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*An Explorative Experimental Study Testing the Effect of an Autonomy-Supportive Tone of Voice and Identification*

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**Publication date**

2023

**Document Version**

Final published version

**Published in**

European Journal of Health Communication

**License**

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**Citation for published version (APA):**

Gültzow, T., Driehuizen, E., Zimmrman, H., & Smit, E. S. (2023). Adolescents' Self-Determined Motivation to Learn About Safer Sex Online: An Explorative Experimental Study Testing the Effect of an Autonomy-Supportive Tone of Voice and Identification. *European Journal of Health Communication*, 4(3), 138-161. <https://ejhc.org/article/view/4058>

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*Article*

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## Adolescents' Self-Determined Motivation to Learn About Safer Sex Online

DOI: 10.47368/ejhc.2023.308  
2023, Vol. 4(3) 138-161  
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**An Explorative Experimental Study Testing  
the Effect of an Autonomy-Supportive Tone  
of Voice and Identification**

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### Abstract

Self-determined motivation fosters better learning and sustained health behaviour adoption than controlled motivation. Self-determined motivation can be strengthened by satisfying the need for autonomy. Therefore, this study investigated if adolescents' (1) intrinsic motivation to learn about safer sex and (2) self-determined motivation to perform safer sex would be higher when an online message is presented in autonomy-supportive language compared to controlling language. Furthermore, this study also investigated if adolescents' (1) intrinsic motivation to learn about safer sex and (2) self-determined motivation to perform safer sex changes depending on whether the online message is written by someone that is similar to them. To this end, a 2 (autonomy-supportive language vs. controlling language) x 2 (identification vs. no identification) experimental study ( $N = 214$ ) was conducted using a

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website page about safe sex from the Dutch sexual health website sense.info. Even though we found some indications of the expected effects, a two-way analysis of covariance (ANCOVA) showed no significant difference for either autonomy-supportive language, identification, or an interaction of both strategies. However, we found some preliminary evidence that this could be due to a ceiling effect. We therefore recommend further exploring these strategies, considering some lessons learned.

## Keywords

Safer sex, digital health, motivation, autonomy support, identification.

Challenges in sexual health, such as sexually transmitted infections (STIs) and unwanted pregnancies, remain serious issues for Dutch adolescents (Rutgers & Soa Aids Nederland, 2021). Accessible and motivational information regarding sexual health is therefore paramount for this age group. Digital forms of communication have drastically changed how adolescents receive information about sex and sexual health, which can now be accessed through various sources at any time and place (Bailey et al., 2015; Nikkelen et al., 2020). Digital forms of communication can therefore create opportunities for sexual health education. For example, the internet provides an opportunity for adolescents to learn about sexual health since it serves as an anonymous, free, and accessible space to learn and talk to others about sensitive topics around sexuality. Also, it grants them the freedom to explore and develop themselves autonomously in this area (Kanuga & Rosenfeld, 2004). At the same time, however, some might worry about adolescents' use of technology as it is difficult to protect them from detrimental content and potential negative effects (Kanuga & Rosenfeld, 2004). For example, the internet can be overwhelming to adolescents as the amount of information is virtually unlimited (Kanuga & Rosenfeld, 2004; Patterson et al., 2019). Also, with no authority figure around, adolescents may run the risk of exploitation or finding age inappropriate (e.g., porn) or incorrect information about sex (Kanuga & Rosenfeld, 2004; Patterson et al., 2019). To balance worries and opportunities, it is thus important for adolescents to have access to an online space where they can stay anonymous, feel comfortable and autonomous, while at the same time being provided with reliable and trustworthy sources of information. This underlines the importance of having professional sexual health websites available to adolescents to easily and freely find appropriate information to learn about sex and sexual health. Sense.info (Soa Aids Nederland, n.d.-a) is an example of such a professional sexual health website for youth in the Netherlands which provides information on a variety of topics, such as sex and sexuality. Sense.info has seen a steady increase in visitors in the last years, is recognised by the Dutch recognition system for health promotion interventions ([www.loketgezondleven.nl](http://www.loketgezondleven.nl)), and has been used as a case study to understand the effects of web-based health promotion interventions before (Brug et al., 2010; Metz et al., 2021). Because sense.info is a widely used, real-life website, which is also reliable, content from sense.info was chosen for this online experiment. Specifically, the website page about safe sex (Soa Aids Nederland, n.d.-b).

Despite the previous studies conducted into safe(r) sex websites like sense.info (e.g., Metz et al., 2021), we presently do not know how web-based information can be provided to motivate adolescents to learn from it and consequently change their behaviour. Other scholars have highlighted the important role of intrinsic motivation in learning as one generally learns better when one is intrinsically motivated to do so (Cordova & Lepper, 1996; Deci et al., 1991;

Froiland & Worrell, 2016). In general, intrinsic motivation refers to a person's motivation to perform a behaviour because it is innately satisfying (Cordova & Lepper, 1996; Deci et al., 1991; Froiland & Worrell, 2016). For example, feeling intrinsically motivated to learn from a website about safer sex would mean that adolescent users of said platform enjoy the process of learning about this subject. However, in some domains this very narrow definition of motivation may fall short when it concerns not only learning about but also practicing a certain behaviour, i.e., safer sex in this case. For example, given that some prevention strategies that fall under safer sex are often not described as inherently pleasurable or satisfying, e.g., condom use (Civic, 2000; Farrington et al., 2016), it is questionable whether people build up intrinsic motivation when it comes to safer sex behaviours (as opposed to learning about safer sex). However, safer sex behaviours can still be viewed as self-determined through other regulative processes that are described in the well-known self-determination theory (SDT), i.e., so-called integrated regulation (e.g., choosing to use condoms because they match how one perceives oneself) and identified regulation (e.g., choosing to use condoms because one wants to prevent STIs). While these regulatory processes are generally defined as extrinsic motivations (i.e., not done because it is in itself satisfactory), they are still considered self-determined within the SDT because they have become integrated into one's sense of self (Ryan & Deci, 2000) – after intrinsic motivation, these self-determined types of motivation are considered the types of motivation of most quality, and with most predictive power when it comes to behaviour change and maintenance (Hagger et al., 2014; Hagger & Chatzisarantis, 2009; Ryan et al., 2008). Thus, in the context of sexual health, someone applying safer sex behaviours because they freely choose to do so, e.g., because it is important to them personally, would be regarded as having self-determined motivation.

