Effects of alcohol portrayals in movies on actual alcohol consumption: an observational experimental study

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ABSTRACT

Aims This study uses an experimental design to assess the effects of movie alcohol portrayal on alcohol consumption of young adults while watching a movie. Gender, weekly alcohol use and identification with the movie actor/character were assessed as moderators. Design A two (sex) × two (movie: alcohol or no portrayal of alcohol) between-subject design was used. Setting Participants watched a contemporary movie in a semi-naturalistic living room setting. Participants A total of 122 same-sex, young adult dyads (ages 18–29 years) participated in the experiment. Measurements Their actual alcohol consumption while watching was examined. A multivariate regression analysis was used to examine the effects of the movie condition on alcohol consumption. Findings Assignment to movie alcohol increased alcohol consumption during the movie for men but not women. Identification and weekly alcohol consumption did not moderate the relation between movie condition and alcohol consumption. Conclusions Viewing a movie with alcohol portrayal can lead to higher alcohol consumption in young men while watching the movie.

INTRODUCTION

Alcohol misuse is a prominent problem world-wide, and one of the major risk factors for burden of disease and social harm [1,2]. Young people in particular are adopting harmful patterns of alcohol consumption [3,4] and are at particular risk of acute alcohol-related harm, including car accidents and untimely death [5]. Because alcohol misuse is a severe social and public health problem, identifying processes that influence heavy drinking is imperative. Alcohol portrayal in movies is thought to affect young people’s alcohol consumption [6–9]. Alcohol use is portrayed frequently in movies [10–13], and there is ample evidence that alcohol portrayal in movies is related to the onset and continuation of alcohol use in young people [14,15]. However, these survey studies have assessed the long-term effects of alcohol portrayal in movies rather than examining contemporaneous effects. Exposure to alcohol depictions in movies may cue alcohol consumption in the same way that exposure to food commercials cues eating behaviour [16,17]. The aim of the present study was to replicate a study by Engels et al. [18], who tested experimentally the effects of alcohol portrayal in movies on young adults’ alcohol consumption.

Engels et al. [18] exposed 40 pairs of males to two movie conditions (many versus few alcohol portrayals) for 60 minutes in a bar-laboratory setting in which they had access to non-alcoholic or alcoholic drinks. Males who watched a movie containing more incidents of alcohol portrayal drank on average 1.5 glasses more than those who watched a movie containing few incidents of alcohol portrayal.

Several mechanisms can be identified that explain increased alcohol consumption after exposure to alcohol. First, cue–reactivity might explain the effects of alcohol portrayal. Robinson & Berridge [19] state that repeated use of a substance produces a dopaminergic response.
that becomes sensitized every time the drug is used. This process causes the substance to be perceived as necessary and allows it to acquire strong motivational properties. Studies have shown that heavy drinkers respond to alcohol cues with an increased desire for alcohol (craving) [20–23]. Secondly, processes of imitation might affect alcohol consumption. Research has found that people assume each other’s behaviour automatically and unconsciously [24,25]. This might also apply to seeing actors drinking on screen.

This study extended the study by Engels et al. [18] in several ways. First, we took a completely different approach to constructing the stimulus (movie). One movie was carefully edited into two versions in order to limit the possibility that differences found in alcohol consumption could be due to factors other than alcohol portrayal. Secondly, as there are profound sex differences in young adult drinking [26,27], it was important to test sex differences. Males drink more alcohol per instance and are more frequent users of alcohol than females [28]. We expected the effects of alcohol portrayal in movies to be stronger for males than females. Thirdly, we tested the moderating effects of identification. Identification with particular characters might amplify susceptibility to alcohol portrayal in movies. Alcohol use of characters liked by young people [11] could appeal to pre-existing norms on drinking, and lead subsequently to alcohol use. In movies, alcohol use is depicted mainly as a natural and pleasant part of social interaction, whereas the negative consequences of alcohol use are rarely portrayed [11]. Identification with a character may be an important factor in the adaptation of a character’s drinking behaviour, particularly because an actor is selected for his or her ability to inspire empathy on the part of the viewer [29]. We expected that identification with actors and/or characters might amplify the effects of alcohol portrayal in movies.

