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Young People's Perception of Internet Pornography: Case of Junior High School Students' in West Java Indonesia

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Abstract--- Pornography contents on the internet exists in a various kind possible that resulting in high rates of accidentally/involuntarily exposure towards internet users, e.g. pop up ads and web banner. This is mainly how children and young people encounter pornography contents. Internet pornography exposure on children and young people has affected their perception on pornography realism beside other impacts it may occur on children and young people. This study aims to investigate young people's perception on pornography contents and evaluate the difference between young male and young female perception towards pornography, mainly internet pornography contents. Methods used was quantitative by delivering questionnaires to 120 respondents of junior high school students in Bandung and Depok of West Java. Multistage sampling technique was employed to determine the sample. Quantitative descriptive analysis was applied to analyze primary data. Results indicate that young people found it confusing to define pornography but two predominate categories are sexual and 18+. Mostly young male define pornography as sexual while mostly young female define it as 18+ which comprises of large scope of content types. Mostly both young male and young female view pornography negatively but small numbers of young male view it positively indicates permissive attitude towards pornography contents.

Keywords--- Internet Pornography, Perception, Quantitative Descriptive, Young People.

I. Introduction

The emergence of Internet has brought human being into a new phase of life. Internet has proven to be the most reliable tools in assisting human's needs of information and communication. It has been said that Internet has enabled enormous benefits for most of human being facets of life from commerce to education, to social interaction, and political dialogue [1]. As a new media, Internet has an unprecedented character where everyone in this digital world is anonymous. Internet enables people to express themselves freely about everything they desire, communicate freely to anyone they attract to without any burden and almost without boundaries. Internet also enables people to produce, create, manipulate, modify, and spread content without gatekeepers.

Nevertheless nonetheless, it does not necessarily mean internet does not bring negative effects. Pornography has been one of the predominant negative sides of Internet. Literature to date have argued that the internet also enables an unprecedented availability of pornographic material [2]. In the past, every topic surrounded human sexuality and sexual activity might be considered as taboo. It corresponds to the difficulties people must encounter in accessing porn or pornography materials. Back in 1990s, the predominant media used to access pornography were magazines, videos/DVDs and television.

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Then, the emergence of Internet and Smartphone revolution followed by increasing high-speed Internet connection allowing easy, cheap, and convenient access to all types of pornography [3]. Nowadays, Internet has become one of the predominant media used to access pornography besides videos/DVDs, television and magazines[4].

Flood in his study mentioned a growing body of international scholarship documents significant proportions of children and young people are exposed to pornography. He also compiles number of studies that document large numbers of young people, particularly boys, who growing up in the presence of sexually explicit media, according to studies in Australia, Cambodia, Canada, Denmark and Norway, Iceland, Italy, Sweden, and Taiwan [5]. Children and young people nowadays categorized into digital native meaning generation who interact with digital world since they were born and during their growing up period. Pornography contents are available almost everywhere on the internet allowing free and effortless access for children and young people, for instance in the form of pop up ads and/or web banner. Irresponsible people are taking advantages of the internet by producing and distributing pornography contents through pornography website and ads.

Moreover, the work of Owens et al has mentioned that the proliferation and mainstreaming of pornography over the last 2 decades, especially through the internet, have influenced youth culture and adolescent development in unprecedented and diverse ways also research has shown significant increases in the number of youth who are intentionally or accidentally encountering pornographic material online [6]. The World Internet Report surveyed 12 to 14 years old from thirteen different countries and found that 100% of British youth, 98% of Israeli youth, 96% of Czech youth, and 95% of Canadian youth reported using the Internet regularly [7]. According to Indonesian Association of Internet Service Provider's (known as APJII in Indonesia) survey in 2017, there were 143,26millions out of 262 millions of Indonesian citizens actively using internet where 49,52% of the total numbers comprised of children and young people. Furthermore, APJII also accounted that Indonesian Internet users by age comprises of 16,68% of 13-18 years old, 49,52% of 19-34 years old, 29,55% of 35-54 years old, and 4,24% of older than 54 years old. The data shows Indonesian Internet users are dominated by young people[8].