One possible method to increase recipients' intrinsic and self-determined motivation is autonomy support (Hagger & Chatzisarantis, 2009), for example by providing noncontrolling, informational language, and choices (Teixeira et al., 2020). Whereas controlling messages have a pressuring tone with words like “must” and “should”, autonomy-supportive messages imply choice (Teixeira et al., 2020). Previous research has shown that autonomy-supportive language compared to controlling language can be effective in terms of increasing self-determined motivation in face-to-face settings (e.g., Williams et al., 1999). Research conducted in digital settings, has also shown that supporting autonomy can be beneficial on outcomes, such as the positive evaluation of digital content, especially for people with a high need for autonomy (Altendorf et al., 2020; Smit et al., 2019). However, the effectiveness of autonomy-supportive language compared to controlling language on adolescents' self-determined motivation around the subject of sexual health specifically in an online context has not been the subject of research yet, to the best of our knowledge. Therefore, this study aims to investigate if the Tone of Voice (autonomy-supportive language vs. controlling language) of a sexual health message on sense.info can have differential outcomes on adolescents' (1) intrinsic motivation to learn about safer sex (*RQ1*) and (2) self-determined motivation to perform safer sex (*RQ2*).

Because the particular age group that we are investigating in this study is especially characterised by the value they attach to their peers and the identification with their peers (Ragelienė, 2016), the effect of identification with the author of a digital message on motivation is also highly interesting. Research has shown that peers seem to play a more significant role in digital communication about sexual health for adolescents than authority figures such as caregivers (e.g., parents) or teachers (Nikkelen et al., 2020). Since sexuality is a sensitive topic, especially for adolescents, they might feel more comfortable, supported, and therefore

motivated when someone similar to them, like a peer, provides them with sexual health information in comparison to someone with more distance, like a parent or teacher. Research in health communication has shown that identification with the character of a television show who modelled a sexual discussion motivated viewers to engage in conversation about sexual health (Moyer-Gusé et al., 2011). While we are not aware of a specific study that has studied this in relation to sexual health information in an online context, integration of information can be expected to have a positive impact on one's self-determined motivation, therefore, this study also aims to investigate if adolescents' (1) intrinsic motivation to learn about safer sex (*RQ3*) and (2) self-determined motivation to perform safer sex (*RQ4*) changes depending on whether the message on sense.info is written by someone that is similar to them (and with whom identification is more likely to take place), in comparison to when this message is written by someone that is not similar to them (with whom identification is less likely to take place). Furthermore, according to a study by Jenkins and Dragojevic (2013) based on politeness theory, controlling language can evoke the impression that the message sender possesses more relational power than the message receiver. Broadly speaking politeness theory revolves around individuals' public self-image (or 'face') and how this is maintained (Brown & Levinson, 1987). Threatening someone's freedom of action, e.g., by employing controlling language (Jenkins & Dragojevic, 2013), can threaten this self-image. Jenkins and Dragojevic (2013) found that controlling language leads to the perception that the message source has more relative power, which in turn was perceived to be threatening to the public self-image and led to a more negative evaluation of the message (source). However, it should be noted that Jenkins and Dragojevic (2013) tested this without corroborating any information that legitimises the source's claim of relative power. In situations where this relational power is accepted, the message may not be evaluated negatively. Applied to the context of this study, this could mean that controlling language used within sense.info could evoke the impression that the author of the website possesses greater power relative to the person reading the information on sense.info. The question is whether adolescents would experience this as problematic if the presented website was written by someone who clearly does not have more relative power compared to them, e.g., another adolescent they identify with. In that case, one would expect that when the source of the message is someone adolescents identify with, it is even more important that the message is written in an autonomy-supportive tone instead of a controlled tone. Therefore, we were also interested in how the concepts of autonomy support and identification interacted with each other in respect to (1) intrinsic motivation to learn about safer sex (*RQ4*) and (2) self-determined motivation to perform safer sex (*RQ5*).

## Materials and Methods

To answer *RQs1–5* an explorative experimental study was conducted. A  $2 \times 2$  experimental design was used, with Tone of Voice of the message (autonomy-supportive language vs. controlling language) x Identification with the Author of the message (identification vs. no identification) as between-subject variables. Ethical approval was granted by the University of Amsterdam's Ethical Review Board (project number 2021-PC-13411). Participants received a debriefing at the end of the study.

Table 1. Summary Identification Stimuli

	Identification	No Identification
Boys	<i>Author of the presented website: 17-year-old boy</i>	<i>Author of the presented website: 50-year-old woman</i>
Girls	<i>Author of the presented website: 17-year-old girl</i>	<i>Author of the presented website: 50-year-old man</i>

### Participants

For this study, late adolescents aged 16–19 were recruited using a convenience sample. This age group was selected because 50% of all adolescents in the Netherlands start to become sexually active at the average age of 18.6 years (Nederlands Jeugdinstituut, n.d.). Respondents were recruited using a snow-ball sampling technique, through (1) posting recruitment texts on different social media platforms (i.e., Facebook, Instagram, LinkedIn, Reddit, and WhatsApp), and (2) asking schools, teachers, and other friends and acquaintances of the second author to share the questionnaire with adolescents in their network. A formal sample size calculation was not conducted because we considered this study to be more hypothesis-generating than hypothesis-testing. Due to ethical concerns about being able to identify non-binary participants recruited from the second author's personal network, non-binary participants and participants preferring not to state their gender had to be excluded. Although unfortunate, this was necessary to protect their privacy. No other exclusion criteria were applied.

### Stimuli

The website page of *sense.info* that was used for this study contained information about safe sex. It should be noted that the current version of the website looks similar but is not identical to the one used by us. Safe sex is also the terminology used on the website, as opposed to other terms, such as protected or safer sex. That said, we have decided to use the term safer sex in this article unless it is strictly about the website (note, however, that partly measurements also originally referred to safe sex). To create the stimuli, the page was edited in Canva.com (Canva.com, n.d.). Videos on the website page were removed to make the experiment more straightforward, comprehensible, and not take too much of participants' time and energy. In total, eight stimuli were created. Stimuli were written in either autonomy-supportive language or controlling language. For autonomy-supportive stimuli all imperatives were removed from the texts and put into words that implied having a choice. Thus, words like “should” and “must” were removed to minimise pressure and choice was highlighted by replacing them with words as “would”, “could”, and “might”. Also, more contraceptive options were proposed than in the controlling condition so it would pronounce having the possibility to make one's own decision (see Figure 1 for an example of the autonomy-supportive language stimuli). Using the recently developed classification by Teixeira et al. (2020), one would say that the following motivation and behaviour change techniques (MBCTs) were used: (1) “MBCT 3. Use noncontrolling, informational language” and (2) “MBCT 6. Provide choice”.