**METHODS**

**Participants**

Participants were 122 same-sex dyads of college students (56 male and 66 female, mainly first-year psychology students) aged 18–29 years [mean = 21.0, standard deviation (SD) = 2.54]. Participants were recruited via flyers and an internet system at Radboud University Nijmegen. In this system, students can sign up voluntarily for participation in ongoing research; however, students enrolled in courses of study (e.g. psychology) are obliged to participate in free-to-select experiments for a specific number of hours during their first year [30]. All were asked to come with a friend. Students received either US$20 or course credits.

**Design**

A randomized two (sex) × two (movie condition: alcohol, non-alcohol) between-subject design was used. Participants watched in same-sex dyads. Two 60-minute versions of the same movie were created: one showing exclusively non-alcoholic scenes and the other showing both male and female characters drinking alcohol in addition to non-alcoholic scenes. Both versions of the movie were edited carefully in such a way that the two versions were of the same length and did not differ with regard to scene and storyline. We used the same scenes in both conditions as often as possible. In the few cases where it was not possible to use the alcohol scene in the control condition, we used a similar scene without alcohol in the control condition [31]. In the alcohol condition, alcohol was portrayed for 565 seconds. The main male character was portrayed with alcohol for 541 seconds (12 sips), the main female character for 532 seconds (six sips). Alcohol portrayal was defined as real or implied use of alcohol, including occasions where an alcoholic beverage was clearly in the possession of a character or was mentioned verbally. Alcoholic beverages that were displayed, but not implied as being consumed, by a character were not coded as alcohol portrayal [14].

**Procedure**

To observe participants in a semi-naturalistic setting, we tried to create a living room ambience in a laboratory room. Relaxing couches and decorations were placed into the room [29]. Sessions were conducted on Tuesday to Friday evenings and lasted 1.5 hours. Participants learned that they would watch a movie for 1 hour and were asked to act as if they were at home. They were told that they could obtain free drinks and nuts from the refrigerator. Participants could choose from beer, wine, soda or water in bottles of 20 or 25 cl. The movie What Happens in Vegas [32] was chosen for its numerous scenes containing alcohol and for its appeal to both men and women. The movie is about two people who discover they were married following a night of debauchery, with one of them winning a huge jackpot after playing the other’s quarter. The unhappy pair try to undermine each other and get their hands on the money—falling in love along the way. The main characters were played by Cameron Diaz and Ashton Kutcher. Of the participants, 88.9% indicated that they recognized Ashton Kutcher and 93.8% indicated they recognized Cameron Diaz. During each session, video recordings were made by a hidden camera. Debriefing of the participants was performed after the data collection was completed. Whenever participants had consumed more than two alcoholic consumptions they were offered a taxi. The local ethical
Measures

Observational data

The researcher coded the amount of bottles and the amount of centilitres consumed and subtracted what was left in the bottle after the session ended [33]. The wine offered contained 2.5 cl. of pure alcohol per bottle. The beer offered contained 1.25 cl. of pure alcohol per bottle. Because more beer had to be consumed to equal the alcohol contained in one glass of wine, the total amount of beer consumed per participant was divided by 2 (i.e. based on the difference in pure alcohol between wine and beer bottles: 2.5/1.25 = 2). We used this standardized measure as the dependent variable in our analyses (cf. [34]).

Drinking habits

Alcohol use was assessed with one question: ‘Which of the past 7 days did you consume alcohol and how many glasses did you drink?’ The sum total of the last 7 days was the measure used in the analysis [34]. Problem drinking [35] was measured with six questions containing response possibilities of ‘yes’ or ‘no’; for example: ‘In the past 12 months have you tried to stop drinking without succeeding?’.

Attitude towards the movie

Six statements about the movie were presented, for which participants could indicate on a five-point Likert scale whether they agreed with the following statements (ranging from ‘totally do not agree’ to ‘totally agree’); for example: ‘I liked the movie’. Cronbach’s \( \alpha \) was 0.80.

