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ORIGINAL PAPER

Male Adolescents with Mild Intellectual Disabilities: Normative Sexual Development and Factors Associated with Sexual Risks

Mirthe C. Verbeek[1] · **Maartje Luijk**[1] · **Joyce Weeland**[1] · **Daphne van de Bongardt**[1]

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Abstract

This study aimed to (1) describe male mildly intellectually disabled (MID) adolescents' general romantic and sexual development, education experience with topics on sexuality and relationships, and frequency of undesirable sexual behaviors and experiences; and (2) explore how sexuality related attitudes, self-esteem, sexual knowledge, and resilience to peer pressure link to MID male adolescents' sexual and dating violence (SDV) perpetration, SDV victimization and sexual risk behavior. We used baseline data from a randomized controlled trial on a program for psychosexual health promotion and prevention of undesirable sexual experiences for MID male adolescents (N=120, M_{age} = 15.03 years), assessed with self-report questionnaires. We examined cross-sectional associations with correlations and (logistic) regression analyses between sexuality-related attitudes, global self-esteem, sexual knowledge, and resilience to peer pressure with SDV perpetration, SDV victimization and behavioral intentions following sexual rejection. Results indicated that male MID adolescents were romantically and sexually active, and reported unsafe sex, 47.7% experienced SDV perpetration and 33.9% victimization. Positive attitudes towards dating violence were associated with having experienced both SDV perpetration and victimization, and more adherence to heterosexual double standards was related to more negative and fewer positive behavioral intentions upon sexual rejection. Participants who experienced SDV victimization had more sexual knowledge. Self-esteem and resilience to peer pressure were unrelated to SDV. Concluding, male MID adolescents are similarly sexually active to the general population but may need more guidance in the form of timely, tailored prevention and education. We provide concrete suggestions such as focusing on changing attitudes and practicing skills.

Keywords Sexual assault · Male youth · Sexual development · Learning disability · Risk factors · Netherlands

✉ Mirthe C. Verbeek
m.c.verbeek@essb.eur.nl

[1] Youth and Family, Department of Psychology, Education and Child Studies, Erasmus School of Social and Behavioural Sciences, Erasmus University Rotterdam, P.O. Box 1738, Rotterdam 3000 DR, The Netherlands

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Worldwide, an estimated 1% of adolescents have a mild intellectual disability (MID), defined as having an IQ between 50 and 70 in combination with difficulties in socio-emotional and cognitive domains [1, 2]. Despite these developmental and clinical challenges, studies suggest that adolescents with MID develop romantically and sexually at a rate similar to the general population: most MID adolescents around the age of 15 have experience with dating and romantic relationships, and most have had sexual intercourse by the age of 20 [3]. At the same time, MID adolescents show more sexual risk behavior in terms of contraception and sexually transmitted infections (STIs) compared to the general population of adolescents [4]. Moreover, adolescents with MID, and specifically male adolescents with MID, are at an increased risk of both experiencing and perpetrating sexual violence (i.e., sexual activity where consent is not received or freely given) and dating violence (i.e., psychological, physical and/or sexual violence between adolescent dating partners) hereafter termed SDV [5–7].

One explanation for the elevated sexual risks that MID adolescents face may be a knowledge gap. Overall, MID adolescents have been shown to possess on average less sexual knowledge than non-MID adolescents [8]. Specifically, knowledge regarding safe sex, masturbation, and sexual intercourse is lacking [9, 10]. Also, MID adolescents' sexual knowledge tends to be relatively superficial or not entirely correct, and not readily transferable to actual safe sex behavior [10, 11].

The lack of sexual knowledge may be explained by MID adolescents' limited access to understandable information and education about sexuality [8, 12]. Studies have shown that MID adolescents have smaller social networks, receive less information from various sources (e.g., parents, friends, school, doctors, and media), and have lower rates of receiving sexuality and relationships education compared to non-MID adolescents [13, 14]. Whilst parents are often the only available source of information, parents of MID children may feel ill-equipped and reluctant to provide sexuality and relationships education, specifically because of fears about their child's ability to cope with sexuality and/or not realizing their child's need for sexuality and relationships education [15, 16]. These findings highlight the need for improved access to comprehensive, adapted, and professionally delivered sexuality and relationships education for MID adolescents, especially considering their sexual risks [8, 11].

