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Testing the Content Progression Thesis: A Longitudinal Assessment of Pornography Use and Preference for Coercive and Violent Content among Male Adolescents

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Abstract

Content progression thesis (CPT), a direct application of conditioning theories to conceptualizing exposure to pornography, proposes that pornography use leads to viewing increasingly more extreme material due to the effect of satiation. To test this assumption, association between the frequency of pornography use and the preference for violent and coercive content were examined over a 24-month period using an online panel sample of male adolescents. Participants were 248 high school students who took part in at least three of five waves of the PROBIOPS study. The average baseline age was 16.1. Dual-domain latent growth curve modeling was used to test the CPT. The preference for violent/coercive pornography was found to decrease over time. Moreover, its dynamics was unrelated to latent growth in pornography use. In this first longitudinal assessment, the CPT was not found to be a useful model for understanding the patterns and potential consequences of adolescent pornography use.

Key Words: Content progression; pornography; violent/coercive pornography content; adolescents

1. Introduction

Possible incitement of sexual aggression has been one of the key social concerns over pornography use ever since sexually explicit materials became widely available (Hald et al., 2014). In response, the topic has been extensively researched among adults and—to a lesser degree—among adolescents (Wright et al., 2016). Although considerable methodological limitations have been attributed to the existing research (e.g. Hald et al., 2014, p. 16; Peter and Valkenburg, 2016, pp. 525–527), a number of studies reported positive associations and even implied causal relations between pornography use and sexually aggressive behaviors. Measured in only a minority of studies, pornography contents were found to be a contributing factor to sexual aggression, with violent pornography—compared to other types of pornography—indicated to hold higher associations with sexually aggressive attitudes and behaviors (McKee, 2015; Wright et al., 2016), but also with higher frequency of pornography use, sexual boredom, acceptance of sex myths and pornographic scripts, suppression of intimacy, and sexual compulsiveness (Štulhofer et al., 2010).

Taking into account that first exposure to pornography usually occurs in early adolescence, as well as that its intentional use typically precedes first sexual experiences (Brown and L'Engle, 2009; Koletić, 2017), it has been argued that pornography may play a substantial socializing role in forming adverse sexual attitudes, expectations, and behavioral schemata (cf. Seto et al., 2001; Hald et al., 2014). For example, from the sexual callousness model perspective, adolescents lack real-life experiences and cognitive ability to recognize pornographic representations as exaggerated and fictional, which may contribute to the development of unrealistic ideas about sexuality (Peter and Valkenburg, 2010) and to the internalization and subsequent re-enactment of pornographic scripts (Baams et al., 2015). Similarly, from the perspective of the sexual scripting theory (Gagnon and Simon, 1973; Simon and Gagnon, 2003), explicit images and symbolic

narratives presented in pornography may influence the development of young people's sexuality in its cognitive, affective, and behavioral aspects. Representing a set of persuasive socio-cultural messages on sexuality, pornography may model adolescents' sexual reality both at intrapersonal and interpersonal levels by shaping shared expectations of sex and sexual relationships, providing guidelines about sexual behavior and a normative framework for the assessment of body attractiveness (Štulhofer et al., 2010).

Prolonged exposure to pornography is considered to be especially harmful. Propositions of conditioning theories in particular were used to outline mechanisms underlying increased use of pornography and the use of progressively more degrading and violent content (Hald et al., 2014). As sexual arousal and sexual pleasure, but also stress-relief, become conditioned responses to pornography, its subsequent use may increase. Furthermore, as users habituate to a content that they find exciting, they may be motivated to seek out progressively more extreme stimuli to sustain the same response. This progression to more deviant and eventually violent content has been proposed to be fostered by the process of desensitization (Zillmann and Bryant, 1986) that makes the user less emotionally affected by aggressive and/or degrading sexual acts and less empathic towards the victims of such acts over time. Normalization of violent pornographic repertoire may follow, possibly leading to the acceptance of the portrayed sexual practices.

In essence, it was thus proposed that continued pornography use would lead to a gradual transition from more mainstream to more extreme content. This *content progression thesis* (CPT) has so far been examined only fragmentarily both among adults and adolescents. In particular, little is known of the types of pornography that adolescents are exposed to (Wright, 2014; Peter and Valkenburg, 2016; Koletić, 2017) even though Ybarra and her collaborators' large-scale longitudinal study indicated that sexual aggression among adolescents was related to using violent—unlike non-violent—pornography (Ybarra et al., 2011). In addition, there are publically

and academically voiced concerns that violent pornography is becoming increasingly mainstreamed (Barron and Kimmel, 2000; Klaassen and Peter, 2015; Shor and Seida, 2018).

