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# Gaming for Safer Sex: Young German and Turkish People Report No Specific Culture-Related Preferences Toward Educational Games Promoting Safer Sex

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## Abstract

**Objective:** Comprehensive sex education programs specifically designed for adolescents and young adults that take into account gender norms and cultural background have shown promise as a means of countering the high sexually transmitted infection rate in young people. Recently, digital gaming interventions delivered on computers or mobile devices have emerged as another way to promote safer sex behavior in a young population. Tailoring these computer-based interventions to their target population has been recognized to increase positive behavior outcomes. In this qualitative study, we investigated whether young female and male adults from two different cultural backgrounds (all living in Germany) would have different preferences and needs in relation to an educational game promoting safer sex.

**Materials and Methods:** We conducted four semistructured focus group interviews comprising open-ended questions with male and female participants who had either a German or a Turkish background. In total, 20 individuals, aged between 18 and 22 years, from two socially diverse and ethnically mixed vocational schools in Germany participated.

**Results:** Independent of cultural background and gender, participants preferred a real-world design with a first-person visual perspective over a fantasy-like third-person perspective. Furthermore, they preferred highly customizable avatars. All participants mentioned the importance of including an alcohol-intoxicated avatar and most participants wanted there to be additional information available about various safer sex approaches and about the use of different barrier protection methods. Males and females reported similar preferences for the design of an educational game promoting safer sex, with the only difference being exactly *how* the topic of having sexual intercourse should be addressed in the game. Males preferred a direct approach, whereas females had a preference for treating this subject more sympathetically.

**Conclusion:** Educational games offer anonymity and can provide young people across different cultural backgrounds with gender-tailored opportunities to experiment with specific safer sex precautions in a non-threatening virtual environment, free from unwanted parental control and peer monitoring.

**Keywords:** Adolescent sexuality, Prevention, Sexual health promotion, Gamification, Serious games, Young people

## Introduction

EVERY YEAR, A QUARTER of a billion young people aged 15–24 years acquire a curable sexually transmitted infection (STI) for the first time. This accounts for nearly half of all new curable STIs.<sup>1</sup> In 2012, with 900,000 people infected with human immunodeficiency virus (HIV) in Western and Central Europe, the prevalence of newly infected 15–24-year-olds was

0.2% for females (1800) and 0.3% (2700) for males.<sup>2</sup> Tried and tested approaches for improving young people's sexual decision-making in such a way that resulting behavior does not harm their health, but keeps them sexually healthy—and thereby reducing the rate of new STIs—include curriculum-based sex and HIV education programs.<sup>3–9</sup> Developing programs for young people has proven to be a promising way of lowering the high infection rate seen in this population.<sup>10,11</sup>

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The recognition that gender norms<sup>12</sup> and cultural factors<sup>13</sup> influence the sexual decision-making process of young people can further improve the impact of sex education.<sup>14</sup> In this article, we associate ethnic identity with boundaries that determine who is a member and who is not and designate which ethnic categories are available for individual identification at a particular time and place.<sup>15</sup> In this sense, boundaries emerging out of ethnic identity help to answer the question: Who are we? In contrast, culture is seen as a conceptual construction that emerges from individual action, group action, and individual and group interactions within larger society,<sup>16</sup> helping to answer the question: What are we?<sup>15</sup> The way females learn about sex and sexuality often differs from the way males learn about these issues, with, for example, females preferring intimate talks with parents, especially mothers, and males preferring peers and mostly exclude adults for intimate talks about sexuality.<sup>10</sup> This leads to gender-specific expectations related to sexual intercourse and therefore a need for gender-tailored sex education programs.<sup>17</sup> Furthermore, integrating popular culture, such as online games, into sex education efforts—as well as responding to a need for information that integrates culture-specific expectancies—helps to ensure that programs are grounded in the lives and realities of young people.<sup>18–22</sup>