Pornography is one of the most accessible materials on the Internet in Indonesia. Backin 2006, *Aliansi Selamatkan Anak* (ASA) Indonesia claimed that Indonesia is one of the countries without evident regulations of pornography also set a record as number 2 the most susceptible to pornography penetration towards children and young people in the world (number 1 is Russia). This claim corresponds to study in 2002 by Raviqoh (2002) on senior high school students in Jakarta documented 44% of the respondents' exposed by pornography for the first time at the age of 13 years old which comprised 92,7% have experienced reading porn book, 86,2% have experienced watching porn movie, 89,1% have experienced watching porn video, and as many as 87,1% have experienced viewing porn on the internet [9]. Notwithstanding Indonesia has enacted laws of Anti-Pornography in 2008, the numbers of internet pornography exposure still increasing to date. One of recent studies in Indonesia by *Yayasan Kita dan Buah Hati* showed 90% of 2064 primary school students by the age of 10-12 years old in Jabodetabek confess to have viewed pornography on the internet. Another study in Mataram done by Mariani and Bachtiar towards 1415 junior high school students in 2010 also documented 90% of respondents have been exposed by internet pornography [10].

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All of this indicates Indonesia indeed has such high penetration of internet pornography on children and young people notwithstanding the enactment of Anti-Pornography laws in 2008. As mentioned above, internet pornography exposure on children and young people happened in two different ways, deliberately and accidentally/involuntarily. Either way, pornography exposure on the internet may have affected young people view and perception regarding pornography and sex realism. This study aims to investigate young people perception on pornography they have run across on the internet. A report of literature study surrounding children and pornography done by a group of scholars under Children Commissioner of England in 2013 made some important highlights to answer the question about the impact on children of viewing pornography. One of the highlights is there are gender differences is exposure and access to pornography. It was recorded that boys and young men generally view pornography more positively and state that they view it primarily out of curiosity while girls and young women generally report that it is unwelcome and socially distasteful and they feel much more uncomfortable than boys and young men when viewing pornography [11]. This study will evaluate the finding in the context of junior high schools students' perception on internet pornography.

II. LITERATURE REVIEW

Young people or mostly known as teenagers or adolescences are unique human being with unique characteristic due to puberty transition during the period of time. Most literature studying the effect of pornography used "children" and "young people" term to refers to this group of age. We chose to use "young people" term in referring our respondents. Young people in our study refers to the definition of adolescents by WHO, that is citizen in the age ranging of 10-19 years old.

Pornography is something that widely known and acknowledged by people but then its definition is varied among scholars. Owens et al in their study has compiled a couple of the pornography definitions: 1) Tsitsika et al. (2009) defined pornography internet sites as "illicit internet sites potraying sexual behaviors and practices"; 2) Reid and colleagues (2011) defined pornography as material that (a) creates of elicits sexual feelings or thoughts, and (b) contains explicit images or descriptions of sexual acts involving the genitals (e.g., vaginal or anal intercourse, oral sex, masturbation, etc.)[6]. However, in this study we did not provide specific definition of pornography as we were investigating young people's perception towards the term where one of the questions given was "In your opinion, what is pornography?". We would like to know the definition of pornography based on our respondents' opinions and experiences on the internet. In this study context, internet refers to all form of access to World Wide Web including all the platforms using any kind of digital tools. While internet pornography in this study refers to all of the pornography contents found online in the Internet. Santrock (2012) argued that young people more attract to sex materials in pornography than in the form of sex education. This is related to the puberty transition period experienced by young people [12].

A report of literature study surrounding children and pornographydone by a group of scholars under Children Commissioner of England in 2013 made some important highlights to answer the question about the impact on children of viewing pornography. There were 8 highlights in total. Finding 1) A significant proportion of children and young people are exposed to or access pornography.

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Ybarra and Mitchell (2005) report that children and young people who reported unintentional online exposure

were more than 2.5 times as likely to report intentional exposure online[11]. Hardy et al. in their study compiled

previous study stated that recent advances in technology, particularly the internet and "smartphones," have led to

increase in pornography viewing by adolescents also it is estimated that nearly half of adolescent internet users have

viewed online pornography in the past year, with about two-thirds of those reporting only unwanted exposure [13].