Some evidence in support of the CPT among adults was found in two cross-sectional studies. In a qualitative research of adults convicted of acquiring child pornography, some offenders described being drawn to access more extreme and violent material in the course of time (Quayle and Taylor, 2002). A survey-based study carried out on a community sample found that those who reported younger age at the onset of intentional exposure to pornography were likelier to use non-violent deviant pornography (bestiality and child pornography) compared to those who reported older age of onset (Seigfried-Spellar and Rogers, 2013).

However, as the assumption of temporal change is integral to the CPT, longitudinal studies provide clear conceptual and methodological advantages over cross-sectional studies. Findings on the dynamics of pornography use among adolescents were reported in several longitudinal studies that examined parallel or reciprocal changes in pornography use and sexual objectification of women (Peter and Valkenburg, 2009a), sexual satisfaction (Peter and Valkenburg, 2009b; Doornwaard et al., 2014), sensation seeking and life satisfaction (Peter and Valkenburg, 2011; Beyens et al., 2015), permissive attitudes (Baams et al., 2015), and excessive sexual interest (Doornwaard, van den Eijnden, Baams et al., 2015). No marked increase in pornography use dependent or independent of distal and proximal factors was reported. Hennessy et al. (2010) even found that higher initial level of sexual behavior was associated with decreased pornography use over time.

In what appears to be the only longitudinal study that examined trajectories of pornography use among adolescents, Doornwaard, van den Eijnden, Overbeek, and ter Bogt (2015) found that, on average, both female and male adolescents reported a slight increase in pornography use over the course of 18 months. Predicted by sexual permissiveness and sexual interest, exposure to

pornography increased strongly among 22% of male and 5% of female participants who reported close to no use at baseline, but also decreased among 20% of male adolescents whose initial levels of use were relatively high. Pornography use was consistently rare for 92% of female and 35% of male participants.

Specific pornography contents used by adolescents were accounted for only in the longitudinal studies reported by Ybarra et al. (2011) and Vandenbosch (2015). Although analyses of change in content preference over time were not included in either study, Vanderbosch found that violent pornography (depiction of sexual activities containing physical aggression) was the least frequently used and its use was not associated with participants' age. However, younger adolescents were more exposed to affection-themed pornography (sexual partners depicted exchanging love and affection) and older adolescents to dominance-themed pornography (content featuring a male or female sexual character that is dominant). The author cautiously interpreted that finding along the lines of the CPT, stating that her explanation is pending further empirical examination (Vandenbosch, 2015, p. 446).

1.1 The Current Study

A recent meta-analysis (Wright et al., 2016) and two overviews (Peter and Valkenburg, 2016; Koletić, 2017) suggested that the CPT has been neither directly, nor systematically examined either in adults or adolescent samples. The evidence of change in the frequency of pornography use is partial and inconclusive, and virtually non-existent with regard to the change in content preference. To start bridging this gap, we used data from a longitudinal panel study of adolescent use of sexualized and sexual media contents. Drawing from the principal propositions of conditioning theories applied to the patterns and outcomes of pornography use (Seto et al., 2001; Hald et al., 2014), we hypothesized that the dynamics of pornography use and the preference for violent content in the period of 24 months would be positively associated. The

findings of this first direct and systematic test of the CPT should be relevant not only for researchers in the field, but also for educational and media policy experts, as well as for concerned parents.

In the present study, we focused exclusively on male adolescents. Compared to their female peers, adolescent men have been consistently found to use pornography substantially more frequently (Hald et al., 2014; Peter and Valkenburg, 2016), which makes them more vulnerable to progressive satiation and desensitization due to a contact with more extreme content. Several studies also suggested that female adolescents are less likely to use more extreme pornographic material (Sabina et al., 2008; Seigfried-Spellar and Rogers, 2013; Romito and Beltramini, 2015). Taking into account both gender-specific frequency of pornography use, and indications of gender-specific interpretation of pornographic imagery (Hald and Štulhofer, 2016), pornography use has been routinely proposed as (potentially) more harmful for adolescent men than women (Brown and L'Engle, 2009; Flood, 2009).