For the controlling language stimuli, imperatives were emphasised, and pressure-inducing language was used with the aim to pressure participants to think, feel, or behave in a specific way. The text did not offer choice but simply described one contraceptive option. Therefore, it can be considered a more forceful message that contains commands and orders and uses language like “must”, “have to” and “should” (see Figure 2 for an example of the controlling

language stimuli). Participants were randomly assigned to either the autonomy-supportive stimuli or the controlling language stimuli.

The identification stimuli were based on participants' age and gender. This means that with the identification condition a participant would see a text written by an author with the same age and gender, and for the no-identification condition a participant would see a 50-year-old author of another gender. The manipulation was made by adding a portrait at the bottom of the blogpost with the text "Written by" and the name and age of the author (see Figure 1 for an example stimulus written by a 17-year-old boy). Assignment to either the identification condition or the no identification condition was also subject to randomisation. A summary of the composition of the identification stimuli can be found in Table 1. Participants were required to spend a minimum of 30 seconds on the page containing the stimuli and had to indicate whether they had read the text.

The screenshot shows a website interface for 'SENSE Voor al je vragen over seks'. The main article is titled 'Veilig vrijen'. It includes a search bar, a navigation menu, and several content blocks. The text is as follows:

**Veilig vrijen**

Gebruik voorbehoedsmiddelen  
Video Condoomgebruik bij onenightstands  
Bescherm jezelf tegen soa's Dit is veilig voor soa's  
Dit is onveilig voor soa's

Als je verder gaat dan zoenen en strelen, **is het goed om na te denken over veilig vrijen**. Wil je geen soa's krijgen en niet zwanger worden? **Dan wordt het aangeraden om veilig vrijen te overwegen.**

**Voorbehoedsmiddelen**  
Je vrijt veilig als je voorbehoedsmiddelen gebruikt. **Om soa's te voorkomen kan je een condoom gebruiken. Om zwangerschap te voorkomen zijn er verschillende opties mogelijk, zoals een condoom, de pil of een spiraaltje. De beste manier om zwangerschap te voorkomen is wanneer je kiest om een condoom én een ander anticonceptiemiddel te gebruiken, zoals bijvoorbeeld de pil of spiraaltje. Maar dit blijft natuurlijk je eigen keuze.**

**Bescherming tegen soa's**  
Als je met iemand naar bed gaat, is het gebruik van condooms **de manier** om soa's te voorkomen. Bijna alle ongelukjes met condooms komen doordat ze verkeerd gebruikt worden. **Weet jij ook dat het belangrijk is dat je weet hoe je een condoom goed gebruikt?**

Geschreven door:  
Noah, 17 jaar

Figure 1. Example Stimulus: Manipulation Autonomy-Supportive Language and Identification for Boys

Note. Manipulated language is shown in bold and green for clarification but was shown without it to participants in the experiment.

SENSE Voor al je vragen over seks NL EN Hulp & advies

Wat zoek je?

Seks +  
Seks en internet +  
Over je grens? +  
Condoom, pil en meer +  
Soa's +  
Zwanger +  
Verhalen, blogs, video's +  
Seks ABC +  
Veetgestelde vragen +  
Hulp & advies +  
Sense in jouw buurt +  
Werkstukinformatie +  
Sense in jouw buurt +  
Werkstukinformatie +

Home / Soa's / Soa's voorkomen / Veilig vrijen

← Lees voor →

## Veilig vrijen

Gebruik voorbehoedsmiddelen  
Video Condoomgebruik bij onenightstands  
Bescherm jezelf tegen soa's Dit is veilig voor soa's  
Dit is onveilig voor soa's

Als je verder gaat dan zoenen en strelen **is het noodzakelijk om veilig te vrijen!** Wil je geen soa's krijgen en niet zwanger worden? **Dan moet je altijd veilig vrijen!**

### Gebruik voorbehoedsmiddelen

Je vrijt veilig als je voorbehoedsmiddelen gebruikt. **Je moet altijd een condoom én de pil gebruiken om zwangerschap te voorkomen (of een ander anticonceptiemiddel).** Een condoom beschermt tegen soa's. De pil beschermt niet tegen soa's, maar is wel één van de meest gebruikte middelen om zwangerschap te voorkomen!

### Bescherm jezelf tegen soa's

Als je met iemand naar bed gaat, is het gebruik van condooms **de enige manier** om soa's te voorkomen. Bijna alle ongelukjes met condooms komen doordat ze verkeerd gebruikt worden. **Je moet daarom weten hoe je een condoom goed gebruikt!**

**Geschreven door:**  
Hilke van den Does, 50 jaar

Meer over Soa's voorkomen?  
Wat is veilig en wat niet?  
Hiv voorkomen  
Praten over veilig vrijen

Ervaring met seks?  
Doe mee aan dit onderzoek!

Geen condoom omdat je elkaar vertrouwt?  
Doe de VR Experience

**Figure 2.** Example Stimulus: Manipulation Controlling Language and No Identification  
*Note.* Manipulated language is shown in bold and red for clarification but was shown without it to participants in the experiment.

## Measurements

**Demographics.** Age in years was measured continuously via an open text box. Since age was found to be non-normally distributed because the data was skewed toward 16 and 17-year-olds, age was recoded into three categories (1 = 16, 2 = 17, 3 = > 17). Gender was measured with one item (“I am a ...”) and three response categories: 1 (*boy*), 2 (*girl*), and 3 (*non-binary/prefer not to say*). The third response category was then used to exclude participants, i.e., only 1 (*boy*) and 2 (*girl*) were used in analyses. Finally, level of education was measured with one item (“What is your school level?”) and three response categories: 1 (*preparatory secondary vocational education, in Dutch: VMBO*), 2 (*senior general secondary education, in Dutch: HAVO*), and 3 (*pre-university education, in Dutch: VWO*). We were unable to measure sexual orientation due to the same ethical concerns that applied to measuring non-binary gender identity.



**Factors Influencing Online Sexual Health Information Seeking Behaviour.** Other internal and external factors have been found to influence online sexual health information seeking (Nikkelen et al., 2020). Therefore, they are also likely to influence motivation to learn about and to perform sexual health. In this study, it was measured if participants (1) had any sexual experience by asking them if they had any sexual experience (1 = *yes*, 2 = *no*, 3 = *I prefer not to say*), (2) were currently sexually active (1 = *yes*, 2 = *no*, 3 = *I prefer not to say*), and (3) ever visited sense.info (1 = *yes*, 2 = *no*, 3 = *I do not know*). In analyses "I prefer not to say/I do not know" and "no" were collapsed into one category.