Identification

We assumed Cohen’s definition [29], which defines identification as a mechanism through which the audience assumes the identity, goals and perspective of a character, as if the events were happening to them. To test identification, participants completed a questionnaire for actor and character (Appendix 1) in which they indicated on a five-point Likert scale (ranging from ‘totally disagree’ to ‘totally agree’) whether they agreed with the statements presented. Examples were: ‘I try to look like Cameron’, ‘During viewing, I felt I could really get inside Joy’s head’ and ‘I think I have a good understanding of Joy’. Alpha of identification with actors Cameron Diaz and Ashton Kutcher was 0.82 and 0.87, respectively. Alpha of identification with characters Joy and Jack was 0.83 and 0.82, respectively.

Strategy for analyses

To examine the effects of movie condition on alcohol consumption, we applied linear regression analysis using the software package MPLUS version 5.1 [36], which allows the handling of nested data. Individuals’ drinking is nested within dyads and failing to take this into consideration might lead to an inflation of effects. To correct for the potential non-independence of the data, the TYPE = COMPLEX procedure was used. This procedure corrects the standard errors of the parameter estimates for dependency leading to unbiased estimates [37].

In model 0 we tested whether there were main effects of condition. In model 1 we examined whether sex was a moderator between movie condition and alcohol consumption. Model 2 tested this relation while controlling for weekly consumption. In model 3 we assessed the three-way interaction for sex, weekly drinking and condition on alcohol consumption. Further, we tested separately for men and women whether identification with both male and female actors/characters was a moderator between movie condition and alcohol. As the \( \chi^2 \) goodness-of-fit test is sensitive to sample size, the fit indices \( \chi^2 \), comparative fit index (CFI) and root mean square error of approximation (RMSEA) were utilized [38].

RESULTS

Descriptives

Men and women differed substantially in self-reported alcohol consumption. Male participants reported a higher weekly consumption (\( t_{(223)} = 7.22, P < 0.001 \)) and scored higher on problem drinking than women (\( t_{(240)} = 3.21, P = 0.001 \)). There was no difference between men and women in attitude towards the movie. Of the male participants, eight (7.1%) did not drink alcohol during the movie versus 41 (31.1%) of the female participants. While watching, men consumed substantially more alcohol than women (\( t_{(242)} = 7.65, P < 0.001 \)). The intraclass correlation (ICC) was 0.515 for male and 0.754 for female dyads (\( P < 0.001 \) in both cases); the ICC was significantly different for males compared with females (\( Z = -2.21, P = 0.027 \)). Further, men identified more with Ashton Kutcher (\( t_{(111)} = 3.01, P = 0.003 \)) and marginally significantly more with Jack (\( t_{(111)} = 1.77, P = 0.077 \)) than women. Women identified more with Cameron Diaz (\( t_{(122)} = -3.42, P = 0.001 \)) and Joy (\( t_{(111)} = -4.33, P < 0.001 \)) than did men. Of all participants, 92 (31.6%) reported that they had seen the movie before. The means and standard deviations are shown in Table 1.
Randomization

Analyses of variance (ANOVAs) showed no differences between the movie conditions on sex, age, self-reported weekly alcohol consumption, problem drinking, attitude towards the movie, time and day of the week that the experiment took place and whether they had seen the movie before, indicating that randomization was successful.

Effects of movies on alcohol consumption by sex and weekly consumption

Pearson’s correlations showed that self-reported weekly consumption correlated with alcohol consumption while watching ($r_{243} = 0.530$, $P < 0.001$), and was therefore added as covariate in subsequent analyses.

Model 0 showed that there was no main effect of movie condition on alcohol consumed (Table 2). Model 1 demonstrated that sex was a moderator in the relation between movie condition and alcohol consumption. Men’s alcohol consumption was higher in the alcohol movie condition than in the non-alcohol movie condition, whereas women’s alcohol consumption was slightly lower in the alcohol movie condition than in the non-alcohol movie condition.

Model 2 showed that the interaction between condition and sex remained while controlling for weekly consumption (Fig. 1). We found an interaction effect for sex

Table 1 Sample means and standard deviations (SD).

