive their friends to approve of aggressive behavior while they themselves do not, the individuals are more unlikely to engage in aggressive behavior than when they would approve of this behavior themselves. Thus, the relationship between peer norms and the

individual's shown behavior would include individual factors. Therefore, it is important for this study to focus on either mediating or moderating processes of individual factors.

Many individual factors in relation to adolescent VVG engagement have been researched and studies generally agree on the strongest predictors. These include the male gender and the aggressive behavior of the individual. For instance, a cross-sectional study (Lau, et al., 2018) found strong indications that males in later adolescence with externalizing symptoms, among other characteristics, would be more likely to engage in problematic video gaming. This study included VVG within the reach of problematic video gaming. These findings are supported by cross-sectional (Hartmann, Möller & Krause, 2015) and exploratory (DeCamp, 2017) findings that males engage in VVG more frequently than females. Also there are clear indications that more aggressive individuals would more often engage in violent media than less aggressive individuals (Breuer, et al., 2015). As peer norms cannot have an effect on gender, this study will include aggressive behavior as a mediating factor.

Up until now little research has concerned itself with the role of friends in the association between VVG and aggression (Verheijen, Burk, Stolz, van den Berg & Cillissen, 2018). One longitudinal study that did include these variables found that peer norms could both strengthen and reverse the effects of media violence on aggression (Fikkers, Piotrowski, Lugtig & Valkenburg, 2015). Beside these first indications for mediating and moderating effects, the separate relationships have been elaborately studied. For example, there is scientific evidence that suggests that aggressive behavior of the individual is increased through *deviancy training* by their peers (Dishion, Eddy, Haas, Li & Spracklen, 1997). In this process peers reinforce each other's antisocial behavior and attitudes through positive affective behavior, such as laughing (Dishion, et al., 1997). This specific positive affective behavior can be described as an injunctive peer norm. The peers show their approval of certain behavior through a positive or reinforcing response to that behavior. Peer norms in favor of antisocial, or aggressive, behavior would lead to more aggressive behavior of the individual (Dishion, et al., 1997).

Additionally, the relationship between aggressive behavior and VVG engagement can be explained with the use of several theories. One of these theories is the *disposition content congruency hypothesis*. This theory states that individuals tend to base their choices of media content on their own pre-existing cognitions, emotions, attitudes, beliefs and behavior (Klapper, 1960). In other words, individuals would select their media based on their personality or feelings

at that moment, among other things. In relation to aggressive behavior, this would mean that aggressive individuals are more likely to engage in media content that features aggressive behavior, such as VVG. This theory is supported by the results found in several longitudinal studies that showed more aggressive individuals to engage in VVG more often (Breuer, et al., 2015; Lau, et al., 2018).

As discussed before, according to the *social norm theory* peer norms include the individual's perceptions of behaviors that are prevalent, accepted or desired among valued social referents (Cialdini & Trost, 1998). Furthermore, the *disposition content congruency hypothesis* states that individuals tend to base their choices of media content on their own pre-existing cognitions, emotions, attitudes, beliefs and behavior (Klapper, 1960). These two theories combined could help explain the indirect effect of peer norms on adolescent VVG engagement. Namely, that peer norms concerning aggressive behavior could predict an adolescent to behave more aggressively. This, in turn, would increase the likeliness that an adolescent would choose media that includes aggression.

Hypotheses

Hypothesis 1. Descriptive peer norms are indirectly related to adolescent VVG engagement via aggressive behavior. When an individual perceives a higher level of aggressive behavior of their peers, they are more likely to behave aggressively themselves. This higher level of aggressive behavior changes the likeliness that the individual will engage in VVG. When an individual perceives a lower level of aggressive behavior of their peers, they are less likely to behave aggressively themselves. This lower level of aggressive behavior decreases the likeliness that the individual will engage in VVG.

Hypothesis 2. Injunctive peer norms are indirectly related to adolescent VVG engagement via aggressive behavior. When an individual perceives a higher level of approval of aggressive behavior by their peers, they are more likely to behave aggressively themselves. This higher level of aggressive behavior increases the likeliness that the individual will engage in VVG. When an individual perceives a lower level of approval of aggressive behavior by their peers, they are less likely to behave aggressively themselves. This lower level of aggressive behavior decreases the likeliness that the individual will engage in VVG.

Method

Participants and Procedure

The data used for this thesis was gathered in 2012. In total 516 families participated out of the 1,565 families with at least two children between the age of 10 and 14 that were in TNS NIPO's (a private survey research institute in the Netherlands) existing online panel. Participants filled out a questionnaire on a laptop at their own homes. In total 1,032 adolescent participants were included with a mean age of 11.8 years (SD 1.4 years). The final sample contained 943 adolescents of which 99.7% were sibling pairs and 50.4% were girls.