**Intrinsic Motivation to Learn From sense.info.** Intrinsic motivation to learn the information presented on the different stimuli was measured using a Dutch translation of the Intrinsic Motivation Inventory (IMI; McAuley et al., 1989) for text material. The inventory consisted of nine items with answers ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) measuring the subscales interest/enjoyment (five items), perceived competence (two items), and tension/pressure (two items). Since only the interest/enjoyment subscale measures intrinsic motivation directly, this scale was used as outcome variable for the analysis. An example item of this subscale is "As I was reading the website page, I thought about how much I enjoyed it" (see Appendix A for the full scale). A factor analysis of all nine items revealed that the 5-item interest/enjoyment subscale had a unidimensional structure in our sample, but items 1 (i.e., "As I read the website page, I thought about how much pleasure it gave me.") and 3 (i.e., "This website page did not hold my attention at all.") showed low factor loadings (i.e., 0.46 and 0.49) relative to the other factor loadings (i.e., all > 0.6). As also, the  $\Omega$  increased by removing these items we decided to proceed with a mean score based on the other three items ( $\Omega = .84$ ,  $M = 3.7$ ,  $SD = 1.2$ ). More information regarding the scale diagnosis can be found on the Open Science Framework, [https://osf.io/j7y4m/?view\\_only=17ad2666be524be1ac0ec4d9ee8a67e4](https://osf.io/j7y4m/?view_only=17ad2666be524be1ac0ec4d9ee8a67e4).

**Self-Determined Motivation to Perform Safer Sex.** Self-determined motivation to perform safer sex was measured using a version of the Treatment Self-Regulation Questionnaire (Levesque et al., 2007) to measure to which degree participants would perform the health behaviour for autonomous, self-determined reasons, or for controlled reasons as used by Altendorf et al. (2021). To limit participant burden in the rather young sample of participants, six items were used in the questionnaire, instead of the 16 used by Altendorf et al. (2021). Therefore, (1) three items were chosen to measure autonomous regulation and (2) three items to measure controlled regulation. Items were chosen that best matched the target behaviour of this study (i.e., safer sex) and that were probably the most understandable for the rather young target group (e.g., without difficult words, short sentences). We choose not to select items based on previously reported factor loadings as factor structures can differ between samples and even when using the same items (Crutzen & Peters, 2017). Amotivation (i.e., the absence of motivation) was not measured for this study. These items were assessed on a 7-point Likert Scale from 1 (*strongly disagree*) to 7 ( ) asking participants "The reason I would have safe sex is ..."; example items included "... because I feel like I want to take responsibility for my own health" (see Appendix B for questionnaire). A factor analysis of all six items revealed that the three items meant to measure autonomous regulation also showed a unidimensional structure in our sample ( $\Omega = .79$ ,  $M = 5.7$ ,  $SD = 1.2$ , all factor loadings > 0.6) and we, therefore, proceeded with a mean score based on these three items. More information regarding the scale diagnosis can be found on the Open Science Framework, [https://osf.io/j7y4m/?view\\_only=17ad2666be524be1ac0ec4d9ee8a67e4](https://osf.io/j7y4m/?view_only=17ad2666be524be1ac0ec4d9ee8a67e4).

## Manipulation Checks

***Tone of Voice of the Message.*** Similar to Altendorf et al (2021), to assess the validity of the manipulation for Tone of Voice of the message, two items were used measured on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*). Items were “I experienced the tone of voice of the text of the website page as autonomy supportive” and “I experienced the tone of voice of the text of the website page as controlling”. Participants were also provided with information on how we conceptualised autonomy supportive (i.e., “It gave you a feeling that you have a choice of your own.”) and controlling (i.e., “It made you feel like you do not have a choice of your own.”).

***Identification with the Author.*** To assess the identification manipulation, a scale based on the study of Murphy et al. (2013) was used. This scale had four items measuring perceived similarity, likeability, wishful identification, and parasocial interaction on a 5-point-Likert scale ranging from 1 (*not at all*) to 5 (*very much*). One example item is “To which extent do you consider yourself similar to the person who wrote the website page?” (see Appendix C for all items). This scale also had a unidimensional structure in our sample ( $\Omega = .69$ ,  $M = 2.8$ ,  $SD = 0.8$ ) and we, therefore, proceeded with a mean score based on those four items.

## Data Analysis

First, the quality of all used scales was explored, following the 2-step process proposed by Crutzen and Peters (2017): (1) conformation of intended structure by means of exploratory factor analyses and (2) calculation of omega (McDonald, 2013) as alternative to  $\alpha$  with R (R Development Core Team, 2021), making use of the integrated development environment RStudio (RStudio Team, 2020). All other analyses were conducted in SPSS 28 (IBM Corp, 2021). The R script and the SPSS syntax can be found on the Open Science Framework, [https://osf.io/j7y4m/?view\\_only=17ad2666be524be1ac0ec4d9ee8a67e4](https://osf.io/j7y4m/?view_only=17ad2666be524be1ac0ec4d9ee8a67e4).

Second, sample characteristics were explored by means of descriptive analyses.

Third, manipulation checks were conducted by first examining whether the autonomy-supportive language group perceived their assigned website as more autonomy supportive and less controlling than the group that received the version containing controlling language by using two independent-samples t-tests. The same analysis was then performed to explore whether adolescents in the identification group experienced stronger identification with the authors of the received website.

Fourth, two two-way analysis of covariance (ANCOVA) models were employed to answer *RQs1–5*, i.e., to answer the RQs related to intrinsic motivation to learn said variable was used as outcome, the two manipulations as independent variables, while age, gender, level of education, sexual experience, current sexual activity, and ever having visited sense.info were entered as covariates. An interaction term between the two manipulations was included and we first investigated if this interaction was significant. The same process was then repeated to answer the RQs related to self-determined motivation to perform safer sex using this variable as outcome. For all statistical tests the necessary assumptions were checked, and we reacted accordingly if needed. In the model used to assess the effects on self-determined motivation to perform safer sex, gender violated the assumption regarding homogeneity of regression slopes, i.e., there were indications that the effects differed in the two gender groups included in this study. An interaction term with gender was therefore included in this model to deal with this violation. In the case of significant interactions, we followed this up with simple main effects,

e.g., in the case of an interaction with gender we repeated the analyses once in the girl sample and once in the boy sample.