2. Method

2.1 Participants and Procedure

Participants were high-school students from Croatia's capital of Zagreb and the surrounding county who took part in the PROBIOPS (*Prospective Biopsychosocial Study of the Effects of Sexually Explicit Material on Young People's Sexual Socialization and Health*) online panel study. The study was launched in March 2015 in 59 high schools (65% of the total number of high schools located in Zagreb and the county; small private and public schools with less than 50 students in total and schools that refused to participate were omitted from sampling). Leaflets that were distributed among sophomore students contained basic information about the study for students and their parents, a unique code, and instructions for (one-time) online registration.

Students were asked to visit the study web site and register using their Facebook account or e-mail address. To take the survey, participants were required to provide informed consent. In total, 2,655 female and male students registered (a 36% response rate). At baseline, the average age in the sample was 16.2 years (*SD* = 0.50). Male students were 42% of the sample.

The questionnaire included five sections (socio-demographic indicators, psychological characteristics, beliefs and attitudes, sexualized media use, and sexual behaviors) and took less than 20 minutes to complete. The survey application supported the use of tablets and smart phones to fill out the questionnaire. Participants who completed the survey were included in a lottery, in which 100 shopping mall vouchers worth an equivalent of $16.5 (13.5 €) were awarded. Similar procedure was employed in the subsequent data collection waves, which were spaced about six months apart. In addition to advertising the information about the upcoming survey by e-mail and at the research project's Facebook group, study assistants visited the participating schools at the beginning of each wave to remind participants of the new data collection wave. Fifth study wave was carried out in April 2017.

Only male participants who took part in any three of the five study waves were included in the analyses presented here (N = 248). At baseline, their average age was 16.1 years (SD = .45). Attendance of religious services at least once per month was reported by 33.1% of the participants. College degree or higher was reported by 47.2% of participants for their mothers and 44.9% for their fathers. To address attrition bias, a multivariate logistic regression analysis was carried out with the dependent variable denoting two groups of adolescents: those included in this study (coded 1) and those who were omitted (coded 0). Socio-demographic characteristics (father's and mother's education, academic achievement, and religiosity), baseline frequency of pornography use, and the preference for violent/coercive content were included as independent variables. The only statistically significant difference between the two groups was academic

achievement, with higher achievement increasing the odds of being selected in this study (AOR = 1.72, $p < .001$). The size of this difference was small (Chen et al., 2010).

All study procedures were approved by the Ethical Research Committee of the Faculty of Humanities and Social Sciences, University of Zagreb. Considering that the Croatian guidelines for ethical research in minors stipulate that adolescents aged ≥ 14 years can give informed consent, participants' parents were informed about the study, but not asked for approval. In addition to consent-related information, all questionnaires contained the contact of a non-governmental organization that offers psychological support and counseling to children and youth.

2.2 Measures

Frequency of pornography use was measured using a single-item indicator (*How often did you use pornography in the past 6 months?*). Responses were anchored on an 8-point scale with answers ranging from 1 = never to 8 = several times a day. In the questionnaire, pornography was defined as "any material which openly (i.e., not censored) depicts sexual activity; material which shows naked bodies but not sexual intercourse or other sexual activity does not belong to pornography as here defined". Coefficients of stability for pornography use were in the .52 – .73 range ($p < .001$).

Due to ethical limitations (cf. Peter and Valkenburg, 2012) and following the example of a previous longitudinal study of pornography use in adolescents (Ybarra et al., 2011), a *preference for coercive and/or violent pornography use* was measured by the following two dichotomous items (the yes/no format was used for anchoring answers): "Do pornographic material that you usually use depict" (1) "a person who appears to be forced or coerced into doing something"; (2) "a person who suffers or is in pain". In this study we used a composite variable of preference for coercive/violent pornography defined as a simple linear combination of the two items.

2.3 Analytical Strategy

To test the CPT, we used dual-domain (or parallel process) latent growth curve modeling (LGCM; Bollen and Curran, 2006; Duncan et al., 2006) of the frequency of pornography use and the preference for coercive/violent pornography content across 5 data collection waves. The approach focuses on covariance estimates between latent intercepts and slopes of the two constructs. While latent intercept means indicate the average or group-level values at T1 (initial levels), latent slope means represent the average rate of change in the construct over time. Importantly, LGCM also estimates individual variation around the average values, which enables the estimation of target associations at within-individual level (Duncan and Duncan, 2009; Little, 2013).