Currently, three important gaps in the literature result in limited scientific knowledge on which elements would constitute effective sexuality and relationships education for MID adolescents. First, very few studies specifically target this developmentally and clinically relevant population. The existing studies so far have paid more attention to severely intellectually disabled people, adults compared to adolescents, and girls or women compared to boys and men. Internationally therefore, male adolescents with MID specifically, are an under-researched and underserved population when it comes to intimate relationships and sexuality [17, 18].

Second, studies rarely include MID adolescents themselves as informants, often drawing on parent or teacher reports and case files or ask MID adolescents face to face about their sexual (violence) experiences [18, 19]. Considering the sensitive and private nature of sexuality, these methods may result in two knowledge gaps. First, information obtained from other sources will never provide a full picture of intra-individual sexual emotions, attitudes, cognitions, and experiences [20, 21]. Second, face to face interviewing might limit disclosure [22].

Third, apart from a rather large body of literature on MID adolescents' sexual knowledge and on which topics this is lacking (e.g., intercourse), little research exists on other factors that help or hinder MID adolescents' healthy romantic and sexual development. In the general population, more socially constructed and subconscious factors, such as attitudes and social norms (both descriptive and injunctive) and resilience to peer pressure have been proved to be related to both SDV experiences [23] and safe sexual practices [24]. For instance, studies found that male adolescents endorsing more gender inequitable attitudes and more positive attitudes toward dating violence, engaged more often in SDV perpetration [25, 26]. To date, researchers have not yet comprehensively investigated such processes among male MID adolescents, thus limiting relevant directions for prevention programs designed for this population.

Current Study

To close these knowledge gaps, this pre-registered study [27] aimed to:

1) Describe a sample of male MID adolescents regarding general romantic and sexual developmental milestones (i.e., experiencing being in love, having a romantic relationship and various coital and non-coital sexual behaviors), experience with sexuality and relationships education, and the frequency of undesirable sexual experiences (i.e., sexual and dating violence perpetration and victimization).

2) Explore how a set of factors on various socio-cognitive levels (i.e., attitudinal, cognitive, and psychological) link to MID adolescents' experiences with (intended) sexual and dating violence (SDV) perpetration, SDV victimization and sexual risk behavior. This aim is partly exploratory because we use available baseline data from the Move Up! Project: a randomized controlled trial (RCT) evaluating the effectiveness of a group counselling program for male MID adolescents aged 14 to 21 years in the Netherlands, called Make a Move+ (MaM+) pre-registered on the Open Science Forum (OSF), see [28]. MaM+aims to improve sexual attitudes, sexual knowledge, global self-esteem, and sexual interaction-, self-regulation- and peer resilience skills, to ultimately improve psychosexual health and prevent undesirable sexual experiences (i.e., SDV perpetration and victimization, and risky sexual behavior) [29]. The factors that we explore in the current study are directly related to these program aims.

Methods

Participants

The sample of the Move Up! project consisted of $N=120$ male MID adolescents aged 11 to 21 years ($M=15.03$, $SD=1.46$) in total, of which we have demographic information and information regarding their romantic and sexual development (Aim 1). Just over 50% identify as fully Dutch and the rest as a range of other (combined) cultural identities. We obtained baseline questionnaires from $n=109$ participants, the sample for our final analyses (Aim 2). All participants attended special education and/or lived in residential youth care.