## Results

In total, 222 people completed the study. Based on the average response time of the participants ( $M = 5.6$  minutes,  $SD = 5.9$ ), substantial differences in response times existed but as previous research has shown that removing "speedy" participants hardly affects findings at all (Greszki et al., 2015), we decided to not exclude any participant based on their response times. However, eight participants indicated to be either non-binary or that they did not want to state their gender and were therefore excluded as previously explained. Analyses were conducted with a final sample of 214 respondents with an average age of 16.9 ( $SD = 0.9$ ) from which 29 (13.6%) identified as boy and 185 (86.4%) as girl. From the participants, 42 (19.6%) indicated to have a preparatory secondary vocational education (in Dutch: VMBO), 72 (33.6%) to have a senior general secondary education (in Dutch: HAVO), and 100 (46.7%) to have a pre-university education (in Dutch: VWO). Information can be found in Table 2.

### Manipulation Check

Both manipulations were shown to be successful. Adolescents in the autonomy-supportive condition rated the shown website as more autonomy supportive ( $M = 3.5$ ,  $SD = 1.1$ ) than the adolescents in the controlling condition ( $M = 3.0$ ,  $SD = 1.1$ ),  $t(212) = 3.431$ ,  $p < .001$ , reflecting a mean difference of 0.51, 95% CI [0.22, 0.80]. As the scale used to measure experienced autonomy support contained a few outliers, we checked if this finding would hold using a Mann-Whitney U test and that was indeed the case,  $p < .001$ . Similarly, adolescents in

Table 2. Sample Characteristics ( $N = 214$ )

Characteristic	$M (SD)$	$n (%)$
Age	16.9 (0.9)	
16		77 (36.0)
17		91 (42.5)
> 17		46 (21.5)
Gender		
Girl		185 (86.4)
Boy		29 (13.6)
Level of education		
Preparatory secondary vocational education (in Dutch: VMBO)		42 (19.6)
Senior general secondary education (in Dutch: HAVO)		72 (33.6)
Pre-university education (in Dutch: VWO)		100 (46.7)
Factors influencing online sexual health information seeking behaviour		
Any sexual experience		141 (65.9)
Currently sexually active		105 (49.1)
Ever visited sense.info		80 (37.4)

the controlling conditions rated the shown website as more controlling ( $M = 2.6$ ,  $SD = 1.2$ ) than the adolescents in the in the autonomy-supportive condition ( $M = 2.0$ ,  $SD = 1.1$ ),  $t(212) = -3.503$ ,  $p < .001$ , reflecting a mean difference of  $-0.57$ , 95% CI  $[-0.90, -0.25]$ .

Likewise, people assigned to the identification condition identified stronger with the author ( $M = 3.0$ ,  $SD = 0.8$ ) than people assigned to the no identification condition ( $M = 2.5$ ,  $SD = 0.7$ ),  $t(212) = 4.667$ ,  $p < .001$ , reflecting a mean difference of  $0.47$ , 95% CI  $[0.27, 0.66]$ . As the scale used to measure identification contained a few outliers, we checked if this finding would hold using a Mann-Whitney U test and that was indeed the case,  $p < .001$ .

### *Intrinsic Motivation to Learn From sense.info*

No statistically significant interaction between Tone of Voice and Identification with the Author was found,  $F(1, 202) = 1.63$ ,  $p = .2$ , partial  $\eta^2 = .008$ . Therefore, we report main effects only. However, neither the effect of Tone of Voice,  $F(1, 202) = 0.0$ ,  $p = .99$ , partial  $\eta^2 = .0$ , nor the effect of Identification was significant,  $F(1, 202) = 0.71$ ,  $p = .4$ , partial  $\eta^2 = .004$ . Simple descriptive statistics can be found in Table 3. The only variable that had a significant effect on intrinsic motivation to learn from sense.info was whether participants attended pre-university education ( $p < .001$ ). Relative to those not attending pre-university education ( $M = 3.9$ ,  $SD = 1.2$ ) those participants that did ( $M = 3.4$ ,  $SD = 1.1$ ) showed lower intrinsic motivation to learn from sense.info,  $t(212) = 3.374$ ,  $p < .001$ , reflecting a mean difference of  $0.53$ , 95% CI  $[0.22, 0.84]$ . The Mann-Whitney U test run in the presence of outliers confirmed this finding,  $p < .001$ .

### *Self-Determined Motivation to Perform Safer Sex*

While no interaction effect between gender and Identification,  $F(1, 199) = 1.524$ ,  $p = .22$ , partial  $\eta^2 = .008$ , Tone of Voice and Identification,  $F(1, 199) = 2.870$ ,  $p = .09$ , partial  $\eta^2 = .014$ , and gender, Tone of Voice, and Identification,  $F(1, 199) = 2.819$ ,  $p = .1$ , partial  $\eta^2 = .014$  was found, the interaction between gender and Tone of Voice,  $F(1, 189) = 11.452$ ,  $p < .001$ , partial  $\eta^2 = .054$  was significant. We therefore explored this two-way interaction further by exploring simple main effects for boys and girls separately.

**Self-Determined Motivation to Perform Safer Sex by Gender.** That said, both for boys,  $F(1, 19) = 2.285$ ,  $p = .15$ , partial  $\eta^2 = .107$ , and for girls,  $F(1, 175) = 2.022$ ,  $p = .16$ , partial  $\eta^2 = .011$ , the effect of Tone of Voice was not significant. No variable affected self-determined motivation to perform safer sex in the sample consisting of girls only, however, in the sample consisting of boys only, whether participants were older than 17 affected the outcome ( $p = .03$ ). In an independent-samples t-tests exploring this further, however, this effect was not present  $t(27) = -1.323$ ,  $p = .20$ . Again, simple descriptive statistics can be found in Table 4.

*Table 3.* Simple Descriptive Statistics Regarding Intrinsic Motivation to Learn from sense.info ( $N = 214$ )

	Identification			No Identification		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Autonomy-supportive language <sup>1</sup>	62	3.9	1.1	50	3.5	1.0
Controlling language <sup>1</sup>	51	3.6	1.3	51	3.7	1.3

*Note.* <sup>1</sup> possible range: 1 - 7, 1 = strongly disagree; 7 = strongly agree.

**Table 4.** Simple Descriptive Statistics Regarding Self-Determined Motivation to Perform Safer Sex ( $N = 214$ )

	Identification			No Identification		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Autonomy-supportive language <sup>1</sup>	62	5.7	1.3	50	5.7	1.2
Controlling language <sup>1</sup>	51	5.7	1.2	51	5.7	1.0

Note. <sup>1</sup> possible range: 1 - 7, 1 = *strongly disagree*; 7 = *strongly agree*.