Full information maximum likelihood (FIML) was used as a parameter estimation method and a way to deal with missing data (Graham, 2012).[1] Before testing the parallel process (or dual-domain) model, fit of two different latent growth curve specifications—the linear curve and non-specified cumulative one (only the first and the last slope loadings were fixed to 0 and 1, respectively; McArdle and Grimm, 2010)—were compared by construct using the chi-square difference test. Because the non-linear LGC specification did not prove superior to the more parsimonious linear model of either construct, the latter specification of latent curve was applied in the dual-domain model.

As recommended (Duncan et al., 2006), error terms were constrained to equality in all LGC models reflecting the assumption of adequate temporal stability of measurement. To evaluate the final dual-domain model we used the standard criteria for evaluation of model fit

[1] True data missingness (i.e., after discounting the effect of attrition) was rare (< 5%) and Little's test indicated that information related to the frequency of pornography use and the preference for coercive/violent content were missing completely at random ($\chi^2(42) = 47.97$, $p = .24$, and $\chi^2(65) = 65.87$, $p = .44$, respectively).

with FIML method (Jöreskog et al., 2016; Little, 2013): FIML chi-square test, RMSEA values, and chi-square/df ratio. The analyses were performed using LISREL 9.3 (Jöreskog and Sörbom, 2004; Jöreskog et al., 2016). While robustness of FIML against departures from normality remains debated (Jöreskog et al., 2016), it should be noted that multivariate normality as one of FIML assumptions could not be met by the study dataset.[2]

3. Results

The dynamics of pornography use and the preference for specific content in the 2-year study period are presented in Figure 1. Unlike the frequency of pornography use, which first slightly decreased (from T1 to T3) and then seemingly increased, the change in the preference for coercive/violent content was, overall, negative (its preference was the highest at T1, when it was reported by 8.1% of participants, and the lowest at T4 (4.6%)). At bivariate level, associations between male adolescents' pornography use and their preference for coercive/violent contents were inconsistent over time in size and direction, but very small where they were statistically significant (ranging from .15 to .22; see Table 1).

Figure 1 and Table 1 about here

Next, a parallel process LGCM was modeled (Figure 2). The model had a reasonably acceptable fit ($\chi^2(49) = 118.57$, $p < .001$; RMSEA = 0.076 [90% CI = .058 – .093]; $\chi^2/df = 2.42$). Statistically significant mean values of latent factors and significant variances in individual latent

[2] As a provisional robustness check, bootstrapped analyses with 5,000 resamples on the final LGC model with MI method to handle missing data were performed. These analyses resulted in a highly congruent pattern of findings to those obtained by FIML, both in terms of absolute parameter values and significance tests.

trajectories were confirmed for both constructs (see Table 2). Confirming the univariate observations, latent growth in pornography use was slight and positive ($M = 0.10$, S.E. = .03, $p < .001$). In contrast, the growth trajectory of the preference for coercive/violent content was negative ($M = –0.02$, S.E. = .01, $p < .05$). Although significant, this negative growth in the reported preference was practically negligent. It should be noted that these divergent latent trajectories do not support the CPT. An estimated non-significant covariance between the two growths factors provided a further and more direct test of the concept.

The only significant cross-domain relationship was the one between the frequency of pornography use at baseline and subsequent change in the preference for specific contents ($r = 0.40$, $p < .01$). Participants who used pornography more often at baseline reported a less substantive decrease in the preference for coercive/violent pornographic content over time. Significant and negative covariance between latent factors in either construct is likely an artifact related to the restricted measurement scales (the ceiling effect; see Little, 2013, p. 260).

Figure 2 and Table 2 about here

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4. Discussion

Although the CPT was first proposed more than thirty years ago (Zillmann and Bryant, 1984, 1986) and has reverberated ever since (Ley et al., 2014), this conceptual model has never been directly tested. Considering important ramifications of the CPT for adolescent well-being, this longitudinal study sought to empirically test the CPT and its expectation that over time pornography use would result in increasingly more specific and violent content preferences. Focusing on the dynamics of the preference for violent and/or coercive pornographic content, our findings failed to corroborate the CPT. Over and above insignificant associations between

changes in pornography use and the preference for aggressive content over time being observed, the dynamics of the content preference was negative. Contrary to the CPT, we found a small but significant decline in the preference for coercive/violent pornography across the 2-year period marking the transition between middle and late adolescence.

Interestingly, our analysis pointed to a significant association between higher baseline frequency of pornography use and less pronounced decline in the preference for coercive/violent contents over time. Although this finding neither supports nor falsifies the CPT, it suggests that higher pornography use is linked to more diverse content consumption (i.e., more heterogeneous interest) in adolescence. This may be relevant for subsequent dynamics of pornography use and should be further investigated.