Finding 2) exposure is more prevalent than access. Studies that have distinguished between exposure and access

report that unwanted exposure appears more prevalent than (ostensibly) deliberate access notwithstanding rates vary

considerably between 4 and 6 per cent of children and young people reporting unwanted exposure [11]. Finding 3)

there are gender differences in exposure and access to pornography. Finding 4) Exposure and access to pornography

appear to increase with age. Young men and boys are more likely to access, seek or use pornography and are

exposed to or access pornography more frequently [11].

Finding 5) Children and young people's exposure and access to pornography occur both online and offline [11].

While all of studies above documented online pornography exposure, a study in 2014 in Pontianak documented

pornography exposure on the television and magazines toward young people of junior high school and senior high

school in Pontianak, an example of offline pornography exposure [12].

There are also considerable amounts of studies regarding young people's perception on pornography. A study

taken place in Sweden in 2010 aimed to investigate young people age 14-20 years old regarding their perception and

experience with pornography found that the cultural script concerning pornography seems to have changed from

having been regarded as shameful and morally reprehensible to something socially accepted. Primarily due to the

internet, pornography has become an integral part of everyday life of young people [14]. Another study of Flood

"The Harms of Pornography Exposure Among Children and Young People" concluded that more widely, the

shifting cultural and collective dynamics of children's and young people's social, sexual, and gender relations are

likely to have a profound influence on the use, meaning, and impact of pornography [5].

III. RESEARCH METHOD

This study is a small part of a larger study regarding the effects of internet pornography exposure on young

people in West Java where the method used was mixed methods. The research conducted in 2018 and located in

West Java because of its highest numbers of early-age marriage in Indonesia. During our pre-research and literature

study regarding early-age marriage, one of its findings showed that one of the prominent factors of early-age

marriage is internet pornography exposure on young people. Thus, it needs further research regarding internet

pornography exposure effects towards young people in West Java.

This study aims to investigate young people's perception on internet pornography. Method used was quantitative

descriptive methods in order to describe young people's perception towards internet pornography. This study

population includesall of young people studies at junior high school in West Java. Considering the vast area

coverage and the degree of citizens proliferation, multistage sampling was employed in determining the research

sample whom represents young people of West Java. First stage, two cities was chosen based on its highest numbers

of districts in West Java, that is Depok City and Bandung City.

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Second stage, one of the best 5 junior high schools in each city was chosen to represent the city. Third stage, one

class chosen randomly from each class year to represent the class year. The last stage, 20 students chosen randomly

from each class as the representatives. Thus, there were 60 students from each junior high school. Hence, the study

conducted on 120 junior high school students age of 12-15 years old. The two schools chosen as sample were Junior

High School 2 of Bandung and Junior High School 2 of Depok.

Primary data collected through questionnaires handed to the respondents. 120 responds were received out of 120

questionnaires handed, means 100% of feedback respond. Questionnaire was designed with both close and open-

ended questions. The questions regarding perception was designed as open-ended questions enabled respondents to

elaborate on their answers and opinions. Primary data then collected and categorized into groups. Descriptive

analysis conducted to answer research question.

IV. RESULT AND DISCUSSION

Respondents Profile

This study conducted in 2 states junior high school in Bandung and Depok. There were 120 respondents in total

comprised of 33,9% male students and 66,1% female students with the age ranging of 13-15 years old. Beside

school activities, more than half of the respondents also documented active in school organizations (63,6%),

particularly interest talent field, while 34,7% do not joint in any organization activities, and 1,7% admit to active in

religious organization. With the age ranging of 13-15 years old, our respondents categorized into digital natives

group meaning a generation who familiar with information technology since they were born. Data documented

95,9% respondents own a personal smartphone and none of them not having one. Personal smartphone in that age

causing high internet activities proven by 94,2% respondents declared of accessing internet through their

smartphone and only 4,1% accessing internet using computer or personal computer.