Procedure

Upon developing the online questionnaire, we simplified the language using 'Language for all' principles [30], and limited answer options to a maximum of five as much as possible. Next, we piloted the questionnaire with six male adolescents with MID and adjusted it accordingly. Participants of the study were shown a video covering the study's procedure and ethical standards, whereafter they signed informed consent themselves, as did parents or legal guardians for adolescents under 16 years old and adolescents who could not entirely understand giving consent themselves. Next, participants completed the questionnaires at their school or youth care institution, where the researchers and trained research assistants were present to ensure participants' understanding, and privacy. Considering participants' possible reading and/or language difficulties, all parts of the questionnaire could be read aloud, using built-in audio clips. Hereto, we provided headphones that participants could keep as a gift, and all participants received a gift card worth €5.

Ethics

We developed the study design, recruitment, procedure, and instruments in close collaboration with an advisory committee of practitioners, youth care workers and researchers working with the target group (adolescents with MID). The ethics review committee of the Department of Psychology, Education and Child Studies at Erasmus University Rotterdam decided it was exempt from medical ethical testing and approved of the project (decision number 21–026).

Measures

Romantic and Sexual Experience

We assessed participants' romantic experience by asking whether they had (1) ever been in love, (2) ever had a romantic relationship, (3) were currently in a romantic relationship and if so (a) with a boy/girl/x, (b) relationship duration and (c) romantic partner's age. We assessed sexual experience by asking participants about their experience, 0=*No*, 1=*Yes*, 2=*Prefer not to say* with seven coital and non-coital sexual behaviors, see Table 1 [31].

Sexuality and Relationships Education

We asked: 'Have you ever received education surrounding love or sexuality?', 0=*No*, 1=*Yes*, 2=*Don't remember*, and if yes, 'How do you evaluate the education you received, on a scale of 1 to 10?'.

Attitudes

Attitudes toward dating violence. We used 8 items from the Attitudes Towards Male Dating Violence (AMDV) scale, developed and validated by Price et al. [32] and adapted by Van Lieshout et al. [33] (e.g., 'Some girls/boys deserve to be slapped by their boyfriends'; *Strongly disagree* (1) – *Strongly agree* (5)).

Table 1 Romantic and Sexual Development and Experience

Sexual and Romantic Experience ($N=120$)	Yes[a]	
Being in love	86.7%	
Romantic relationship experience	84.2%	
Currently in a romantic relationship	26.7%	
French Kissing	44.2%	
Masturbation	46.7%	
Naked touching or caressing	23.3%	
Manual sex (giving or receiving)	30.0%	
Oral sex (giving or receiving)	26.7%	
Vaginal sex	22.5%	
Anal sex	0.8%	
Behavioral Intention Upon Sexual Rejection ($n=109$)	*M* (*SD*)	Range
Positive	5.25 (1.52)	1–7
Negative	1.55 (1.00)	1–7
SDV Experience ($n=109$)	Perpetrated	Victimized
Coercion into performing sexual acts	0%	5.5%
Forwarding/showing of nude/sexy photos to others without consent	21.1%	10.1%
Kissing without consent	8.3%	18.3%
Persuading into performing sexual acts	9.2%	11.0%
Showing genitals without consent	4.6%	17.4%
Showing pictures/videos of naked people without consent	8.3%	26.6%
Touching private parts without consent	8.3%	16.5%
At least one of these behaviors/ experiences	33.9%	47.7%

[a] The other percentages reported *No* or *Prefer not to say*

Attitudes Towards Positive Sexual Behavior. We adapted the sexual competence scale developed for Dutch adolescents [31] to an attitudinal measure asking all participants what they found important instead of what they do, allowing us to include also those without sexual experience. The adapted scale started with 'When I have sex, I think it is important…' followed by 5 items (e.g., 'To pay a lot of attention to what the boy or girl with whom I have sex likes'; 1 = *Strongly disagree* – 5 = *Strongly agree*).

Attitudes Towards Sexual Communication. We used a scale developed by Van Lieshout et al. [33], starting with 'Asking my girlfriend/boyfriend what they do and do not want during sex, seems to me…' followed by 3 responses: [item 1] (1 = *Not good at all* – 5 = *Very good*), [item 2] (1 = *Very unimportant* – 5 = *Very important*), [item 3] (1 = *Very uncomfortable* – 5 = *Very comfortable*).