Overall frequency of pornography use and the prevalence of aggressive content preference observed in this study are in line with the previous reports. A small but positive average growth in pornography use in our panel corresponds to little or no increase found in other longitudinal studies on European adolescents' pornography use (Peter and Valkenburg, 2009a, 2009b, 2011; Doornwaard et al., 2014; Baams et al., 2015; Beyens et al., 2015; Doornwaard, van den Eijnden, Baams et al., 2015). Similarly, low and somewhat declining levels of the preference for aggressive pornographic content among male Croatian adolescents (5–8%) are comparable to the available figures of < 5% and 10% (Ybarra et al., 2011, and Vandenbosch, 2015, respectively).

An aggregate-level finding that further contradicts the CPT can be found in a recent content analysis of videos uploaded to PornHub over the past decade, a period that saw unprecedented raise in accessibility and availability of online pornography (Shor & Seida, 2018). The authors reported no consistent increase in uploading violent content to this largest adult website by hosted material, but noted a downward trend in certain types of videos containing

violence. They also found that more recent videos contained shorter fragments depicting violent acts compared to those uploaded less recently. An earlier content analysis of videos available on popular pornographic websites (Klaassen & Peter, 2015) also contested the proposition that violent pornography is becoming increasingly mainstream.

It does not mean, however, that pornography use is necessarily unrelated to the preference for specific contents. As suggested in an earlier retrospective study (Štulhofer et al., 2010), a minority of men do exhibit a proclivity for non-mainstream pornographic contents and their frequency of pornography use is higher than average. A possible explanation of this link between the specific content preference and higher frequency of use would be that these specific sexual interests are easier to gratify through pornography use than in real life (i.e., with sexual partners). Two studies carried out in adolescent samples pointed to the role of specific socialization (hypergender orientation; Vandenbosch, 2015) and traumatic experiences, such as sexual victimization (Romito and Beltramini, 2015), in developing a preference for violent pornographic material.

More generally, the Confluence Model of sexual aggression (Malamuth, 1986; Malamuth et al., 2000; Malamuth and Hald, 2017) suggests a causal link from a disposition for sexual aggression (Malamuth et al., 2000) to the preference for violent pornographic material. It conceptualizes sexually aggressive behavior as an outcome of an interactive combination, or confluence, of specific personality traits and social factors, such as abusive upbringing, juvenile delinquency, impersonal sexuality, hyper gendered orientation, narcissism, and hostility towards women. Pornography, particularly when including violent or aggressive content, is assumed to be harmful only for users who score high on such risk factors. In contrast to the CPT, this conceptualization reverses the implied causal link arguing that it is the particular proclivities that

are responsible for higher violent pornography use (and its potential harmful behavioral outcomes), and not the other way around.

Although probably as well-known in the field as the Confluence Model—which, despite its shortcomings (see Baer et al., 2015), has been repeatedly shown to predict the target behavior (Malamuth and Hald, 2017; Malamuth, 2018)—the CPT is supported by surprisingly little evidence. While it remains influential in the current discussions over the existence and phenomenology of pornography addiction (Ley et al., 2014; Shor and Seida, 2018), the CPT seems to fail as a conceptual framework to clarify ramifications of adolescent pornography use. As indicated by the studies referred to above (Štulhofer et al., 2010; Vandenbosch, 2015; Romito and Beltramini, 2015; Malamuth, 2018), this may be so due to the model's overly reductionist discounting of demographic, socio-cultural, experiential, and personality factors that shape content preferences. More integrative conceptual frameworks such as the Confluence Model (cf. Hald et al., 2014, pp. 7–9) should be relied on in future studies of violent pornography use and temporal change in sexual content preference.

4.1 Study Strengths and Limitations

This study has several strengths. It represents the first longitudinal test of the concept (CPT) that has been frequently (and not just anecdotally) used in public discourse, but also in academic accounts of pornography use. The longitudinal design used here enabled a systematic and robust analytical test (LGCM) that examined the target relationship at between- and, even more importantly, intra-individual levels. The use of five time points secured not only a relatively lengthy observation period (about two years), but also a more precise simultaneous measurement of the dynamics of the two key constructs. Importantly, the study covered a vital developmental period of transition from middle to late adolescence, which is characterized by increasing

explorations of and experimentation with sexuality (including increasing pornography use and sexual debut for most young people; cf. Landripet et al., 2011).