In recent years, digital gaming interventions have emerged as a novel way of making developmentally and culturally appropriate interventions available to a population of young people.<sup>23</sup> These so-called educational games are interventions delivered by computers or mobile devices that aim to educate or promote behavior change while at the same time being enjoyable and intrinsically motivating.<sup>24–26</sup> Learning effects are fostered by utilizing immersion techniques (whereby a player becomes fully absorbed in the play), by establishing flow (a state of highly focused concentration), and by meeting the specific individual's desire to become proficient in the game.<sup>27–30</sup> Delivering interventions promoting behavior change in an educational game environment has been shown to facilitate positive outcomes in participants, such as increased motivation and enjoyment to take part in an intervention.<sup>31</sup> However, in a recent meta-analysis,<sup>32</sup> DeSmet et al. reported that educational games failed to induce a long-term effect on behavior and stressed the importance of tailoring a game not only toward behavioral outcomes but also taking into account both sociodemographic information (e.g., age, gender, body frame) and behavioral change needs (e.g., current level of lifestyle adoption, already acquired knowledge, stages of change, or motivation). It has been recognized that this kind of tailoring of computer-based interventions can lead to engaging and immersive learning experiences that are effective in creating positive behavior outcomes, such as increased fruit and vegetable intake and decreased calorie consumption.<sup>33</sup> Tailoring game content in this way has been shown to be particularly effective in educational games for sexual health promotion.<sup>34–35</sup>

In the present study, our goal was to identify content- and design-related preferences among future players of an educational game promoting safer sex that we are currently developing for young people. Furthermore, we wanted to investigate whether these game-related preferences would differ depending on gender and cultural background. It has been reported that preferences for safer sex programs depend on both gender and culture,<sup>36–38</sup> even if these differences

might be much smaller than common understanding would suggest.<sup>39</sup> For example, a written survey study conducted in China (among 440 college students aged between 19 and 24 years), which asked about preferred sources for sex education, showed that females favored reading material, classroom lectures, and their parents as sources of information, whereas males preferred friends, the internet, and personal sexual experience as primary sources.<sup>40</sup> Coleman and Testa<sup>41</sup> conducted a cross-sectional survey among an ethnically diverse sample of 3007 adolescents aged between 15 and 18 years attending schools in London, United Kingdom, about their preferred topics in relation to sex education programs. Females in general favored learning about emotions, relationships, and contraception, preferably delivered by someone of the same sex. Black students favored learning more about biological and cultural influences, such as the reproductive cycle or culture-specific role distributions, as well as sexual behavior and STIs, with black male students showing a preference for family-based information, preferably delivered by someone of the same ethnic background. In contrast, Asian students showed a stronger interest in information about STIs and contraception, while preferring to keep sex education out of the family household. With regard to such different attitudes and expectations being influenced by gender and culture, the present study first focused on identifying potential game-related content and design preferences of future players. Second, we explored whether these game-related preferences would differ depending on the gender and cultural background (German or Turkish) of the players.

## Materials and Methods

### *Participants and procedure*

Four focus groups were conducted with a total number of 20 participants, all aged between 18 and 22 years (Table 1).

TABLE 1. CHARACTERISTICS OF THE STUDY SAMPLE (N=20)

<i>Participants</i>	<i>Age (years)</i>	<i>Gender</i>	<i>Cultural background</i>
Recruitment at vocational school 1			
Participant 1	19	Male	German
Participant 2	21	Male	German
Participant 3	18	Male	German
Participant 4	18	Male	Turkish
Participant 5	22	Male	Turkish
Participant 6	19	Male	Turkish
Participant 7	18	Female	German
Participant 8	20	Female	German
Participant 9	19	Female	Turkish
Participant 10	21	Female	Turkish
Recruitment at vocational school 2			
Participant 11	18	Male	German
Participant 12	18	Male	German
Participant 13	21	Male	German
Participant 14	18	Male	Turkish
Participant 15	19	Male	Turkish
Participant 16	22	Female	German
Participant 17	18	Female	German
Participant 18	18	Female	German
Participant 19	19	Female	Turkish
Participant 20	21	Female	Turkish

All participants were recruited from two vocational schools in Germany that are attended by students with diverse social backgrounds (e.g., socioeconomic status) and different ethnic identities (e.g., African, Turkish, and German). All procedures followed were in accordance with national and international ethical standards. Following approval from the institutional ethics committee, researchers informed participants about the study in general terms during a short visit to their classroom. Furthermore, posters and flyers in common areas such as the refectory and entry hall also displayed a quick response code (a so-called QR-code consisting of a matrix barcode that can be scanned by smartphones and links to a website) that allowed participants to get more information about the study. Only potential participants who felt closely related to a German or a Turkish cultural background and were born to parents who have either a German or a Turkish cultural background were invited to sign up. After giving their written informed consent online, participants could sign up for the study. They then received an email containing more details about the date and location of their specific focus group interview. A short demographic survey with open-ended questions asked participants to identify their age, gender identity, primary cultural background (German or Turkish), and the name of the vocational school that each participant currently attended. Participants were allowed to quit the study at any time (without providing a reason and without any consequence).