Adversarial Sexual Beliefs. Negative attitudes towards girls/women were assessed with 3 items adapted from Burt [34] by Van Lieshout et al. [33] (e.g., 'I think women mostly date men as to make use of them'; 1 = *Strongly disagree* – 5 = *Strongly agree*).

Heterosexual Double Standard. Being more permissive towards boys than towards girls when it comes to sex was assessed with 6 items with the highest factor loadings from the Scale for the Sexual Standards Among Adolescents (SASSY) developed and validated in Dutch by Emmerink et al. [35] (e.g., 'I think that a girl who takes the initiative in sex is pushy'; 1 = *Strongly disagree* – 5 = *Strongly agree*).

Mean scores were calculated for all attitude scales with a minimum of 1 and a maximum of 5, with higher scores indicating stronger adherence to that attitude.

Sexual Knowledge. We used 8 rewritten quiz questions from different MaM + sessions, covering topics related to puberty, respecting boundaries, anatomy, and flirting (e.g., 'All girls bleed when they have sex for the first time with a boy. This is because the hymen breaks'; 1 = *True, 2* = *False*, 3 = *I don't know*). We computed a sum score of 0 to 8 based on the number of correct answers.

Global Self-esteem. We used 5 items originally translated and adapted from Harter's Self-perception Profile for Adolescents [36] in Dutch by Deković et al. [31] (e.g., I am often disappointed in myself' (recoded); 1 = *Completely not true* – 5 = *Completely true*). Mean scores were computed with higher scores indicating higher global self-esteem.

Resilience to Peer Pressure. We used 5 items from the Peer Pressure Scale developed by Santor et al. [37], used previously in Deković et al. [31]. Participants reported how often things applied to them (e.g., 'I've done dangerous or foolish things because others dared me to'; 1 = *Never* – 6 = *Very often*). One item ('I feel pressured to have sex, because a lot of people my own age has already had sex') was added by Deković et al. [31] and used in the current study resulting in 6 items. We computed a mean score with higher scores indicating higher resilience to peer pressure.

Sexual Risk Behavior. We used 4 items from Deković et al. [31]. Two items asked whether participants had ever done something sexual when under the influence of (1) too much alcohol or (2) drugs (1 = *Never* – 5 = *Very often*) and were only presented to participants when they had some sexual experience. Next, we presented two items only to participants with vaginal and/or anal sexual experience, asking how often they use (1) condoms to prevent STIs and (2) contraceptives to prevent pregnancy (1 = *Never* – 5 = *Always or almost always*). Two mean scores were computed for these outcomes with higher scores indicating more frequent sexual risk behavior.

Intentions. We used 3 items from a previous evaluation of the Make a Move program for adolescents in residential youth care, measuring negative reactions (i.e., 'Getting angry', 'Start whining' and 'Start persuading') upon being sexually rejected [33]. For the positive intentions scale, we used the control item (i.e., 'Leaving the other person alone') from Van Lieshout et al. [33] and added two items measuring positive behavior (i.e., 'Suggesting doing something else' and 'Asking what the other person *does* want to do'). Participants indicated their likelihood to react in these ways by virtually piling up building blocks; 1 block = *Very unlikely to react like this* – 7 blocks = *Certainly react like this*. Mean scores were calculated with higher scores indicating higher intentions to behave negatively or positively. Cronbach's $\alpha = 0.73$ and 0.47 for negative and positive intentions, respectively.

SDV Perpetration and Victimization. We used 14 items, measuring seven experiences of perpetration and seven experiences of victimization. We used five experiences (10 items) from the widely used Sexual Abuse Subscale by Foshee et al. [38]. However, to fully capture this construct we added 2 items about online SDV from an SDV prevention study among Dutch adolescent boys [39] (i.e., 'How often have you/has someone sent or shown a naked picture of someone else/you to others?'; 0 = *Never*, 1 = *One or two times*, 2 = *Three or four times*, 4 = *More than four times*), and to capture the difference between "persuasion" and "coercion", we added 1 item about persuading someone/being persuaded into having sex when the other person/the participant initially did not want to. For the final analyses, we

dichotomized SDV victimization and perpetration into 0=*No SDV experience whatsoever* and 1=*At least one experience*.