However, several study limitations should also be considered. Firstly, the sample was affected by a considerable initial attrition. Although the attrition bias analysis indicated that participants included in this study did not differ from the rest of the panel in the key characteristics, this remains a potential problem—including restricted statistical power. Noteworthy, our sample size precluded statistically robust multi-group modeling to compare participants with initially high vs. low levels of pornography use (or between students who reported the first encounter with pornography at an earlier vs. later age).

Secondly, the two items that measured the preference for coercive/violent pornography had a limited response scale range, which affected growth estimations. Pertinent to both of these issues, the format and distributional characteristics of our data could not fully meet statistical requirements for FIML, despite the fact that it was the estimation method of choice given the study design and data structure. The observed departures from multivariate normality may have impacted parameter and model fit estimates, suggesting caution when interpreting this study's findings.

Thirdly, the perception of pornographic content as coercive and violent, or not, may have changed for some participants over time due to increasing sexual experience. The accumulating experience may have resulted in male adolescents being either less or more likely to interpret some scenes as coercive and violent then in the past. To measure such changes in order to control for possible bias in reporting content preference would likely be ethically problematic, because it would require asking adolescents detailed questions about specific sexual acts. Ethical reasons also guided our decision not to measure pornography genres in greater variety. This decision,

however, limited our ability to test the CPT, which postulates progression to more extreme material in general (e.g., bestiality), not only to more coercive and violent content.

Finally, it is possible that the link between pornography use and the preference for aggressive content was restricted to a small minority of participants characterized be extremely high frequency of pornography use. As already noted, this could not be assessed given this study's sample size. More importantly, although this study was running longer than most previous longitudinal studies of adolescent pornography use (cf. Koletić, 2017, p. 122) and covered an important developmental period (the transition from middle to late adolescence), we cannot rule out the possibility that the formation of the causal link between pornography use and the preference for aggressive content takes more time than observed. If so, the hypothesized link would not manifest before emerging adulthood or even later. However, this study's finding of a decline in the preference for coercive/violent pornography during the observed period, as well as the divergence between latent growth trajectories in this preference and pornography use, suggests that this is unlikely. Future longitudinal studies should aim to recruit larger panel samples of participants in the 16 to 25 age range using a more comprehensive measure of pornography genres to replicate our findings and gain a more complete account of the relationship between pornography use and specific content preferences.

5. Conclusions

Our findings failed to support the CPT as a valid model for understanding patterns and potential outcomes of pornography use among adolescents. Considering that a minority of adolescents in this and other studies reported the use of violent or aggressive pornography content (Ybarra et al., 2011; Vandenbosch, 2015)—which has been associated with sexually aggressive attitudes and behaviors in both adolescent and adult men (cf. Hald et al., 2014)—

other, more integrative, conceptualizations and testable hypotheses about the origins of this preference are needed. It was beyond this paper's scope to propose or test models that may prove more useful, including revisions to the CPT.

Although perhaps of greatest social concern, sexual aggression is not the only detrimental outcome that has been associated with pornography use. Out of nearly 350 studies on pornography use among adolescents published internationally in the 2005—2015 period, many reported one or more associations between pornography use—irrespective of its specific content—and various adverse outcomes ranging from reduced bodily self-esteem and sexual satisfaction to sexual objectification and sexual risk taking (Peter and Valkenburg, 2016). As online pornography has become widely available and easily accessible to adolescents (Martellozzo et al., 2016), the importance of school-based sexual education and media literacy programs aimed at critical reception of sexual media contents and reduction of its adverse outcomes (Vandenbosch and van Oosten, 2017) can hardly be overestimated.

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Figure 1 – The average frequency of male adolescents' pornography use and the preference for coercive and violent pornography contents across the period of 24 months (N = 248)