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th></th>
<th>Men</th>
<th></th>
<th>Women</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Alcohol consumption (standardized)$^c$</td>
<td>0.89</td>
<td>1.08</td>
<td>1.41</td>
<td>1.12</td>
<td>0.45</td>
<td>0.72</td>
</tr>
<tr>
<td>Weekly alcohol consumption (consumption)</td>
<td>11.36</td>
<td>13.27</td>
<td>17.04</td>
<td>15.83</td>
<td>6.05</td>
<td>7.15</td>
</tr>
<tr>
<td>Weekly alcohol consumption (days)</td>
<td>2.35</td>
<td>1.81</td>
<td>3.17</td>
<td>1.73</td>
<td>1.66</td>
<td>1.57</td>
</tr>
<tr>
<td>4-week alcohol consumption</td>
<td>3.02</td>
<td>1.10</td>
<td>3.45</td>
<td>1.12</td>
<td>2.63</td>
<td>0.92</td>
</tr>
<tr>
<td>Problem drinking</td>
<td>1.14</td>
<td>0.19</td>
<td>1.19</td>
<td>0.21</td>
<td>1.11</td>
<td>0.17</td>
</tr>
<tr>
<td>Attitude towards movie</td>
<td>3.95</td>
<td>0.62</td>
<td>3.90</td>
<td>0.61</td>
<td>4.06</td>
<td>0.58</td>
</tr>
<tr>
<td>Identification actress Cameron Diaz</td>
<td>1.47</td>
<td>0.48</td>
<td>1.36</td>
<td>0.45</td>
<td>1.57</td>
<td>0.49</td>
</tr>
<tr>
<td>Identification actor Ashton Kutcher</td>
<td>1.44</td>
<td>0.50</td>
<td>1.55</td>
<td>0.57</td>
<td>1.35</td>
<td>0.42</td>
</tr>
<tr>
<td>Identification character Joy</td>
<td>3.11</td>
<td>0.61</td>
<td>2.92</td>
<td>0.59</td>
<td>3.26</td>
<td>0.59</td>
</tr>
<tr>
<td>Identification character Jack</td>
<td>3.25</td>
<td>0.59</td>
<td>3.32</td>
<td>0.58</td>
<td>3.19</td>
<td>0.60</td>
</tr>
</tbody>
</table>

$^a$P = 0.05; $^b$P < 0.001. The results are given in glasses of 15 cl.; n = 243 (men = 111; women = 132).

Table 2 Linear regression analyses on the effects of movie condition on alcohol consumption.

<table>
<thead>
<tr>
<th></th>
<th>Model 0 Estimate (SE)</th>
<th>Model 1 Estimates (SE)</th>
<th>Model 2 Estimate (SE)</th>
<th>Model 3 Estimate (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.619 (2.477)$^a$</td>
<td>0.005 (0.006)</td>
<td>-0.266 (–0.371)</td>
<td>-0.654 (0.419)</td>
</tr>
<tr>
<td>Movie condition</td>
<td>0.071 (0.858)</td>
<td>1.495 (2.910)$^a$</td>
<td>1.109 (4.79)$^a$</td>
<td>1.335 (0.524)$^a$</td>
</tr>
<tr>
<td>Weekly consumption</td>
<td></td>
<td>0.029 (.004)$^b$</td>
<td>0.039 (0.016)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td>0.350 (0.459)</td>
<td>0.407 (.417)</td>
<td>0.626 (0.423)</td>
</tr>
<tr>
<td>Condition $\times$ sex</td>
<td></td>
<td>-0.839 (–2.912)$^a$</td>
<td>-0.650 (–0.268)$^a$</td>
<td>-0.729 (0.286)$^a$</td>
</tr>
<tr>
<td>Condition $\times$ weekly consumption</td>
<td></td>
<td></td>
<td></td>
<td>-0.005 (0.011)</td>
</tr>
<tr>
<td>Weekly consumption $\times$ sex</td>
<td></td>
<td></td>
<td></td>
<td>0.327 (0.155)</td>
</tr>
<tr>
<td>Condition $\times$ sex $\times$ weekly consumption</td>
<td></td>
<td></td>
<td></td>
<td>-0.005 (0.006)</td>
</tr>
<tr>
<td>Random effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance of intercept</td>
<td>0.995 (84.317)$^b$</td>
<td>0.749 (11.152)$^b$</td>
<td>0.632 (9.806)$^b$</td>
<td>0.614 (0.063)$^b$</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>7.393</td>
<td>40.976</td>
<td>71.621</td>
<td>96.99</td>
</tr>
<tr>
<td>df</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>0.390</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CFI</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

$^a$P < 0.05; $^b$P < 0.001. Men are referent group, standardized betas are used. CFI: comparative fit index; RMSEA: root mean square error of approximation; SE: standard error.
and movie condition on alcohol consumption when excluding the 92 participants who had seen the movie before (β = 0.643, P = 0.035).