Measuring instruments

Violent video game play. VVG was measured using direct estimates. This type of self-report on VVG would be reliable and valid (Fikkers, et al., 2015). The following definition of violence was provided: "All violence (for example, fighting and shooting) that living beings (for example, humans and monsters) do to each other." Participants were asked how often they played games that featured violence in number of days per week. Then number of days per week were measured with 0 being "Less than one day per week" and 7 being "seven days per week". Then participants were asked for how long they generally play these violent games in hours and minutes on a day that they play violent games. The hours per day spent on playing VVG were multiplied by the number of days to determine the hours per week spent on VVG.

Descriptive peer norms. The scale for descriptive and injunctive norms on aggressive behavior was developed by Fikkers, and others (2015). Participants were asked to answer the question "Which of the following actions have you seen your friends do in the past half year?" based on five answer possibilities with 1 being "none of my friends" and 5 being "all of my friends". These were scenarios such as "hitting another adolescent". Participants were told that "friends" meant friends they see more than once a week, they spend time with and like doing things with. The items were averaged to create a scale (Cronbach's $\alpha = .78$).

Injunctive peer norms. With regard to the measurement of injunctive peer norms the same items were used as for descriptive norms. However participants were asked to answer the question "What do your friends think of the following scenarios?" based on five answer possibilities with 1 being "absolutely not OK" and 5 being "Absolutely OK". The items were averaged to create a scale (Cronbach's $\alpha = .88$).

Aggressive behavior. Participants were asked to answer the question "To what degree are you alike to the following statements?" These statements would include examples of aggressive behavior, such as having arguments, threatening others, and expressing the emotion of anger. The

five answer possibilities varied from 1 being “Absolutely unlike me” to 5 being “Absolutely like me”. The items were averaged to create a scale (Cronbach’s $\alpha = .86$).

Covariates

Gender. For the covariate of gender participants were asked to fill in whether they were female (0) or male (1). There are indications that males are generally more likely to engage in VVG (e.g. DeCamp, 2017). Therefore the analyses will be controlled for this variable.

Age. For the covariate of age, participants were asked to fill in their birthdays after which their ages in years and months were calculated. Younger adolescents generally have lower engagement rates in VVG than older adolescents (Stevens, et al., 2018), therefore the analyses will be controlled for this variable.

General video game play. The covariate of video game play engagement was measured similarly to the violent video game play. Except for this variable all types of video game play were included. A higher level of adolescent general video game play often means a higher level of adolescent VVG engagement (Padilla-Walker, Nelsen, Carroll & Jensen, 2010). Therefore the analyses will be controlled for this variable.

Analytic approach

Before the statistical analyses could be performed, the data was checked for outliers and assumptions of the statistical methods. Since VVG exposure was calculated based on an open-ended question, there were some extreme values. These extreme values were defined as values exceeding the mean plus 3 times the standard deviation. They were recoded to the value of the mean plus 3 times the standard deviation. A total of 18 cases were considered outliers. Furthermore, the assumptions of normality, homoscedasticity and linearity were violated. In order to ensure a degree of accuracy of the statistical results, bootstrapping was performed.

Both analyses were performed using Andrew Hayes’ (2017) process macro function. The process macro analyses all paths within the relationship between the dependent and independent variable and the mediator. For hypothesis 1 descriptive peer norms were selected as the independent variable, VVG exposure as the dependent variable, aggressive behavior as mediator, and gender, age and general video gameplay as the covariates. The model (no name was specified) that included VVG exposure as the outcome variable and included descriptive peer norms and aggressive behavior was used for hypothesis 1. For hypothesis 2 a similar analysis was performed, except injunctive peer norms were now included as the independent variable.

Results

Descriptive statistics

Table 1 contains an overview of the means, standard deviations and correlations between the variables used in the analyses. The data visualized in the table describes numerous significant correlations between the variables. For instance, both types of peer norms are significantly correlated with all variables except for general video game play. Individuals perceive their friends to approve of aggressive behavior more often when they are older, when they show more aggressive behavior themselves and when they are boys. Also injunctive peer norms are significantly correlated with VVG exposure. When individuals believe their peers have a more positive attitude towards aggressive behavior, they engage in VVG more often. Furthermore, trait aggression is positively correlated with all variables except for age. This illustrates that individuals who show more aggressive behavior play more VVG and other video games, and perceive their peers to be more approving of aggressive behavior. In addition, the male gender is positively correlated with all variables except for age. Thus boys engage in VVG, perceive their peers to approve of aggressive behavior and express aggressive behavior more often than girls.

