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Portrayals of character smoking and drinking in Argentine-, Mexican-and US-produced films

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Abstract

The aim of this study was to assess film character portrayals of tobacco and alcohol use in US and nationally-produced films that were popular in Argentina and Mexico from 2004–2012. We performed a content analysis of these films (n = 82 Argentine, 91 Mexican, and 908 US films, respectively). Chi-squares and t-tests were used to compare characteristics of characters who smoked or drank by country of movie production. Then data from all countries were pooled, and generalized estimating equation (GEE) models were used to determine independent correlates of character smoking or drinking. There were 480 major characters for Argentine-, 364 for Mexican-, and 4962 for US-produced films. Smoking prevalence among movie characters was similar to population smoking prevalence in Mexico (21%) and Argentina (26%), but about half in the US (11%), where movie product placements are restricted. Movie smoking declined over the period in all three countries. Movie alcohol prevalence was 40–50% across all countries and did not change with time. Demographic predictors of character smoking included: being male, 18 and older, having negative character valence. Movie smoking was not associated with lower SES. Predictors of character drinking included: being age 18 and older and positive character valence. Smoking and drinking predicted each other, illicit drug use, and higher scores for other risk behaviors. This

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Conflict of interest

The authors declare there is no conflict of interest.

Transparency document

The Transparency document associated with this article can be found, in the online version.

suggests that policy development in Mexico and Argentina may be necessary to reduce the amount of character tobacco and alcohol use in films.

Keywords

Media; Global health; Movies; Tobacco; Alcohol

1. Introduction

Adolescent tobacco and alcohol use are considerable public health concerns in the Latin American countries of Mexico and Argentina and occur at higher rates than in the US. For example, Mexican and Argentine adolescents, ages 13–15, have higher 30 day tobacco use rates than US high school students (Tobacco: 15%, 19%, vs. 9%, respectively) (Reynales-Shigematsu et al., 2011; Global School-based Student Health Survey, 2012; CDC, 2016a). Argentine adolescents, ages 13–15, also have higher rates of prior 30 day alcohol consumption than US high school students (50%, vs. 35%, respectively) (Global School-based Student Health Survey, 2012; CDC, 2016b), while data on Mexican adolescents, ages 12–17, suggest slightly lower alcohol consumption rates (30% prior 12-month consumption) than US high school students (Health Ministry (Mexico), 2012). Policies to address these risk behaviors often consider restricting tobacco product marketing (WHO, 2009; WHO, 2010) and reductions in youth exposure to tobacco and alcohol portrayals in entertainment media (WHO, 2011).

The association between exposure to tobacco use in films and adolescent smoking initiation has been consistently documented across a variety of countries (Sargent et al., 2005; Arora et al., 2011; Morgenstern et al., 2011; Thrasher et al., 2009), leading the US National Cancer Institute (NCI, 2008), the US Surgeon General (DHHS, 2012), and the World Health Organization (WHO, 2010) to conclude the relationship is causal. This evidence underpins a section on entertainment media in the 1998 Master Settlement Agreement, which limited major cigarette companies from paying for product placement for their brands. Evidence is also accumulating to suggest there is an association between exposure to alcohol use in movies and adolescent drinking as well (Hanewinkel et al., 2012; Sargent et al., 2006; Mejia et al., 2016). Thus, while not all agree that depictions of smoking and drinking in movies should be restricted (Paynter and Chapman, 2013), there is widespread agreement in the scientific community that these depictions are important risk factors and consensus at the Centers for Disease Control that movie smoking is a risk factor that merits monitoring from year-to-year (CDC, 2016c).