Model 3 showed no three-way interaction between weekly consumption, movie condition and sex on alcohol consumption. In addition, we checked whether there was an interaction effect for weekly drinking and movie condition on alcohol consumption while controlling for sex. The results showed a main effect for sex (β = −0.271, P < 0.001) and a main effect of weekly consumption (β = 0.432, P = 0.043). No main effect of movie condition was found (β = 0.056, P = 0.654). No interaction effect was found for weekly consumption and movie condition on alcohol consumption while watching the movie (β = −0.024, P = 0.917).

Moderating effects of identification

For men, identifying with actor Ashton Kutcher was correlated with identifying with character Jack (r_{111} = 0.191, P = 0.044). For women, identifying with actress Cameron Diaz was correlated with identifying with character Joy (r_{112} = 0.263, P = 0.002).

For men, there was no interaction between identification with actor Ashton Kutcher (β = −0.106, P = 0.795), character Jack (β = 0.072, P = 0.911), actress Cameron Diaz (β = −0.255, P = 0.427) or character Joy (β = −0.206, P = 0.679) and movie condition on alcohol consumption while watching the movie. In these analyses main effects of weekly drinking were found on alcohol consumption (βs ranging from 0.025 to 0.369, P < 0.001), but not of identification with actor and/or character (βs ranging from −0.075 to 0.292, P > 0.05).

For women, there was no interaction between identification with actress Cameron Diaz (β = −0.543, P = 0.148), character Joy (β = 0.296, P = 0.594), actor Ashton Kutcher (β = −0.585, P = 0.083) or character Jack (β = 0.192, P = 0.643) and movie condition on alcohol consumption. In these analyses main effects of weekly drinking were found on alcohol consumption (βs ranging from 0.036 to 0.462, P < 0.001), but not of identification with actor and/or character on alcohol consumption (βs ranging from −0.075 to 0.292, P > 0.05).

No three-way interactions were found for identification with actors or characters and weekly drinking and condition on alcohol consumption (βs ranging from −0.002 to 0.402, P > 0.05).

DISCUSSION

The main finding was that exposure to alcohol portrayal in a movie increased alcohol consumption while watching for men, but not for women. The results contribute to the literature on longitudinal and cross-sectional associations between alcohol portrayal in movies and alcohol consumption of young people [14,15]. Moreover, these results confirm the findings by Engels et al. [18] that revealed a direct relation between alcohol portrayal in movies and alcohol consumption in men while watching a movie. In contrast with Engels et al. [18], two versions of the same movie were used to limit the possibility that differences found in alcohol consumption could be due to factors other than alcohol portrayal.

There are several possible explanations for the sex differences found in the present study. First, cue–reactivity

Figure 1 Alcohol consumption for males and females in the two movie conditions.
might explain our main finding. In heavy drinkers, exposure to environmental alcohol-related cues increases attentional bias for alcohol-related cues [39–41] and subsequent craving levels [42]. In the current study, men consumed substantially more alcohol than women, which coincides with other research on sex differences in drinking [43,44]. When confronted with alcohol cues in a movie men might generally be more susceptible to these images, as they are more often heavy drinkers, and therefore consume more alcohol during the movie.

Secondly, imitation of alcohol use might occur more among men [28]. Previous studies focusing on groups of mixed-sex compositions showed that men were more inclined to imitate the sips of a same-sex partner than women [45,46]. Moreover, male characters in our movie stimuli and in movies in general consume more alcohol than female characters [11], making processes of imitation for men more likely. However, within the dyads, the drinking behaviour of female participants seems to cluster more strongly than the drinking behaviour of male participants. For men, the effect of movie alcohol portrayal on alcohol consumption might be stronger than the effect of their friend’s drinking.