Table 1

Means, Standard Deviations and Pearson Correlation coefficients (N = 995)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Violent video game exposure	2.85	5.60	-						
2. Descriptive peer norms	1.77	0.69	.05	-					
3. Injunctive peer norms	1.91	0.73	.09**	.65**	-				
4. Aggressive behavior	2.01	0.62	.18**	.38**	.39**	-			
5. Gender	1.48	0.50	-.41**	-.08*	-.13**	-.21**	-		
6. Age	11.74	1.40	.11*	.10**	.16**	-.04	-.04	-	
7. General video game play	8.36	9.31	.54**	.02	-.00	.14**	-.30**	.07*	-

Note * $p < .05$; ** $p < .01$

Mediating effect of Aggressive behavior for Descriptive peer norms on VVG

Hypothesis 1 states that descriptive peer norms are indirectly related to adolescent VVG engagement via aggressive behavior. This hypothesis has been analyzed using a linear regression analysis within the process macro developed by Andrew Hayes (2017). A process macro analysis was performed with violent video game exposure as the dependent variable, descriptive peer norms as the independent variable and aggressive behavior as the mediator. In addition, gender, age and general video game play were included as covariates. The linear regression model for the direct effect between descriptive peer norms and VVG engagement was significant ($F(4, 990) = 101.71$, $p < .001$). This means that this linear regression model would be useful to directly predict VVG engagement. This model predicted 29% of the total explained variance of VVG ($R^2 = .291$).

Table 2

Effects of descriptive peer norms and covariates on VVG

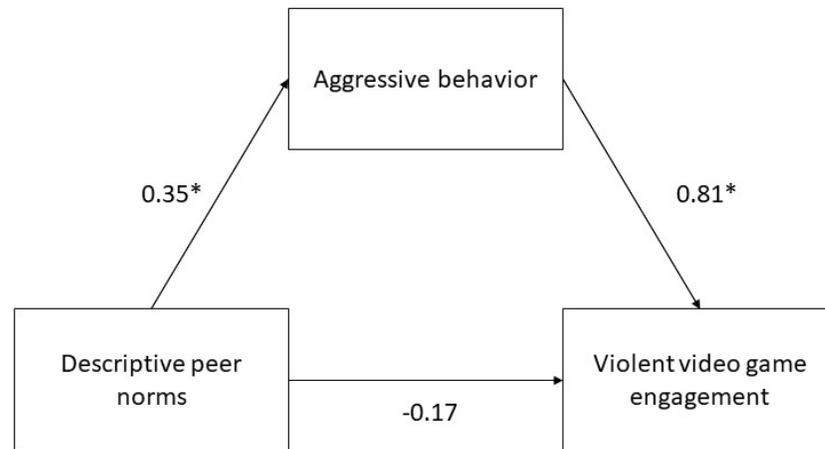
	β	SE	t	p	LLCI	ULCI
Descriptive peer norms	0.11	0.22	0.50	.618	-0.32	0.54
Gender	-3.63	0.31	-11.73	<.001	-4.24	-3.02
Age	0.28	0.11	2.55	.011	0.06	0.49
General video games	0.16	0.01	12.74	<.001	0.14	0.19

However, the effects of this model can only be attributed to the covariates. Gender, age and general video game play were significantly related to adolescent VVG engagement. The effect of the independent variable did not hold any statistical significance, as seen in Table 2. There is no direct effect of descriptive peer norms on VVG engagement.

In relation to the hypothesis, the indirect effect of descriptive peer norms on VVG engagement via the individual's aggressive behavior was analyzed within the same process macro analysis. The total effect model was significant ($F(5, 989) = 83.93$, $p < .001$) and predicted 30% of the total explained variance of VVG engagement ($R^2 = .30$).

Figure 1

Mediating relationship between Descriptive peer norms, VVG and Aggressive behavior



Note * $p < .05$

As seen in Figure 1 there was a significant indirect effect of descriptive peer norms on VVG engagement via aggressive behavior ($B = .28$, $SE = .10$, $CI\ 95\%: [0.08, 0.49]$). The relationship between descriptive peer norms and the individual's aggressive behavior is significant ($B = .35$, $SE = .03$, $p < .05$). The relationship between aggressive behavior and VVG engagement was also significant ($B = 0.81$, $SE = .25$, $p < .05$). Descriptive peer norms are significantly and indirectly related to the adolescent VVG engagement via the individual's aggressive behavior. Hypothesis 1 was accepted.