Covariates

We also included three covariates: age, psychosocial problems, and sexual experience. Age is important because older participants may have more SDV experience, and age may also affect factors such as sexual knowledge or global self-esteem. Psychological adjustment, such as hyperactivity/impulse control or externalizing problems, is important because it may be associated with some of the central factors (e.g., attitudes toward dating violence) and outcomes (e.g., SDV perpetration). We measured psychosocial adjustment with the Total Problem Scale of the Dutch Strengths and Difficulties Questionnaire (SDQ; [40]. The SDQ consists of 20 items equally divided between Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention and Peer Problems (e.g., an example item for conduct problems is 'I fight a lot. I can make other people do what I want'; *Not True* (0), *Somewhat True* (1) or *Certainly True* (2)). Sexual experience is important because, for instance, adolescents with more sexual experience may have more sexual knowledge and be more likely to have experienced SDV. Hereto, we used a sum score of seven sexual behaviors with another person (see Table 1), where we also divided manual and oral sex into giving and receiving, resulting in a score of *No sexual experience* (0) – *Experience with all sexual behaviors* (7).

Analyses

First, we conducted descriptive analyses to describe the romantic and sexual development and SDV experiences of male MID adolescents. Second, we assessed bivariate Pearson correlations between all factors and outcomes, and point biserial correlations for the SDV experiences. Third, we used the significant associations from the bivariate correlation analyses to obtain the most parsimonious multivariate (logistic) regression models by testing only those factors as predictors in a final model. This resulted in six final models for positive and negative intentions, SDV victimization and perpetration, and two sexual risk behavior outcomes. The final models included the covariates age, psychosocial adjustment problems, and sexual experience. Adaptations to the original pre-registration were to add the covariates as control variables instead of confounders, and to replace the original bivariate regression analyses with bivariate correlation analyses to present the results more consistently. Neither of these changes affected the final conclusions.

Results

Past Experiences with Love, Sexuality and Education

Table 1 shows participants' romantic experience, and their experience with sexual behaviors and SDV. Most participants (63.9%) reported having no sexual experience with another person. Of the participants with some sexual experience ($n=38$), about 1 in 8 sometimes or (very) often had sex under the influence of too much alcohol (15.8%) or drugs (13.2%). Of the participants with vaginal or anal sexual experience, most did not always use protection

to prevent pregnancy (65.4%) and condoms to prevent STIs (53.8%). Some form of sexuality and relationships education was received by 74.8% of participants and they rated this relatively positively with a $M=7.13$ ($SD=2.33$) out of 10, whereas 16.0% had not received any education and 9.2% did not remember.

Associations Between Attitudinal, Cognitive, and Psychological Factors and Undesirable Sexual Experiences

Because only $n=38$ participants reported any sexual experience with another person, we were unable to analyze sexual risk behaviors.

In terms of associations between the undesirable sexual outcomes, having more negative intentions following sexual rejection was slightly correlated with having perpetrated SDV ($r=.24$, $p=.011$); and there was a small but significant correlation between having experienced SDV victimization and having perpetrated SDV ($r=.40$, $p<.001$).

Among the attitudinal, cognitive, and psychological factors, bivariate correlations (Table 2) revealed three patterns. First, more positive attitudes towards positive sexual behavior, more positive sexual communication attitudes, and more sexual knowledge were all significantly correlated with each other. Second, more positive attitudes toward dating violence, more adherence to the heterosexual double standard and more adversarial sexual beliefs were also significantly correlated with each other, and these three attitudes were all significantly correlated with lower resilience to peer pressure. Third, more adversarial sexual beliefs and more adherence to the heterosexual double standard were significantly correlated with less positive attitudes towards sexual communication.