### *Explorative Findings Based on Other Findings*

Based on the previous findings showing that gender may interact with the effects on self-determined motivation to perform safer sex of the used manipulations, further analyses were carried out to explore the role of gender. These further analyses revealed that overall girls reported greater self-determined motivation to perform safer sex ( $M = 5.8$ ,  $SD = 1.1$ ) than boys ( $M = 5.1$ ,  $SD = 1.6$ ),  $t(32.293) = -2.364$ ,  $p = .02$  – and that while the (albeit) insignificant findings from the split analyses suggest that the manipulations' effects were greater among the boys than the girls (i.e., partial  $\eta^2 = .107$  among the boys, partial  $\eta^2 = .011$  among the girls for Tone of Voice; and partial  $\eta^2 = .02$  among the boys, partial  $\eta^2 = .01$  among the girls for Identification with the Author). The Mann-Whitney U test run in the presence of outliers confirmed this finding,  $p = .02$ . Based on the aforementioned findings we saw the possibility that we were unable to find effects on self-determined motivation to perform safer sex due the presence of a ceiling effect (especially among the girls). Due to the absence of baseline levels of motivation we were unable to test this, however, visual inspection of the variable revealed a strong right skew and further exploration revealed that 42.5% ( $n = 91$ ) of the sample reported self-determined motivation higher than the median ( $Mdn = 6$ ). Among the girls 44.3% ( $n = 82$ ) exceeded the median, among the boys only 31% exceeded the median ( $n = 9$ ), however, the difference between boys and girls exceeding the median was insignificant,  $p = .18$ .

Moreover, while there were no indications that gender interacted with the effects of the manipulations on intrinsic motivation to learn from sense.info, based on the aforementioned findings and the general skew in terms of gender, we also exploratively repeated the analyses for boys and girls separately. Overall, the findings did not diverge much from those reported under Intrinsic Motivation to Learn From sense.info, however, the effects of Tone of Voice and Identification with the Author seemed to be bigger (based on partial  $\eta^2$ ) among the boys compared to the girls. The only other differences were that the effect of attending pre-university education on intrinsic motivation to learn from sense.info was present only among the girls, while among the boys having visited sense.info before emerged as significant. Relative to the boys that never visited sense.info before ( $M = 3.0$ ,  $SD = 0.9$ ), those that did ( $M = 4.5$ ,  $SD = 1.4$ ) showed higher intrinsic motivation to learn from sense.info,  $t(27) = -3.527$ ,  $p = .002$ , reflecting a mean difference of -1.55, 95% CI [-2.45, -0.65]. The Mann-Whitney U test run in the presence of outliers confirmed this finding,  $p = .01$ . Overall, boys and girls did not significantly differ in their intrinsic motivation to learn from sense.info,  $t(212) = -1.140$ ,  $p = .26$ . The Mann-Whitney U test run in the presence of outliers confirmed this finding,  $p = .13$ .

## Discussion

### *Principal Findings*

The aim of this study was to explore whether autonomy-supportive language and supporting feelings of identification with the author of a message on a website can be used to increase both adolescents' intrinsic motivation to learn about safer sex and their self-determined motivation to perform safer sex. While our findings indicate that this may be the case, the differences between the manipulations were generally so small that they were all insignificant. This is especially interesting because our findings show that the manipulations worked, in other words, participants experienced more autonomy when they read the website that was written in a more autonomy-supportive tone of voice and also identified more with the authors when identification should have been present according to our manipulation. We can therefore conclude that using the aforementioned strategies had an effect on the intermediate concepts we were meaning to influence (i.e., feelings of autonomy and identification), but that they did not translate into an increase in intrinsic and self-determined motivation. That said, it should be noted that even the adolescents in the controlling condition experienced the stimuli to be relatively autonomy-supportive ( $M = 3.0$ ). While we still consider the manipulation to be successful based on the differences between the conditions, one should consider this during interpretation of our findings. However, this does not mean that one cannot learn from this experiment. In the following discussion, we will indicate what can be gained from this for future research.

### *Intrinsic Motivation to Learn From sense.info*

As previously explained, while both our manipulations worked in the sense that they seemingly increased feelings of autonomy and identification, they both did not affect intrinsic motivation to learn about safer sex. Interestingly, we also found that adolescents' intrinsic motivation to learn about safer sex from sense.info was relatively low in general. We might therefore conclude that we need to find other ways to motivate adolescents to learn more about safer sex. However, while intrinsic motivation is often hailed in the domain of education (e.g., Usable Knowledge, 2016) it is questionable if aiming for high intrinsic motivation to learn about safer sex is a realistic goal given the tight definition of intrinsic motivation that focusses on satisfaction. Adolescents might simply not enjoy learning new things about safer sex (or do not find it inherently satisfying), however, that does not mean that they cannot be(come) self-determined to learn more about the topic. Before drawing premature findings from our study, it may therefore be more useful to first delve deeper into what it means for adolescents to be self-determined in their motivation to learn more about safer sex and use broader conceptualisations in the meantime just as we did for motivation to actually have safer sex.

An interesting chance finding of our study, was that the only included variable that emerged as significantly associated with intrinsic motivation to learn from sense.info was whether adolescents attended pre-university education. This is remarkable in so far as one might expect adolescents that attended pre-university education to be more intrinsically motivated to learn in general, whereas we in fact found them to be less intrinsically motivated to learn from sense.info specifically. A potential explanation for this chance finding comes from a national Dutch survey that showed that students attending pre-university education and senior general secondary education are experiencing more stress relative to other educational groups, and

especially those attending pre-university education report that they do so because of the amount of (home)work they have to do (Kloosterman et al., 2021). Therefore, they may not learn for pleasure, but because they must, i.e., for more extrinsically related reasons, and it may be that this general way of learning for extrinsic reasons also translates into learning about safer sex for extrinsic reasons, which could in turn explain their relatively low intrinsic motivation. A study by Moneta et al. (2009) for example has shown that students' trait extrinsic motivation is related to surface approaches to learning instead of deep learning, giving credence to our explanation. It is important to note here that this study was not designed to specifically look at motivational differences between different educational levels, but this could indicate that scholars should look more closely at these differences and how we might address them. As our explorative analyses showed that gender also seems to play a role in this (i.e., as the effects disappeared among the subsample containing boys only), scholars should also incorporate gender in their investigations regarding motivational differences between different educational levels.

Our explorative analyses also revealed that boys that visited sense.info before showed a significantly higher intrinsic motivation to learn from sense.info. Based on our data, we cannot determine the direction of this effect with certainty, it could be (1) that boys with high levels of intrinsic motivation are more likely to visit sense.info than boys with low levels of intrinsic motivation, but also (2) that sense.info increased the boys' intrinsic motivation, but not that of the girls. The fact that this effect was not present for the girls makes it seem that intrinsic motivation either does play a role for boys to visit sense.info, but not for girls, or that the website affects boys differently than girls. However, as this study – as indicated earlier – was not intended to further elucidate these kinds of differences, this too should be confirmed in follow-up research.