Thirdly, movies play a role in creating positive attitudes and setting social norms with respect to alcohol use [9,12,47]. Alcohol use of male and female characters in this particular movie was displayed in a different manner, and therefore men and women might have reacted differently to the alcohol portrayals. The drinking behaviour of the male character (Jack) is shown in a positive light, whereas the drinking behaviour of the main female character (Joy) is portrayed more negatively. Further, women experience less social pressure to drink and believe they will experience more serious consequences if they drink excessively [48]. As a consequence, women might inhibit their urge to drink alcohol because they feel less comfortable with alcohol after viewing such negative portrayals (see Fig. 1). Future studies should add questions about attitudes towards drinking of the characters. These may explain finding no effect of the movie on female participants’ drinking. Conversely, it might be difficult to measure explicitly participants’ attitudes about the drinking observed in the movie, as this might happen in a somewhat unconscious manner and participants’ reflections on their attitudes might therefore be less valid.

The present study did not find moderator effects of identification on the association between alcohol movie portrayal and alcohol consumption. The sample consisted mainly of college students. It could be that younger people are more susceptible to identification with actors/characters [49]. Conducting a similar experiment in an adolescent sample assessing their cognitions (e.g. attitudes, identification) as outcome variables would be relevant not only because adolescents might be more susceptible to media images and prototypes [49], as their drinking habits have yet to be formed, but also because some of them already display harmful patterns of drinking behaviour [2,50].

Watching the movie in dyads could have influenced the drinking behaviour of the participants and therefore limited the generalizability of the results to other situations (e.g. watching a movie alone). However, we corrected statistically for the fact that participants viewed the movie in dyads, and 85% of the participants reported to watch movies with others. It might be interesting to replicate this study with individual participants to examine the effects independently of peer influence. Further, it would be interesting to test if the long-term effects of alcohol portrayal on current levels of drinking differ between men and women, as epidemiological studies show that movie alcohol exposure has an effect on drinking levels of adolescents. However, most survey studies, as far as we know, did not find differences for men and women in effect of movie alcohol exposure on drinking behaviour. In young adolescents, other processes might play a role (e.g. norm-setting, identification, prototypes), whereas in our sample, where people were already used to large amounts of alcohol, processes of imitation and cue-reactivity are more profound. It could be that processes of identification and norm-setting have the same effects on boys and girls, and that therefore no differences for gender were found in these survey studies.

We do not know whether participants have access to alcoholic beverages while watching a movie at home. Drinking at student homes is not uncommon, so one might expect that it is easy to have access to alcohol while watching. Future studies should ask whether participants have access to alcohol at their homes.

In conclusion, the present study showed that viewing a movie with alcohol portrayal leads directly to higher alcohol consumption in males while watching the movie. Alcohol consumption is related to a wide variety of negative health outcomes [1,2,51]. Alcohol portrayal in movies may be more powerful than advertising because the message is not perceived as advertising [52]. Several national governments regulate alcohol advertising [53]. However, there are few restrictions for alcohol portrayal in movies. The use of an alcohol warning before the start of a movie could be a way to create more awareness. There are some studies supporting the effects of anti-smoking advertisements before movies [54,55]. However, it is not known if anti-smoking and anti-alcohol advertisements have the same effect on smoking and drinking behaviour. Further, icons might also attract people to watch a specific movie. Experimental research is needed to investigate this. The present results are restricted to the specific sample and design used in this study. The experiment should be replicated in different
populations/settings and other countries before strong policy recommendations can be made.

Declarations of interest
None.

Acknowledgements
None.

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**APPENDIX I**

Identification questionnaire [29]

1. I was able to understand the events in the programme in a manner similar to that in which character X understood them.
2. I think I have a good understanding of character X.
3. I tend to understand the reasons why character X does what he or she does.
4. While viewing the show I could feel the emotions character X portrayed.
5. During viewing, I felt I could really get inside character X’s head.
6. At key moments in the show, I felt I knew exactly what character X was going through.
7. While viewing the programme, I wanted character X to succeed in achieving his or her goals.
8. When character X succeeded I felt joy, but when he or she failed, I was sad.