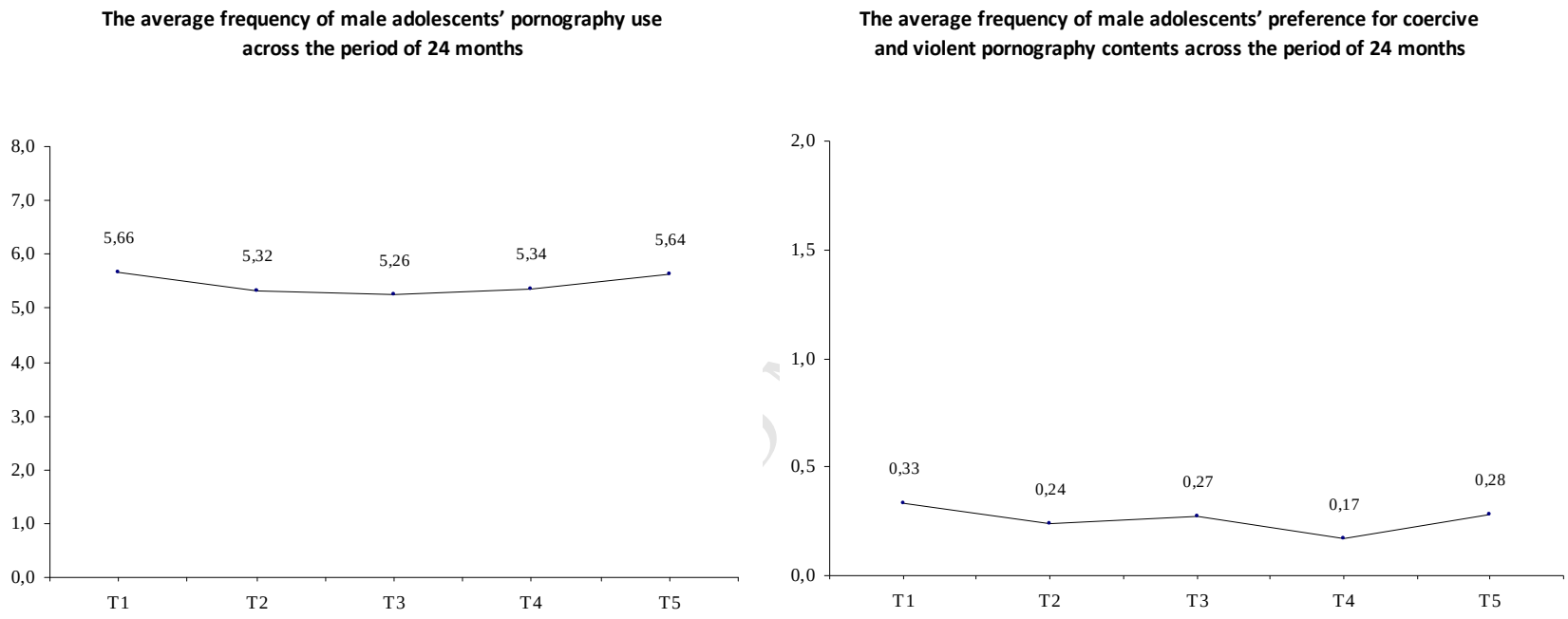
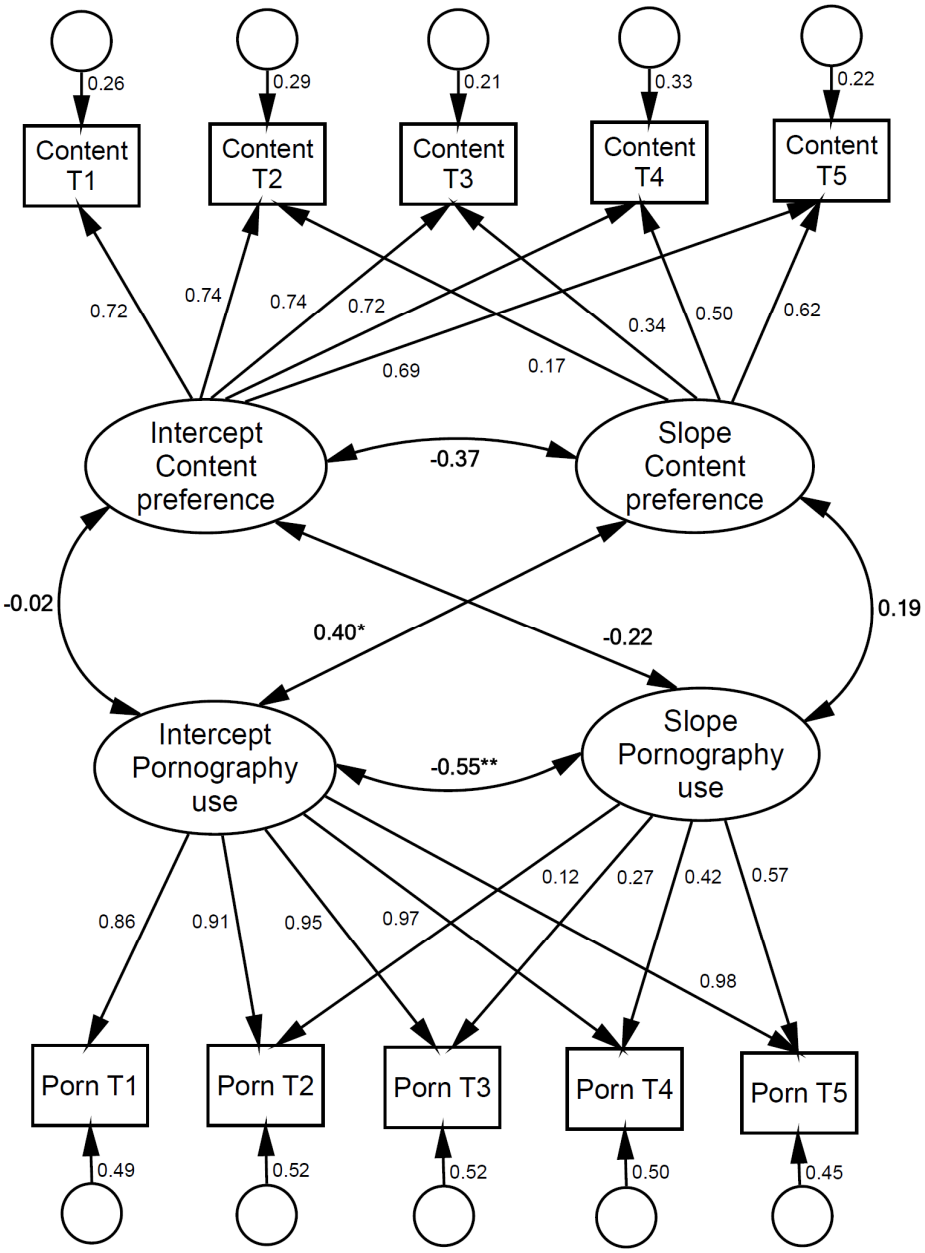