Between attitudes, knowledge, global self-esteem, and peer pressure, and SDV outcomes (Table 2), more negative intentions following sexual rejection were significantly correlated with more positive attitudes toward dating violence, more adversarial sexual beliefs, and more adherence to the heterosexual double standard. More positive intentions following sexual rejection were significantly correlated with more positive attitudes towards positive sexual behavior, more positive attitudes towards communication and less adherence to the heterosexual double standard. Having experienced SDV victimization was significantly correlated with more positive attitudes toward dating violence, more adversarial sexual beliefs, more adherence to the heterosexual double standard, more sexual knowledge, lower global self-esteem, and less resilience to peer pressure. SDV perpetration was significantly correlated with more positive attitudes towards positive sexual behavior, more positive attitudes toward dating violence, more adherence to the heterosexual double standard, more sexual knowledge, lower global self-esteem, and less resilience to peer pressure. The significant bivariate associations informed the factors that we included in the final multivariate regression models.

Main Analyses

We present our main analyses in Table 3. First, only adolescents with greater adherence to the heterosexual double standard had more negative intentions, $\beta=0.36$, 95% CI [0.15, 0.83] and fewer positive intentions, $\beta=-0.21$, 95% CI [-0.88, -0.07] following sexual rejection. Second, adolescents who had experienced SDV victimization were more likely to have positive attitudes toward dating violence, $OR=3.0$, 95% CI [1.02, 9.22], and more sexual

Table 2 *Pearson Correlations Between Factors and Intentions and Point Biserial correlations Between Factors and SDV Outcomes*

	1	2	3	4	5	6	7	8	9	10	11
Factors											
1 Attitude towards DV											
2 Attitude towards positive sexual behavior	0.06										
3 Attitude towards sexual communication	−0.04	0.60***									
4 Adversarial sexual beliefs	0.49***	0.13	−0.22*								
5 Heterosexual double standards	0.63***	−0.01	−0.23*	0.54***							
6 Global Self-esteem	−0.07	−0.14	−0.04	−0.04	−0.10						
7 Resilience to peer pressure	−0.29**	−0.10	0.05	−0.24*	−0.27**	0.41***					
8 Sexual Knowledge	−0.05	0.32***	0.22*	−0.01	−0.03	−0.17	−0.07				
Outcomes											
9 Intentions to behave positively	−0.08	0.25**	0.34***	−0.12	−0.26**	0.08	0.01	0.11			
10 Intentions to behave negatively	0.25**	0.09	−0.04	0.21*	0.37***	−0.17	−0.19	0.05	−0.08		
11 SDV Perpetration	0.37***	0.20*	0.15	0.17	0.24*	−0.19*	−0.21*	0.27**	−0.07	0.24*	
12 SDV Victimization	0.29**	0.16	0.12	0.23*	0.25**	−0.31***	−0.21*	0.43***	0.03	0.18	0.40***

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

Table 3 *Descriptives and Final Parsimonious Models of (Logistic) Regression Analyses (n = 109)*

	Descriptives *(M, SD)*	Cronbach's α	Intentions following sexual rejection		SDV	
			Positive	Negative	Perpetration	Victimization
			B (*SE*)	*B* (*SE*)	*B* (*SE*)	*B* (*SE*)
Heterosexual Double Standard	2.13 (0.73)	0.80	-0.45 (0.19)*	0.48 (0.17)**	-0.20 (0.49)	0.437 (0.46)
Atttiudes Toward Dating Violence	1.96 (0.61)	0.76		0.03 (0.20)	2.09 (0.66)***	1.18 (0.55)*
Adversarial Sexual Beliefs	2.33 (0.93)	0.73		0.01 (0.12)		0.16 (0.33)
Attitudes Towards Sexual Communication	3.47 (1.14)	0.87	0.29 (0.16)			
Attitudes Towards Positive Sexual Behavior	3.70 (0.95)	0.84	0.19 (0.18)		0.37 (0.38)	
Sexual Knowledge	3.79 (1.76)				0.26 (0.17)	0.66 (0.18)***
Global Self-esteem	4.17 (0.82)	0.75			0.11 (0.38)	-0.56 (0.34)
Resilience to Peer Pressure	5.26 (0.68)	0.63			0.17 (0.43)	0.15 (0.39)