Mediating effect of Aggressive behavior for Injunctive peer norms on VVG

Hypothesis 2 states that injunctive peer norms are indirectly related to adolescent VVG engagement via aggressive behavior. This hypothesis has been analyzed using a linear regression analysis within the process macro developed by Andrew Hayes (2017). A process macro analysis was performed with violent video game exposure as the dependent variable, injunctive peer norms as the independent variable and aggressive behavior as the mediator. In addition, gender, age and general video game play were included as covariates. The linear regression model for the direct effect between injunctive peer norms and VVG engagement was significant ($F(4, 990) = 102.11$, $p < .001$). This means that this linear regression model would be useful to directly predict VVG engagement. This model predicted 29% of the total explained variance of VVG ($R^2 = .292$).

Table 3

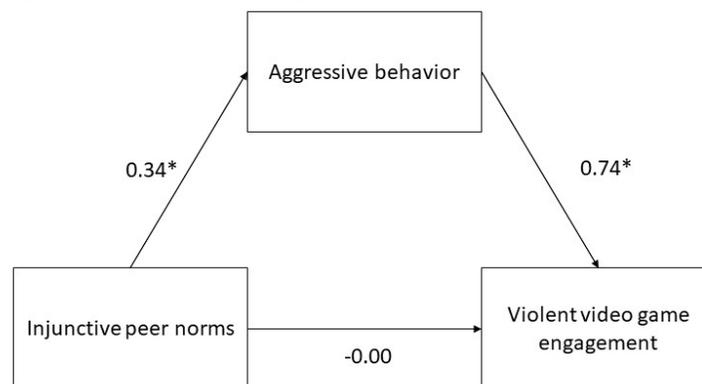
Effects of injunctive peer norms and covariates on VVG

	β	SE	t	p	LLCI	ULCI
Injunctive peer norms	0.25	0.21	1.17	.241	-0.17	0.66
Gender	-3.59	0.31	-11.55	<.001	-4.20	-2.98
Age	0.26	0.11	2.40	.017	0.05	0.47
General video games	0.016	0.01	12.78	<.001	0.14	0.19

However, the effects of this model can only be attributed to the covariates. Gender, age and general video game play were significantly related to adolescent VVG engagement. The effect of the independent variable did not hold any statistical significance, as seen in Table 3. There is no direct effect of injunctive peer norms on VVG engagement.

In relation to the hypothesis, the indirect effect of injunctive peer norms on VVG engagement via the individual's aggressive behavior was analyzed within the same process macro analysis. The total effect model was significant ($F(5, 989) = 83.78, p < .001$) and predicted 30% of the total explained variance of VVG engagement ($R^2 = .30$).

Figure 2

Mediating relationship between Injunctive peer norms, VVG and Aggressive behavior

Note * $p < .05$

As seen in Figure 2 there was a significant indirect effect of injunctive peer norms on VVG engagement via aggressive behavior ($B = .25, SE = .11, CI 95\%: [0.04, 0.46]$). The relationship

between injunctive peer norms and the individual's aggressive behavior is significant ($B = .34$, $SE = .02$, $p < .05$). The relationship between aggressive behavior and VVG engagement was also significant ($B = 0.74$, $SE = .25$, $p < .05$). Injunctive peer norms are significantly and indirectly related to the adolescent VVG engagement via the individual's aggressive behavior. Hypothesis 2 was accepted.

Discussion and conclusion

The aim of the present study was to investigate the relationship between peer norms, adolescent VVG engagement and the individual's aggressive behavior. Up until now, little research had concerned itself with the possible predictors of adolescent VVG engagement despite the importance of implementing predictors in interventions. Previous research concerning predictors had greatly focused on the relationship between VVG and individual factors such as aggressive behavior, but environmental factors like peer norms had hardly been studied. It was hypothesized that there would be an indirect effect of descriptive and injunctive peer norms on VVG engagement via the individual's aggressive behavior. Results suggest that peer norms could have an indirect effect on adolescent VVG engagement.