Figure 2 – Associations between the dynamics of male adolescents' pornography use and the preference for coercive and violent pornography contents over a 24-month period (dual-domain latent growth curve analysis)



$\chi^2(49) = 118.57$, $p < .001$; RMSEA = 0.076 [90% CI = .058–.093]; standardized estimates are presented; † $p < .05$, *$p < .01$, **$p < .001$

Table 1 – Descriptive indicators and bivariate associations between the key constructs

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	*M (SD)*	*Range*
(1) Pornography use T1	.58**	.60**	.54**	.44**	–.07	.07	.20**	.15	.18*	5.66 (1.71)	1–8
(2) Pornography use T2	1	.71**	.55**	.55**	–.07	.07	.14	.08	.02	5.32 (2.07)	1–8
(3) Pornography use T3	.71**	1	.73**	.73**	–.15*	–.03	.20**	.07	.07	5.26 (2.06)	1–8
(4) Pornography use T4	.55**	.73**	1	.63**	–.11	.03	.11	.07	.19*	5.34 (1.97)	1–8
(5) Pornography use T5	.55**	.73**	.63**	1	–.07	.08	.18*	.02	.22**	5.64 (1.73)	1–8
(6) Coercive/violent content use T1	–.07	–.15*	–.11	–.07	1	.43**	.43**	.49**	.36**	0.33 (0.62)	0–2
(7) Coercive/violent content use T2	.07	–.03	.03	.08	.43**	1	.34**	.40**	.48**	0.24 (0.59)	0–2
(8) Coercive/violent content use T3	.14	.20**	.11	.18*	.43**	.34**	1	.50**	.43**	0.27 (0.61)	0–2
(9) Coercive/violent content use T4	.08	.07	.07	.02	.49**	.40**	.50**	1	.68**	0.17 (0.49)	0–2
(10) Coercive/violent content use T5	.02	.07	.20*	.22**	.36**	.48**	.43**	.68**	1	0.28 (0.65)	0–2

*p < .05, **p < .01

Table 2 – Means and variances of latent constructs in the parallel growth model

Pornography use		
	Mean intercept	5.11 (S.E = .13)***
	Variance in individual intercepts	3.57 (S.E. = .40)***
	Mean slope	0.10 (S.E. = .03)***
	Variance in individual slopes	0.08 (S.E. = .02)***
Preference for specific contents		
	Mean intercept	0.30 (S.E = .04)***
	Variance in individual intercepts	0.18 (S.E = .03)***
	Mean slope	–0.02 (S.E = .01)*
	Variance in individual slopes	0.10 (S.E = .00)**

* p < .05, * p < .01, ** p < .001