Regarding respondents' internet access behavior, 94,2% respondents access internet when they are at home

while 4,1% accessing it at school with most of the respondents' (57%) daily access time ranging from 5-10 hours

per day, which we categorize into heavy user group, and the rest of respondents (36,4%) only accessing internet less

than 5 hours per day, which we categorize into light user group. Some of the respondents' internet activity including

social media (65,3%), games (26%), and music player platform (8,3%). Data also show that most of respondents

spend 50.000-100.000 rupiah per month for their mobile data and regular phone (65,3%) while the rest spend less

than 50.000 rupiah per month (22,3%).

To be able to describe respondents' perception towards pornography content they come across on the internet,

open ended questions were given. From the data collected, the answers were categorized and will be described in

two different parts which interlinked.

Young People's Definition of Pornography

First question given was 'in your opinion, what is pornography definition?'. Answers collected from this question

were varied but mostly categorized into two predominate category, that is sexual and 18+, with the percentage of

47,5% and 43,3% consecutively (see graphic 1). As in sexual category respondents referred to the act of couple

kissing, intercourse, having sex, vulgar, and arousing.

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It is in accordance with the study titled 'Analysis of Adolescents Reception towards Pornography Texts in Online Sex Website' where mostly respondents define pornography as something that showing sexuality, sexual exploitation of genitals and all of other sexual activities [15]. Data also show the difference of young male and young female in defining pornography where more young male define pornography as sexuality and all of the sexual activities related while more young female define it as 18+ contents which forbidden for underage.

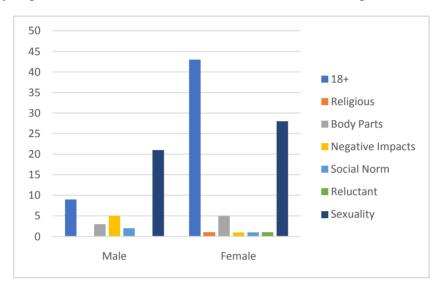


Figure 1: Young People's Definition of Pornography

Source: Research result, 2018

On the other hand, 18+ category respondents referred to the image of it only appropriate for people who are older than 18+ and any kind of these images are not appropriate also have bad effects on children underage. This is in accordance with the result of Spišák's study on Finlandia's young people which demonstrate that they understand pornographic material has been classified as inappropriate for minors [16]. Then it is proven to be a public awareness that pornography is only for adults consumption and forbidden for minors. While the rest of respondents defined pornography as everything showing nudity or half-naked woman (body parts), a disgrace for the society (social norm), an act of sin (religious), also materials which affect badly on children and young people's brain and it might causing brain damage (negative impacts). The latest also relevant to data documented by Spišák, that is young people in Finlandia aware and understand of the potential harmful consequences of the sexually explicit images they are consuming [16].

The various definitions of pornography by respondents has proven how confusing the term itself for the young people. This is in accordance to the result of literature study conducted under Children Commissioner of England surrounding children and pornography, where in the workshop with young people they found that generally it is complicated and challenging for the young people to define pornography [11]. As Spišák argued in his study, pornography itself remains an elusive concept. There is a lack of clarity whether the term 'pornography' should entail only representations with explicit depictions of sexual acts, should include any nudity and simulated sexual behavior or should any materials that have a capacity to result in sexual arousal [16].

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Another literature study conducted by Owen et al. argued that looking for the definition of pornography is very challenging since everyone knows what it is when one sees it but could not clearly define it into words [6].

This has shown how pornography is not only confusing for young people but also for everyone who have experienced of viewing it but could not come up with a consensus definition of it. It is also a prove how evolving and expanding pornography is as a phenomenon, both online and offline. Results also indicate that mostly respondents' definition of pornography based on their experience viewing it, either accidentally or deliberately.

Young People's Attitude towards Pornography Contents

Results show respondents' different attitude towards pornography contents on the internet. Mostly respondents view pornography negatively (76,7%) also disgusted by the contents (17,5%). Respondents' negative view refers to the negative impacts of pornography contents might cause on their brain, also refers to amoral, causing addiction, dangerous, inappropriate, and should be liquidated from this world. On the other hand, other respondents find pornography contents very disgusting and unpleasant to see. This is relevant to the results of Aryani's study which claimed that all of her informants view pornography as something destructive, amoral, and have negative impacts on people who consume it[15]. Data also show that both young male and young female have similar attitude towards pornography where most of the respondents view pornography negatively (as seen in graphic 2).