Although a great variety of groups with different cultural backgrounds can be found in Germany, people with a Turkish cultural background represent by far the largest group, comprising 3.36% of the German population in 2012. Turkish culture differs from German culture in aspects such as the form of relationship between the individual and the collectivity (with Turkish culture tending toward collectivism vs. German culture tending to individualism), the importance of family ties (with Turkish culture emphasizing the importance of family ties stronger than German culture), the number of children (with Turkish families having more children than German families), the definition of gender roles (with Turkish culture valuing masculinity over femininity compared with a more balanced value in German culture), and tolerance of ambiguity and uncertainty (where uncertainty avoidance is higher in Turkish culture compared with German culture).<sup>42</sup> Young people with either a German or a Turkish cultural background, who were fluent in German, were included in the present study. There were 11 male participants aged between 18 and 22 years ( $M=19.8$ , standard deviation [SD]=1.4), of whom five had a Turkish cultural background and six had a German cultural background. Of nine female participants aged between 18 and 22 years ( $M=19.5$ ,  $SD=1.5$ ), four had a Turkish cultural background and five had a German cultural background.

#### Study setting

Every focus group had the same moderator and was held in the evening at one of the schools that participants attended. Participants gave their consent and received a gift voucher of €25 for their participation. Focus groups were divided by gender and cultural background, resulting in four different groups: males with a Turkish cultural background, males with a German cultural background, females with a Turkish

TABLE 2. COMPOSITION OF THE DIFFERENT FOCUS GROUPS

<i>Focus groups</i>	<i>Mean age in years (SD)</i>	<i>Participants</i>
Group 1 Males with Turkish cultural background ( $n=5$ )	19.2 (1.6)	Participant 4 Participant 5 Participant 6 Participant 14 Participant 15
Group 2 Males with German cultural background ( $n=6$ )	19.7 (1.4)	Participant 1 Participant 2 Participant 3 Participant 11 Participant 12 Participant 13
Group 3 Females with German cultural background ( $n=5$ )	19.2 (1.7)	Participant 7 Participant 8 Participant 16 Participant 17 Participant 18
Group 4 Females with Turkish cultural background ( $n=4$ )	20.0 (1.1)	Participant 9 Participant 10 Participant 19 Participant 20

SD, standard deviation.

cultural background, and females with a German cultural background (Table 2).

Interviews were based on a semistructured protocol containing open-ended questions, which assessed three factors related to the design and three factors concerning the content of the game. Questions about game design were as follows: What do you want a game about safer sex education to look like? What kind of feel should the game have? How would you want to be represented as a player in that game? Content-related questions were as follows: What kind of content should be covered by the game? Are there any topics that you feel strongly should be included? What specific aspects of safer sex education do you think should be covered by the game or should not be covered at all? All interviews were conducted in German and lasted between 45 minutes and 1 hour. All focus group sessions were audio recorded, and during the sessions, observational notes were taken, focusing on any strongly stated comments made by participants, their body language, and any nonverbal activity such as eye contact between certain participants. All sessions started with an introduction to the objectives of the study (including a short introduction to serious games) and information about the role of the participants during the focus group. Participants introduced themselves using only their real or fictitious first names to increase confidentiality. At the end of the session, the answers to the questions were summarized and participants were asked to provide feedback to confirm the accuracy of the findings.

#### Data processing and analysis

Interviews were conducted until data saturation (the point at which no new information emerges) was reached. The interviews were recorded with a digital voice recorder and transcribed verbatim by the first author. During transcription, all

identifying and personal information was deleted. The final transcripts—as well as the audio recordings—were then reviewed by the first author and by an independent researcher to ensure that the focus group interviews were transcribed completely and accurately. Transcripts were imported into the qualitative data management software NVivo version 10 (QSR, Doncaster, Australia) and analyzed by the first author, who conducted a thematic analysis<sup>43</sup> in which themes were established and explored. An inductive process was used to derive any subthemes from the main themes. A sample of 30% of the data was coded by a second researcher who was independent from the first author. The initial coding was compared, reviewed, and in the few instances where differences were found, refined to result in a more representative coding. Having established consensus on how the data were coded, the codebook was updated and the transcripts were coded by the first author. Results are structured according to the themes that emerged from this analysis. Quotations representing themes are included to demonstrate study findings. These quotations were translated from German to English by the first author—who is native German-speaking and experienced with translating German into English—and then back-translated to German by an independent researcher (also a native German speaker) to ensure the accuracy of the English translation. Table 3 provides an overview of themes and subthemes that emerged from the focus groups based on how frequently they were mentioned.