Using cross-sectional data from adolescents between the ages of 10 and 14, it was tested whether peer norms on aggressive behavior were indirectly related to adolescent VVG engagement. Based on previous work and theory, it was hypothesized that descriptive peer norms were indirectly related to VVG engagement via the individual's aggressive behavior (hypothesis 1). In addition, it was hypothesized that injunctive peer norms were indirectly related to adolescent VVG engagement via the individual's aggressive behavior (hypothesis 2). Results indicate that there are no direct relationships between both types of peer norms and adolescent VVG engagement. Thus peers' thoughts and behavior concerning aggression would not directly change the likeliness of the adolescent engaging in VVG. Considering that peer norms mainly have indirect effects (Van de Bongardt, et al., 2015) it was expected that no direct effects would be found. In addition, an indirect relationship was found for both types of peer norms to adolescent VVG engagement via the individual's aggressive behavior. As peers appear to be more approving of aggressive behavior, the adolescent's likeliness to approve of and show aggressive behavior changes. This relationship is described by the *social norm theory*. In turn, this change in aggressive behavior of the individual changes the likeliness of the individual to engage in VVG, which is

described by the *disposition content congruency hypothesis*. Thus the results concerning the indirect relationships are in line with expectations and theory.

In all, these findings provide important implications for future research and theory about peer-media effects, and the clinical field. First, these findings emphasize the importance of researching adolescents' social environment in relation to their media behavior. Peers play an important role in shaping adolescent behavior (Brown & Larson, 2009; Brechwald & Prinstein, 2011) and, in line with previous studies (e.g. Baumgartner, et al., 2011; Fikkers, et al., 2015), these results indicate that they do so in adolescents' media use as well. This study also contributes to the scientific need to move beyond direct effects on VVG (Valkenburg & Peter, 2013) as it includes aggressive behavior as a mediator. It was already suggested that peer norms would mainly have indirect effects (Van de Bongardt, et al., 2015) and these results are in agreement.

Second, these findings indicate that interventions on adolescent VVG engagement and its effects could stay focused on the individual while taking the environment into consideration. These results suggest that peers' opinion on and expression of aggressive behavior could not directly influence whether an adolescent will engage in VVG more often. However, peers could steer an individual's behavior by convincing the individual to accept certain behavior, as described by the *social norm theory* (Cialdini & Trost, 1998). Individuals will then determine for themselves whether conformity to these norms is functional (Van de Bongardt, et al., 2015). Clinicians should focus on this internal process of determination of functionality. When an individual learns that conformity to the peer norms is not functional, they could be less inclined to engage in VVG.

Generally, it is important to interpret these findings carefully. These results are based on cross-sectional data. Therefore, no causal interpretations should be made. However, these results still provide useful implications for the clinical and scientific fields as they do illustrate the importance of peer norms in relation to adolescent VVG engagement.

Furthermore, this study provides implications for the younger half of adolescents as the oldest respondents were 14 years old. At a higher age, it is possible that different results could be found. For instance, the peak of peer conformity was found to be at around the age of 15 (Berndt, 1979; Breuer, et al., 2015). At a higher mean age of the sample, a greater effect of peer norms could be found. Also, Dutch adolescents between the ages of 17 and 18 experience more problematic gameplay (4.5%) than 12 to 16 year old adolescents (3.2%) (Van Dorsselaer, Tuithof, Verdurmen, Spit, van Laar & Monshouwer, 2016). VVG are included within the reach of problematic

gameplay. Thus in case of adolescent VVG engagement, there could be higher levels of engagement for older adolescents. Considering the differences in peer conformity and level of VVG engagement for higher ages, these results may not apply to older adolescents. Still, these results provide useful indications for the ages included in the current study.

Building on the current study, future research could continue and improve on several aspects of this study. First, it is important to continue to expand knowledge on the relationship between peer norms and adolescent media use. In doing so, different types of peer norms and media can be included. There already is longitudinal evidence that peer norms on aggression could both enhance and mitigate the effects of VVG on adolescent aggression (Fikkers, et al., 2015) and peer norms would also increase the likeliness of risky online sexual behavior (Van de Bongardt, et al., 2015). This indicates that more important relationships between peer norms and media behavior could exist.

Second, it is important to study the difference in effects between different age groups of adolescents. The difference in peer conformity and level of VVG engagement between young and older adolescents could give different results when studying the relationship between peer norms, aggressive behavior and VVG engagement. In addition, it would be interesting to study the longitudinal effects of the current relationship. Results could provide information on the peaking age of peer influence and the level of VVG engagement and whether the peaking age for both variables differs or not. This would provide indications for when interventions should take place in order to best prevent the possible negative outcomes of adolescent VVG engagement.

All in all, this study took a new perspective at a long discussed subject. The results show that the individual's aggressive behavior plays an important role in the relationship between peer norms on aggression and adolescent VVG engagement. When interventions focus on the internal process of determining the functionality of the behavior perceived through peer norms, the possible effects of peer norms might be mitigated.

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