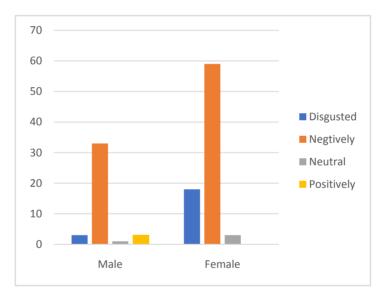


Figure 2: Young People's Attitude towards Pornography Contents

Source: Research result, 2018

However, there are small numbers of respondents who regard pornography positively and even do not bothered by the distribution of the contents (neutral), that is 2,5% and 3,3% consecutively. Data show only young male respondents who regard pornography positively. Respondents' positive view refers to the benefit of pornography contents for them, that is as self-indulgence and to relieve stress. While the neutral ones claimed that the dissemination of pornography contents is not harmful if it is restricted only for 18+. This attitudes indicate typical heavy viewers of internet pornography. It is in accordance to Owens et al. literature study in which compiled several studies arguing that exposure to sexually explicit material on the internet had a greater influence on permissive

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sexual attitudes than all other forms of pornographic media. For instance, a recent study of male Swedish high

school students supported the findings that frequent male viewers of sexually explicit material had more liberal or

positive attitudes towards sexually explicit material that those who viewed pornography less frequently or not at all.

Braun-Courville and Rojas (2009) also found that the more frequently an adolescent is exposed to sexually explicit

materials, the greater their sexually permissive attitudes. Brown and L'Engle (2009) conducted a longitudinal study

that confirmed a relationship between permissive sexual attitudes and exposure to sexually explicit material [6].

Another study titled 'Lust, Love, and Life: A Qualitative Study of Swedish Adolescents' Perceptions and

Experiences with Pornography' claimed that the study results illustrated the cultural script concerning pornography

seems to have changed from having been regarded as shameful and morally reprehensible to something socially

accepted. Primarily due to the internet, pornography has become an integral part of the everyday life of young

people[14]. It is concerning that few young people in the age of 13-15 years old have become permissive and

viewing pornography content as something socially accepted and normal.

Although it is only small numbers of respondents but it needs intensive attention from both parents and teachers

at school. This type of respondent might have experienced heavy consumption of internet pornography that results in

permissive attitudes toward pornography contents.

V. CONCLUSION

The increasing numbers of internet pornography exposure on young people has become a very big concern all

over the world proven by a big body of literatures surrounding children, young people, and pornography. These

literatures mainly focus on the effects of pornography exposure on children and young people since internet

pornography is unavoidable. Today, with the revolution of smartphone and high-speed internet connection, people

are taking advantages by producing, reduplicating, multiplying, and distributing pornography contents freely and

widely.

This study has shown and confirmed that pornography is such a challenging term to define, not only for young

people but also for all the scholars who study it. Despite the confusion, mostly respondents define pornography as

something that sexual and is only for 18+ consumption. The other definitions include everything showing nudity or

half-naked woman (body parts), a disgrace for the society (social norm), an act of sin (religious), also materials

which affect badly on children and young people's brain and it might causing brain damage (negative impacts).

Other finding shows young people's negative attitudes toward pornography contents where they regard it as

dangerous, addictive, causing brain damage, amoral, and inappropriate. However, small numbers of young male

respondents regard it positively even do not bothered by the distribution of the contents. They view it as something

beneficial for self-indulgence and relieving stress. These respondents become permissive towards pornography

contents and consider it as normal and socially accepted. Meanwhile, young female views pornography contents

negatively, disgusted, and neutral.

Also, this study also found how differs young male and young female in viewing pornography. Although, mostly

both young male and young female view pornography contents negatively, they have different way in defining it.

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Most of young male define pornography as sexuality involving sexual activities in any ways while most young female define pornography as restricted for only 18+ and not appropriate for underage where the scope of contents could be varied including holding hands, hugging, kissing, and more intimate sexual activities.