## Results

### *Realistic real-world design*

There was consensus across all four focus groups that the overall design and layout of the educational game should be similar to a real-world setting. In particular, participants were unequivocal in their rejection of fantasy or fairytale-like designs. One 22-year-old German male stated, “The design should reflect the real world. No fairytale-like sceneries. Just like a real city or like a real room, something that I

can recognize as being realistic.” Moreover, participants did not approve of designs linked to preadolescent age ranges, such as avatars with unnatural skin colors (e.g., light blue) or unnatural environments (e.g., fantasy landscapes). In relation to one such design, an 18-year-old Turkish male responded, “Oh no, not such a child-like setting. It needs to be real, well, realistic, like avatars looking like real people in a real environment.”

### *Single-player or multiplayer game*

There were no specific preferences among male participants toward having only nonplayer characters controlled by computer artificial intelligence (single-player) or avatars controlled by real online players (multiplayer) to interact with. In general, female participants also embraced the possibility of a multiplayer design. One 19-year-old Turkish female stated, “There should be real players, well, an online game where other avatars are controlled by real people. That would be exciting, and you could meet online, like knowing that there is really someone controlling the avatar that you don’t know.” However, there was no overall consensus as some female participants were more in favor of a single-player game. A 22-year-old Turkish girl said, “There should also be a possibility to meet computer avatars that are not linked to a real person. Like having places where only computer avatars are present and other places such as specific bars or clubs where avatars are controlled by real people.” The main objection against a multiplayer game was the perceived uncertainty regarding who would be the real person behind an avatar in a multiplayer environment. One 21-year-old German female mentioned, “You never know who is behind a certain avatar, like a guy over 60 or so. I would feel like prey. There should be no chat option, only predefined dialogues.”

### *Avatars*

The look and feel of avatars were important for participants across all focus groups. They preferred to control their avatar from a first-person visual perspective (i.e., seeing through the eyes of the avatar) compared with an elevated third-person visual perspective. A 17-year-old German male stated, “To see my avatar from above is not appealing. He needs to have a character, well, the one I gave to him.” A 19-year-old German female reported, “The perspective is also important to me. Looking from above down on my avatar just feels strange. I need to see her at the same level, like in ego-shooter games.” Furthermore, all participants wanted to be able to adapt the avatar to incorporate their own identity. One 22-year-old Turkish female said, “I should be able to adapt the avatar to my needs, like hair color, outfit, age, and so on.” A 22-year-old Turkish male stated, “To identify with my avatar, I need to be able to give him some character traits that I find important. Viewing him from above is a no-go! I need to see him face-to-face or in ego-shooter style.” Moreover, across all groups, participants agreed that the avatars would need to look human-like. An 18-year-old Turkish female said, “I can’t imagine like fantasy characters having sex! No, that would be ridiculous. They need to look like humans.” A 22-year-old German girl mentioned, “I need to identify with my avatar. It is like if she does something, it needs to be as if I did it. They need to look somewhat

TABLE 3. FOCUS GROUP THEMES AND SUBTHEMES BASED ON FREQUENCY OF MENTION

<i>Focus group question</i>	<i>Theme</i>	<i>Subthemes<sup>a</sup></i>
General look of the game	Realistic	None identified
General feel of the game	real-world design	None identified
Representation of the player	Single-player Multiplayer	Security Realistic Uncertainty
	Avatar	Identity Realistic
Content covered	Approach to sex	Directness Realistic Anonymity
	Health-related contexts	Realistic Recreational
Important topics	Intoxication	Loss of control
Specific aspects	Imparting knowledge	Information Educational

<sup>a</sup>Subthemes are presented in descending order according to how frequently they were mentioned.

realistic.” A 17-year-old Turkish male said, “Avatars should be able to form groups, like cliques, and go out together and have fun. Like in real life.” One 21-year-old German girl mentioned, “Avatars should also represent people from other ethnicities. What if I have a preference for black men? I should be able to find a corresponding avatar too. Avatars should be multicultural and multiethnic.”