Notes. *M* = mean, *SD* = standard deviation. *B* = unstandardized regression coefficient. *S.E.* = standard error. SDV = sexual and dating violence. Empty cells mean that this factor was not included in the final model for this outcome because initial correlation analyses (Table 2) showed no bivariate association

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

knowledge, *OR* = 1.94, 95% CI [1.37, 2.74] than adolescents who had not experienced SDV victimization. Third, adolescents who had perpetrated SDV were significantly more likely to report positive attitudes toward dating violence than were adolescents who had not, *OR* = 8.10, 95% CI [2.23, 29.47].

Discussion

The current study had two aims. The first was to describe a sample of male MID adolescents in terms of their romantic and sexual development. Two main findings emerged. First, male MID adolescents are romantically and sexually active. Most adolescents in our sample reported that they had been in love and had ever had a romantic relationship. Moreover, similar to the general population of male adolescents aged around the age of 15, slightly less than 50% of adolescents had experience with kissing. In addition, of those adolescents, a majority had experience with manual, oral, vaginal, and anal sex. Therefore, contrary to what is often thought by parents, teachers, and caregivers [12], these adolescents are similarly sexually active to their normatively developing peers, and thus their romantic and sexual development warrants equal or even greater attention from both research and (clinical) practice.

Second, male MID adolescents are at risk for undesirable sexual experiences such as SDV victimization, SDV perpetration and sexual risk behaviors, both offline and online. Specifically, we found three notable concerns with undesirable sexual experiences in our sample. First, there were high percentages for both SDV victimization (47.7%) and SDV perpetration (33.9%). For instance, 16.5% experienced someone touching their private parts without consent, 5.5% were ever coerced into performing sexual acts, and 10.1% experienced online SDV. This may be higher than the general population of Dutch male adolescents, where a population study found much smaller percentages [41]. Similarly, 9.2% had ever pressured someone into having sex, which also appears to be higher than the general population [41].

Moreover, we found that a substantial proportion of adolescents who had perpetrated SDV had also been victimized, pointing to the well-established "victim-offender overlap" [42]. This might indicate a general misunderstanding of consent (i.e., that it is freely given, reversible, informed, enthusiastic, and specific [43]). Treating male adolescents not only as (possible) perpetrators, but also as possible victims [44] is an important area for future education and treatment, as it may both help male adolescents process trauma that might otherwise go unnoticed and prevent SDV perpetration in the future.

Third, a relatively large proportion of MID male adolescents (34.6%) did not adequately prevent STIs and pregnancy in their past sexual experiences and around 15% of our sample reported having sex under the influence of too much alcohol or drugs. These findings are concerning because having sex under the influence of drugs/alcohol among adolescents has previously been associated with both SDV experiences [41] and risky sexual behavior [45].

Our second aim, to explore which factors (i.e., attitudinal, cognitive, and psychological) were associated with undesirable sexual experiences, yielded two main findings. First, more sexual knowledge was not associated with fewer undesirable sexual outcomes. This is contrary to what has often been suggested in previous research, that increasing sexual knowledge may be a solution to the sexual problems faced by MID adolescents [8]. Further-

more, it suggests that current relationship and sexuality education, which almost 75% of our sample reported to have received and positively evaluated, is not effective. Current education may not be providing the necessary knowledge. The adolescents in our sample still had, on average, less than half of the knowledge questions correct and many still reported undesirable sexual experiences. Moreover, education may not be focusing enough on the mechanism by which knowledge is translated into behavior. Therefore, male MID adolescents may still lack the confidence and skills to *apply* their knowledge [46]. This is also evident from a previous study where male MID adolescents expressed interest in more knowledge about how to initiate relationships and sex, which also points to their specific need to know more about the *how* of sex (i.e., skills) [47].