### *Self-Determined Motivation to Perform Safer Sex*

While in general we also found null findings regarding self-determined motivation to perform safer sex, a slightly more complicated pattern emerged here. Namely, we have found some inconclusive indications that there is a ceiling effect, especially among the girls in our sample. While the effect size found among the girls was negligible and insignificant, a stronger effect emerged among the boys – albeit this effect was still statistically insignificant (it should be noted that this also emerged in the explorative analyses regarding intrinsic motivation to learn). Overall, adolescents scored relatively high on this outcome measure (regardless of manipulations), which was especially the case among girls. While we are not aware of specific studies mapping Dutch adolescents' sexual health motivation using an SDT-perspective, other authors commonly report that girls (relative to boys) hold more positive beliefs (including behavioural intentions) towards sexual health prevention (Rich et al., 2014; Wolfers et al., 2010). Our finding that girls reported higher self-determined motivation to perform safer sex than boys is in line with this. Given that we found indications for a stronger (albeit insignificant) effect among the boys, but not among the girls, while girls overall reported higher self-determined motivation, could indicate that the girls started out with a higher baseline motivation that was then too high to be affected by our manipulations. On the other hand, the proportion of adolescents reporting a motivation higher than the median did not differ per gender. Yet, it should be emphasised that the group of boys was too small to draw firm conclusions, and probably too small to reach generally accepted levels of statistical significance.

even in the presence of a small to moderate effect. We therefore strongly recommend conducting a preregistered, adequately powered replication of our work including a more balanced sample in terms of gender and recommend that the presence of a ceiling effect is explicitly explored in this replication, e.g., by conducting a moderation analysis using baseline motivational levels. If it is the case that autonomy-supportive language and supporting feelings of identification in an online context increase the self-determined motivation of adolescents who are not yet sufficiently motivated without adversely affecting other adolescents with a higher pre-existing motivation, then it is likely too early to discard these strategies. In fact, in this case, these strategies should be used more.

However, even if we could confirm that autonomy support and increasing feelings of identification are helpful in an online context, it would still be useful to look for other ways through which self-determined motivation to have safer sex can be supported among adolescents in an online context. On the one hand, because there is the possibility that the strategies are not (more) effective among adolescents with little motivation, but on the other hand also because they can probably only lead to an increase in motivation to a certain extent. In the first instance, further optimisation of the strategies could be considered. For example, online materials could be developed together with adolescents that they perceive as even more autonomy supportive than those used in this study. In addition, other strategies could be used that are known to positively influence feelings of autonomy, such as the provision of a meaningful rationale to have safer sex (Teixeira et al., 2020). Further optimisation could also be considered regarding the identification strategy. For example, we mainly made use of identification based on age and gender, and a fairly limited interpretation of age and gender. It could be explored whether further refining this, e.g., by including other characteristics – such as sexuality (Nikkelen et al., 2020), or a more refined way of using the existing concepts, e.g., by including non-binary individuals or aspects such as gender expression, would lead to stronger feelings of identification with the author and subsequently to more self-determined motivation.

Finally, one could also look at the last of the three psychological needs explained in the SDT. The SDT states that if we promote adolescents' feelings of autonomy (as we did within the autonomy-supportive condition) and relatedness (as we did in the identification condition), they are more likely to develop self-determined motivation, but the theory also describes that adolescents need to develop a sense of competence in relation to safer sex for optimal motivational development (Ryan et al., 2008). Feelings of competence and related concepts, such as self-efficacy, play a big role in contemporary theories of behaviour change and maintenance (e.g., De Vries, 2017; Fishbein, 2008) and it might therefore be crucial to explore whether supporting these feelings can positively influence adolescents' motivation to perform safer sex. One strategy that is described as helpful in the literature might lend itself particularly to the young target group and the online context: using challenges (Teixeira et al., 2020), for example social media challenges that revolve around practicing safer sex. For instance, adolescent social media users could be asked to show in a video that they carry condoms with them when going out.

### *Limitations and Strengths*

This study is not without limitations, mainly, we should stress that this study was not adequately powered. However, our findings can be used to design a study that will be, while



also using our insights to look for previously unknown possibilities (e.g., that a ceiling effect might take place). Next to this, the study was strongly rooted in theory. Also, given that we used an existing website, no hypothetical scenario, and asked actual adolescents to take part, we achieved high ecological validity. That said, the majority of the participants was younger than the average age of 18.6 years at which the majority of Dutch adolescents become sexually active (Nederlands Jeugdinstituut, n.d.). However, given that adolescents should probably already be given this information before their sexual debut, we do not think this is a major problem and might in fact be a strength of the study. It should also be noted that this high ecological validity led to a problem of potential self-selection. It may be that we mainly recruited participants with a higher baseline motivation to practice safer sex behaviours and/or read about them online. Relatedly, we also failed to obtain a balanced sample in terms of gender. That said, while both aspects limit what we can conclude based on our findings, they may also reflect real-life use of a sexual health website such as sense.info. In other words, these limitations maybe also reflect the high ecological validity we have achieved. We have therefore chosen not to completely exclude data from the limited number of boys in our sample. Also, because we believe it is only ethical to analyse all data that members of the public have shared for scientific purposes. That said, the interested reader may consult the analyses reported by gender group in the result section. Nevertheless, one should interpret our findings with caution, taking into account these limitations.

Additionally, while our study design was highly ecologically valid, our analyses were quite limited to the individual and did not consider the broader context of our participants. Earlier research, for example by Van de Bongardt et al. (2014), has shown that different types of information sources (e.g., by parents and friends) can interact with each other. Following this line of reasoning, it is possible that the messages tested in this study were inconsistent with existing norms in adolescents' social environment, making them less effective. That said, other research in European countries (including the Netherlands) often reports that there are fairly positive norms around safer sex (Rich et al., 2014; Schaalma et al., 1993) and our sample was also highly motivated to practice safer sex. In other words, while – counterproductive – interactions between online information and (online and offline) normative beliefs can occur, we think that the likelihood that our sample experienced a negative normative environment is small.

Moreover, our design only allows for comparison between the different conditions – we have not included neutral conditions (i.e., one in which language is neither controlling nor autonomy-supportive and/or one in which there was no clear source of the message). Although this would have led to a more comprehensive evaluation of the messages tested, this would also have required including even more participants to achieve sufficient statistical power.