#### *Approach to sex*

There were differing views across gender about how sexual intercourse should be integrated in the game. Asked about it, male participants opted for a straightforward implementation. An 18-year-old Turkish male mentioned, “Avatars should have sexual diseases. Then, you would need to decide if you want to have sex or not.” Some female participants preferred a softer and more indirect approach, emphasizing the sensual experience instead of focusing on the physical intercourse while still integrating the consequences of sexual behavior. A 17-year-old Turkish girl said, “It would be nice to approach sex in a more subtle way, like not making too much fuss about it.” Other female participants were in favor of having a realistic approach. One 19-year-old German girl said, “Well, I would make it more realistic, I mean if it is from 16 onward, I mean everyone knows what a naked man or a naked woman looks like. I don’t think that would be a problem.” Another 19-year-old Turkish girl mentioned, “Choosing between different sexual positions would be important. You could test out things you don’t know yet using your avatar.” Some female participants mentioned that avatars should also probe players’ commitment to safer sex. A 21-year-old German girl said, “But there should be questions during the game, like, ‘do you want to have sex with him?’ because you don’t have any condoms with you, you know. You would ask that question to yourself if you were in that kind of situation.” Across all focus groups, participants wanted to have avatars that could get STIs if they had unsafe sex. A 22-year-old German girl stated, “Yes, and they should also be able to get diseases. If they don’t take care, avatars should run the risk of infecting themselves and even of dying.” Moreover, participants valued the anonymity provided by games, especially when touching upon a sensitive and private topic such as sexual activities, having the freedom to experiment with different consequences associated with their sexual decision-making in a setting free from peer monitoring and—most importantly—without facing negative consequences in real life, which was important to the participants. As one 19-year-old Turkish girl said, “It is OK to have a straightforward approach to sex in the game. This allows me to test things without facing negative consequences and without my friends knowing what kind of fantasies I might have.”

#### *Health-related contexts*

When asked about specific points the game should focus on, males stated that they would like to have some kind of contest in the game. One 22-year-old German male said, “Some action would be nice, like fighting rivals.” Female participants tended to opt for more everyday scenarios. A 22-year-old Turkish female stated, “Including daily activities seems important to me, like it would be a normal day and then you go out at night, which means that the male avatar needs

to wait until I am dressed up or until I have finished dinner, or he needs to be patient until I decide that I am ready.” An 18-year-old Turkish female said, “Consulting a physician would be cool. Like, he then tells you that you are ill or he just gives you some pills,” and an 18-year-old Turkish male said, “It should be fun, too! Maybe a physician challenges us with sex-related questions and we need to solve them, like finding out the correct answers by asking others or by just trying things out.” A 19-year-old German girl mentioned, “And it should be possible to get into precarious situations during the game and then play through them.” One 21-year-old German girl summarized this nicely: “It should be like in real life; like situations you could really experience.”

#### *Intoxication*

Alcohol consumption was identified as an important variable. One 22-year-old Turkish girl said, “Alcohol or drugs should be in there. I mean, that is a reason why many people end up having sex. If the avatar takes drugs or drinks too much, the screen could be blurry or shaky or the avatar could not correctly execute our commands any longer.” A 17-year-old Turkish male reiterated this idea by stating, “Alcohol is important! If my avatar is drunk, he should be somehow out of my control.”

#### *Imparting knowledge*

Some participants wanted to get more information about safer sex precautions. A 17-year-old German male said, “Combining avatar decisions such as having unsafe sex with explanations about the risks would be helpful.” A 19-year-old Turkish male mentioned, “There could be quizzes about safer sex, like one playing against another and whoever knows the right answer wins.” One 22-year-old German male said, “I would like to have an info board, like a virtual info center that provides me with all the information I need to know. Like a ‘sex master’ who tells me about fun and risks related to certain practices.” Some participants asked for educational scenarios explaining the use of specific barrier protection methods. An 18-year-old Turkish girl said, “Like being told by a virtual physician like how to use a contraceptive coil, how to insert it, well, how all this stuff works. But only briefly, like a video clip.” A 19-year-old German girl mentioned, “There should be short video clips explaining like how to use a condom. The avatars could show that.” A 22-year-old German girl confirmed the need to impart knowledge related to the handling of contraceptives: “Showing how to use contraceptives is important, like including pictures or giving tips.”