VI. LIMITATIONS AND STUDY FORWARD

The results of the study are very limited because of the method used. We can only analyze answers based on what respondents stated on their questionnaire sheet. Thus, the results only cover superficial perception of young people towards internet pornography. Based on this study, further research using qualitative method need to be conducted in order to provide scholars with more comprehensive and understanding towards young people's perception on internet pornography based on their experience with pornography. This study did not investigate the difference between young people who accidentally exposed by internet pornography perception and who deliberately actively accessing internet pornography perception. Hence, it needs further research elaborating the difference using qualitative methods.

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REFERENCES

- [1] J. (University of T. Prichard, C. Spiranovic, P. Watters, and C. Lueg, "Young People, Child Pornography, and Subcultural Norms on the Internet," *Int. Rev. Res. Open Distance Learn.*, vol. 14, no. 4, pp. 90–103, 2013.
- [2] A. Štulhofer, V. Buško, and G. Schmidt, "Adolescent exposure to pornography and relationship intimacy in young adulthood," *Psychol. Sex.*, vol. 3, no. 2, pp. 95–107, 2012.
- B. Edelman, "Markets: Red Light States: Who Buys Online Adult Entertainment?," *J. Econ. Perspect.*, vol. 23, no. 1, pp. 209–220, 2009.
- [4] E. M. Morgan, "Associations between Young Adults' Use of Sexually Explicit Materials and Their Sexual Preferences, Behaviors, and Satisfaction," *J. Sex Res.*, vol. 48, no. 6, pp. 520–530, 2011.
- [5] M. Flood, "The Harms of Pornography Exposure Among Children and Young People," *Child Abus. Rev.*, vol. 19, no. 3, pp. 169–171, 2010.
- [6] E. W. Owens, R. J. Behun, J. C. Manning, and R. C. Reid, "The Impact of Internet Pornography on Adolescents: A Review of the Research," *Sex. Addict. Compulsivity*, vol. 19, no. 1–2, pp. 99–122, 2012.
- [7] D. Lawsky, "American Youth Trail in Internet Use: survey," *Reuters*, 2008. .
- [8] F. B. Adhitia, "Millennials Dominasi Penggunaan Internet, Kebanyakan untuk Chatting dan Media Sosial," *IDN Times*, 2018.
- [9] Euis Supriati and Sandra Fikawati, "Efek Paparan Pornografi Pada Remaja SMP Negeri Kota Pontianak Tahun 2008," *Makara Sos. Hum.*, vol. 13, no. 1, pp. 48–56, 2009.
- [10] Mariani and Bachtiar, "Pornographic Exposure and Sexual Behavior of State Junior High School Students in Mataram," vol. 14, no. 2, pp. 83–90, 2010.
- [11] M. A. H. Horvath, L. Alys, K. Massey, A. Pina, M. Scally, and J. R. Adler, "A Rapid Evidence Assessment on the Effects that Access and Exposure to Pornography has on Children and Young People," 2013.
- [12] L. Suwarni and Selviana, "Inisiasi Seks Pranikah Remaja dan Faktor yang Mempengaruhi," *J. Kesehat. Masy.*, vol. 10, no. 2, pp. 169–177, 2015.
- [13] S. A. Hardy, M. A. Steelman, S. M. Coyne, and R. D. Ridge, "Adolescent religiousness as a protective factor against pornography use," *J. Appl. Dev. Psychol.*, vol. 34, no. 3, pp. 131–139, 2013.

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- [14] L. Löfgren-Mårtenson and S. A. Månsson, "Lust, love, and life: A qualitative study of swedish adolescents' perceptions and experiences with pornography," *J. Sex Res.*, vol. 47, no. 6, pp. 568–579, 2010.
- [15] A. Kandi, "'Analisis Penerimaan Remaja terhadap Wacana Pornografi dalam Situs-Situs Seks di Media Online," *J. Masy. Kebud. dan Polit.*, vol. 19, no. 2, pp. 1–27, 2006.
- [16] S. Spišák, "Everywhere they say it's harmful but they don't say how, so I'm asking here': young people, pornography and negotiations with notions of risk and harm," *Sex Educ. Sex. Soc. Learn.*, vol. 16, no. 2, pp. 130–142, 2016.