Finally, we encountered some problems in what we were able to measure due to privacy reasons. Future replications of our work should avoid that by sampling from a bigger sample frame and include non-cisgender and non-heterosexual adolescents in their study design, especially because they are probably more likely to look for online sexual health information (Nikkelen et al., 2020).

### *Recommendations for Future Research*

Based on our findings we propose a number of recommendations: (1) Future studies should focus more on increasing our understanding of the concept of self-determined motivation to

learn about safer sex as opposed to the concept of intrinsic motivation; (2) motivational differences based on educational levels and gender should be explored more, in fact, it might be helpful to map the motivational processes of adolescents more comprehensively using SDT as a theoretical framework; (3) a preregistered, adequately powered replication of our work including a more balanced sample in terms of gender (including non-cisgender and non-heterosexual adolescents) should be conducted and within this replication the presence of ceiling effects should be explicitly explored, e.g., through a moderation analysis; (4) the strategies used in this study (i.e., autonomy-supportive and identification strategies) should be further optimised; and (5) other strategies known to positively influence self-determined motivation (e.g., competence-enhancing strategies, such as online challenges) should be investigated.

## Conclusions

We could not find any positive motivational effects related to safer sex due to the use of autonomy-supportive language and reinforcing feelings of identification in a web-based context in a sample of Dutch adolescents. However, we found some preliminary evidence that this could be due to a ceiling effect and therefore recommend further exploring these strategies, taking into account some lessons learned, for example, that researchers should conduct moderation analyses using baseline motivational levels.

## Acknowledgements

We would like to thank sense.info for allowing us to allow their website for this study. We would like to thank Dr. Maria Altendorf who provided feedback on the stimulus materials. Finally, we would like to thank (anonymous) reviewers who provided feedback on earlier versions of this article.

## Data Availability Statement

Unfortunately, participants of this study were not explicitly asked for consent for their data to be shared publicly, so supporting data is not openly available. However, if desired, data can be consulted together with the authors.

## Ethical Approval

Ethical approval was granted by the University of Amsterdam's Ethical Review Board (project number 2021-PC-13411).

## Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. Eline Smit was supported by the Innovational Research Incentives Scheme Veni from NWO-MaGW (Netherlands Organization for Scientific Research - Division for the Social Sciences; project number 451-15-028).

## Conflict of Interest

The authors report there are no competing interests to declare.

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**Thomas Gültzow** is an assistant professor (Societal Transition & Behaviour Change) at the Department of Theory, Methods & Statistics (Faculty of Psychology) at the Open University of the Netherlands, however most of the work presented in this manuscript was conducted while he was still an assistant professor at the Department of Work & Social Psychology at Maastricht University. He is a researcher in the areas of health psychology and health communication, specialising in informed decision making, behaviour change, the development and optimisation of interventions, and the role of communication in influencing behaviour change and decision-making processes. Additionally, he maintains a keen interest in promoting diversity and inclusivity.

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## Appendix

### Appendix A. Items Measuring Intrinsic Motivation to Learn From sense.info

Original Item	English Translation	Subscale
Terwijl ik de website pagina las, dacht ik eraan hoeveel plezier het me gaf.	While I was reading the website page, I was thinking about how much I enjoyed it.	<b>Enjoyment/interest</b>
Ik voelde me helemaal niet zenuwachtig tijdens het lezen van de website pagina.	I did not feel at all nervous while reading the website page.	<b>Tension/pressure</b>
Deze website pagina trok mijn aandacht helemaal niet.	This website page did not hold my attention at all.	<b>Enjoyment/interest</b>
Ik denk dat ik de website pagina redelijk goed heb begrepen.	I think I understood the website page pretty well.	<b>Perceived competence</b>
Ik zou de website pagina als erg interessant omschrijven.	I would describe the website page as very interesting.	<b>Enjoyment/interest</b>
Ik denk dat ik dit materiaal heel goed heb begrepen, vergeleken met andere leerlingen.	I think I understood this material very well, compared to other students.	<b>Perceived competence</b>
Ik heb erg genoten van het lezen van deze website pagina.	I enjoyed reading this website page very much.	<b>Enjoyment/interest</b>
Ik voelde me erg gespannen tijdens het lezen van deze website pagina.	I felt very tense while reading this website page.	<b>Tension/pressure</b>
Deze website pagina was leuk om te lezen.	This website page was fun to read.	<b>Enjoyment/interest</b>

*Note.* The English translation was not used in this study and is an approximation for international readers.

## Appendix B. Items Measuring Self-Determined Motivation to Perform Safer Sex

<b>Original Item</b>	<b>English Translation</b>	<b>Subscale</b>
<i>De reden dat ik veilig zou vrijen is:</i>	<i>The reason I would have safe sex is:</i>	
Omdat ik voel dat ik de verantwoordelijkheid wil nemen voor mijn eigen gezondheid.	Because I feel that I want to take responsibility for my own health.	<b>Autonomous regulation</b>
Omdat ik persoonlijk van mening ben dat veilig vrijen het beste is voor mijn gezondheid.	Because I personally think that safe sex is best for my health.	<b>Autonomous regulation</b>
Omdat ik me slecht zou voelen over mezelf als ik niet veilig zou vrijen.	Because I would feel bad about myself if I did not have safe sex.	<b>Controlled regulation</b>
Omdat veilig vrijen een belangrijke keuze is die ik echt wil maken.	Because safe sex is an important choice that I really want to make.	<b>Autonomous regulation</b>
Omdat ik druk voel van anderen om veilig te vrijen.	Because I feel pressure from others to have safe sex.	<b>Controlled regulation</b>
Omdat ik de goedkeuring wil van anderen.	Because I want the approval of others.	<b>Controlled regulation</b>

*Note.* The English translation was not used in this study and is an approximation for international readers.



## Appendix C. Items Measuring Identification with the Author

Original Item	English Translation
In hoeverre vind je jezelf vergelijkbaar met de persoon die de website pagina heeft geschreven?	To what extent do you consider yourself similar to the person who wrote the website page?
In hoeverre heb je het gevoel dat je de persoon die de website pagina heeft geschreven zou kunnen kennen?	To what extent do you feel you could know the person who wrote the website page?
In hoeverre zou je net zo willen zijn als de persoon die de website pagina heeft geschreven?	To what extent would you like to be like the person who wrote the website page?
In hoeverre lijkt de persoon die de website pagina heeft geschreven je een aardig iemand?	To what extent does the person who wrote the website page seem like a nice person to you?

*Note.* The English translation was not used in this study and is an approximation for international readers.