Besides gender-related differences regarding the approach to sex, no other gender- or culture-related differences could be identified. Participants showed homogeneous expectations toward game design and overall content.

#### **Discussion**

The findings from the present study demonstrate that the design preferences of young people toward an educational game promoting safer sex did not differ depending on their cultural background. However, some gender variation was found related to specific components of the game.

All participants opted for a design that reflects a real-world scenario and rejected all designs reminiscent of a fantasy world. Young female adults, independent of their cultural background, expressed their desire to include daily activities, such as putting makeup on or dressing their avatars. This preference for using a realistic setting in sex education programs aimed toward young people has been reported previously<sup>36,41</sup> and is also in line with recent theories of gamification.<sup>44</sup> Young male adults across all groups also opted for a realistic setting, but wanted to include some action modules (e.g., some sort of contest) to increase gaming enjoyment.

While male participants did not express a preference for either a multiplayer or a single-player game, female participants preferred the multiplayer option because this allows for a real avatar-induced virtual social contact. Their main concern about this option, namely an uncertainty about the real gender and motivation of the actual person behind the avatar, has been addressed in previous research. Crowe and Watts<sup>45</sup> showed that proclaimed identities within virtual social systems are not reliable. A more recent study emphasized that men who use a female avatar tend to align with the social norms and rules related to the gender of their avatar.<sup>46</sup> However, in a multiplayer game, avatars remain virtual agents that do not necessarily reflect the actual gender and motivation of the real individuals who operate them.

Notwithstanding these findings, one important way of creating real-world scenarios is to increase self-identification with the virtual avatar that is supposed to depict the player. All participants in our study preferred a first-person visual perspective. This is not surprising, considering that the detection and recognition of social interactions are facilitated in this perspective.<sup>47</sup> Moreover, as opposed to a third-person perspective, the first-person perspective is centered upon the player's own body and is perceived in an egocentric reference frame.<sup>48</sup> Such a metarepresentation of mental and bodily states is a prerequisite to the induction of human self-consciousness as related to a virtual avatar<sup>49</sup> and when attempting to increase the player-avatar identification.<sup>50</sup> This is also reflected in the importance participants placed on being able to customize their avatar. An avatar that allows for a high degree of customization was preferred over an avatar with a low degree of customization, or a predefined avatar. High avatar-player similarity determines the player's identification with the avatar, which in turn leads to more enjoyment of the game.<sup>51</sup> Personalization of an avatar has also been shown to increase embodied perception<sup>52,53</sup> so that the more closely an avatar resembles its user, or has been created according to the user's specifications, the more likely it is that the user will hold positive attitudes toward this avatar.<sup>54</sup> Within the framework of safer sex promotion, all participants across gender and cultural background showed a clear preference for highly customizable avatars.

Contentwise, young people's preferences did not differ depending on their cultural background. The only gender variation observed was related to how the topic of having sexual intercourse should be approached by the game.

Across all focus groups, participants advocated the inclusion of an alcohol-intoxicated avatar because that is when you end up having sex with unknown people, as one 22-year-old German female mentioned during discussion. Alcohol consumption remains related to higher rates of sexual risk-taking,<sup>55–58</sup> and implementing the option to select a drunk

avatar condition in an educational game that aims to promote safer sex practices could allow young people to experience reduced volitional control in a safe environment. Integrating these preferences in future games appears to be justified, especially as it has been recommended that the design of these kinds of educational games needs to take into account the players' expectations with regard to the characteristics, goals, rules, and challenges of the game.<sup>59–61</sup> This is particularly relevant when trying to engage hard-to-reach populations who may be attracted to educational games because of a pre-existing enjoyment of gaming.<sup>62</sup>

Previous studies have observed that compared with males, female adolescents express a greater desire for safer sex information covering multiple topics,<sup>36,63</sup> and that preferences across topics differ according to ethnic or cultural group affiliation.<sup>41,64</sup> We cannot support these findings as no differences related to gender or cultural background have been observed with regard to safer sex information. Across all focus groups, participants expressed their desire to be informed about various safer sex approaches and about the specific use of different barrier protection methods or contraceptives. The only gender-related difference we found was that males preferred a more direct approach when it comes to introducing sexual intercourse in the game, whereas female participants favored a slightly softer approach that would be embedded in a narrative, but nevertheless needed to remain realistic. This need for a narrative is beneficial and has been identified by Kapp<sup>65</sup> as providing the player with a vicarious learning experience.