Second, we found that only negative sexuality-related attitudes were associated with undesirable sexual experiences. Knowledge, resilience to peer pressure, or global self-esteem were not. Male MID adolescents who held more heterosexual double standards (i.e., expecting boys to be sexually active and "on the hunt" while not approving of this behavior for girls and expecting them to be sexually "passive") had more negative and fewer positive behavioral intentions following sexual rejection. Moreover, male MID adolescents with more positive attitudes toward dating violence were more likely to have experienced both perpetration and victimization of SDV. Associations such as these are consistently found in the general population as well [48; 49].

Future Directions

Male MID adolescents may face increased risk of undesirable sexual outcomes. Current education appears to be insufficient in preventing such experiences. We have four suggestions for a different approach. First, timely and tailored relationships and sexuality education that focuses on skill-building and is implemented before the first sexual experiences is paramount. Second, existing effective prevention programs for the general population should be adapted to address attitudes and social norms in the MID population as well [44, 50]. This includes using the often group-focused set-up, as research has shown that classroom effects on learning are also apparent in youth with intellectual disabilities [51]. Using group processes to change social norms may be especially relevant in this case, as youth often look to their peers when forming attitudes regarding sexuality [52]. Third, programs and treatment for MID adolescents should emphasize pleasure and awareness of consent [53, 54]. Fourth, education should include the safe and positive use of media and cell phones [55], considering their significant presence in the daily lives of all adolescents, including those with MID [56].

Strengths & Limitations

Our study both has strengths and limitations. First, this was the first study to quantitatively investigate which factors are associated with undesirable sexual experiences in a relatively large, culturally diverse sample of MID male adolescents with a wide age range (11–21 years). The findings provide insights for tailored prevention programs for this population. The study did have a cross-sectional design. As such, we cannot conclude whether – for instance - more knowledge predicted more SDV victimization over time, or SDV victim-

ization enabled adolescents to better answer some of the knowledge questions (e.g., about respecting boundaries) correctly from experience.

Second, we used digital self-reports ensuring privacy and encouraging honest responses [57]. To enable participation, we familiarized with the participants, used language for all principles in our consent forms, communication and questionnaires [30], minimized the number of questions and answer options and built in checks, and audio-taped the questionnaire. However, not asking clarification questions and biases such as acquiescence; the tendency to say yes, and suggestibility; following suggestions, may occur in this population [58]. Although we stressed anonymity and the possibility to ask questions, and answered questions in a non-suggestive way, these biases may have influenced answers. Professionals working with MID adolescents must prioritize further development of self-report possibilities on sensitive topics such as sexuality. Our study shows that it is possible, and that we can obtain unique information from this type of research.

Conclusion

This study provides valuable insights in the romantic and sexual development and factors associated with undesirable sexual experiences in a relatively large, diverse sample of MID male adolescents. Male MID adolescents are normatively sexually active, but also at risk of undesirable sexual experiences. A comprehensive approach is necessary, including timely and tailored relationship and sexuality education by adaptation of existing effective prevention programs, with emphasis on skill-building, attitudes, pleasure and consent, and education on safe media use.

Author Contributions All authors conceptualized the idea for current study and contributed to the methodology and data collection. MV, ML and DB conceptualized the pre-registration and first draft of the manuscript. ML, DB & JW supervised and critically revised and edited the manuscript. Funding for this project was acquired by DB, JW and ML.

Data Availability The current study was pre-registered via OSF: https://osf.io/qe4d8. The data have not previously been published. The data have been presented at the Annual Meeting of the Society for Research on Adolescence (SRA) in San Diego, California, United States in April 2024. This study was conducted as part of a larger project funded by The Netherlands Organization for Health Research and Development (ZonMw), project number 5550002017.

Declarations

Ethics approval and consent to participate During the preparation of this work the authors used DeepL Write in order to improve readability and correct English language. Moreover, the authors used ChatGPT in order to shorten the text. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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