It is possible that this openness across gender and culture toward different safer sex methods and precautions could be explained by the unique characteristics of educational games. Adolescence and young adulthood are times for developing a new sense of self and offer opportunities to influence behavior that supports positive long-term consequences.<sup>66</sup> Young people need opportunities to observe and reflect on the possible consequences of sexual risk behaviors in a safe and nonthreatening environment. Educational games meet this need and allow for exploration of new activities. The resulting consequences of this exploration take the form of reward (e.g., gaming points) or loss (e.g., a diseased avatar). What is more, this exploration takes place in a private setting, free from parental or peer influence.<sup>23</sup> Educational games tailored toward the needs and expectations of young people could offer them the necessary privacy to explore safer sex practices not commonly used within their social environment.

### Limitations

Ethnic and cultural group categorization is complex. Cultural groups need to be homogeneous across different religious and social subgroups, whereas ethnic groups need to reflect not only a common descent but also a shared culture and history that are more often dynamic than fixed. It is acknowledged that cultural and ethnic categorization might obscure diversities within groups and therefore reinforce unhelpful stereotypes. Therefore, care should be taken in applying these results to various cultural or ethnic subgroups.

Furthermore, this study presents only a limited sample of young people from one of just two different cultural backgrounds. The cultural capital of young people raised in Germany by their Turkish families might be influenced by their

mixed cultural environment.<sup>68–70</sup> It is possible therefore that different results might be found in relation to young Turkish adults born and raised in Turkey. Although we included the interviews of young adults whose views are not normally considered (i.e., young adults from a Turkish cultural background), the rather small sample size makes it difficult to determine whether data saturation was finally reached. This holds also true for males versus females as our limited sample of participants could lack data present in a larger sample. However, we included information about dissenters to determine within-group saturation as this would increase the descriptive validity, interpretive validity, and theoretical validity associated with emergent themes. We further monitored the quality of words to assess across-group saturation. However, due to our small sample size, we may have missed information that would have emerged had we had more focus groups.

Participants were told that the study objective was to identify how a serious game that promotes safer sex behavior should look and feel like. Therefore, we cannot exclude the possibility that an expectancy bias (i.e., a response variance due to varying expectations of the purpose of a task by participants so that their own view or opinion is not truly reflected) may have occurred.<sup>71</sup> However, we were careful to design our questions in a way that avoided creating expectations that would inadvertently shape responses. We further standardized the recruitment material and used a standard opening statement (read out by the moderator at the beginning of the sessions), which clarified both process and roles. Moreover, participants introduced themselves using only their first names to increase confidentiality. However, because some participants attended the same school, we cannot exclude the possibility that some might know each other, and this could have led to an acquaintance bias (i.e., individuals who know each other may influence each other's responses).<sup>72</sup> Even if we did not identify any biased responses, we cannot exclude the possibility that such a bias may have occurred.

Last, transcripts of recordings were reviewed by only one additional researcher for thematic analysis and translated into English by the first author. This might have led to missed codes and to a loss of fine linguistic nuances that exist in one language, but are not exactly transferable into another language. Although great care was taken over the coding and translations, we cannot exclude the possibility that some codes and linguistic nuances may have been lost during this process.

## Conclusion

All participants preferred a real-world design with a first-person visual perspective, and female participants, in addition, preferred a multiplayer option. Great emphasis was placed on the importance of highly customizable avatars. Participants said that they would like to have information modules available throughout the game to explain various safer sex approaches and the use of different barrier protection methods. Across all focus groups, participants stated the importance of including an alcohol-intoxicated avatar to increase awareness about the loss of control that can occur while in an intoxicated state. Young people's preferences toward an educational game promoting safer sex were identified as being mostly independent of their cultural background. Only female participants preferred a more indirect approach toward topics

related to sexual intercourse, whereas male participants preferred a more direct approach. In summary, educational games profit from the anonymity they provide. In the present study, we established that such a game could offer young people with different cultural backgrounds (in this case, German and Turkish) gender-tailored opportunities to experiment with specific safer sex precautions in a nonthreatening virtual world that is free from parental or peer monitoring.

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