In most countries, adolescent exposure to tobacco and alcohol portrayals in films comes from US-produced (i.e. Hollywood) films, in part because these films dominate theater exhibitions and DVD/Bluray sales (Thrasher et al., 2014). Nevertheless, examining the impact of characters from films produced outside the US may important for persons from their country of origin because domestic actors may be perceived as more culturally similar to the viewer and easier to identify with. US studies of movie smoking exposure by race-ethnicity suggest US adolescents (where film characters are predominantly White) show

stronger associations with behavior among White (Soneji et al., 2012) compared to Black adolescents (Tanski et al., 2012), but with Black adolescents being responsive to Black actor smoking (Cin et al., 2013). This raises the possibility that domestic films in countries like Mexico and Argentina, which predominantly depict Latino characters, might have a larger influence on adolescents in those countries.

This study reports a content analysis that examined movie character smoking and drinking in the popular films in Mexico and Argentina. The sample included domestic and US-produced films that reached the yearly top 100 grossing movies in each country for the years 2004–2012. Previous studies have nearly exclusively focused on Hollywood films, and there is only limited data on substance use portrayals in non US-produced films (see (Arora et al., 2011; Castaldelli-Maia et al., 2013) for exceptions) and the studies that do exist analyze portrayals at the level of the film and not the level of the character. The questions that guided this research were: 1) “How does character smoking and drinking portrayed in films produced in Mexico, Argentina compare to the US?”, and 2) “What characteristics are associated with smokers and drinkers in films produced in Mexico, Argentine, and the US?”. We hypothesized that character smoking would be significantly less common in Hollywood films because of limits to product placement in the US, whereas there would be few differences in the prevalence of character drinking by country of production. Based on previous research in this area we also hypothesized that character smoking would be portrayed unrealistically—more common among males (Worth et al., 2006), and no relation with socioeconomic status (Dalton et al., 2002)—regardless of country of production. We expected character alcohol prevalence to be more common than smoking prevalence overall (Bergamini et al., 2013).

2. Methods

2.1. Sample

The sampling frame included films released in Argentina and Mexico between 2004 and 2012 and listed by the Argentinean National Institute of Cinema and Visual Arts (INCAA) and Mexican Institute of Cinematography (IMCINE) among the top 100 revenue-grossing films for the year released. Films were considered for inclusion if they were Argentine-, Mexican-, or US-produced. All other non-US produced (i.e. Asian, European) were excluded from the analysis. Some US-produced films were also excluded because they were not popular in the US and therefore not previously coded by the Dart-mouth Media Research Laboratory (DMRL).

2.2. Content analysis

Data for the study were drawn from a larger parent study that examines the effects of movie tobacco and alcohol exposure on behavior among Argentine and Mexican adolescents. For this study coders recorded the amount of smoking and drinking in films and evaluated movie characters in terms of sociodemographic characteristics and whether or not they engaged in substance use and/or other risk behaviors at any point during films. Coders followed previously validated methods (Sargent et al., 2005). The sample of US films consisted of films that were already coded by the DMRL. The DMRL codes the top 100 grossing films

from the US ever year and the coding is done by two trained coders and a content coding supervisor (Sargent et al., 2005). Mexican and Argentine researchers, who were trained by DMRL, coded their respective country's films. Each country had two coders and a content coding supervisor. After viewing films in their entirety coders identified major characters as those who had leading roles or were central to plot development. Information about major character demographics, valence, and risk behaviors (including drug use) was coded in addition to recording whether they used tobacco and/or alcohol at any point during the film. To determine inter-rater reliability a small subsample of films from each country (20% for Mexico and Argentina, 10% for US films) were double coded.

2.3. Measures

Outcome variables included: 1) character tobacco use (yes/no for any use during the film) and 2) character alcohol use (yes/no for any use during the film), for which reliability was good (κ = 0.74–0.82 for tobacco & κ = 0.79–0.90 for alcohol, which represents the range across datasets). Covariates included gender (male/female), age (under 17/18 and older), socioeconomic status, and relationship status. Socioeconomic status was coded as low/middle and upper class because middle class was defined as "struggling but not poor" under the coding scheme while the upper classes were clearly differentiated as being "fairly well off". For relationship status, the category of "Not in a relationship" was created for characters who were coded as single, casually dating, divorced/separated, or widowed while the category of "In a relationship" was used for characters coded as seriously dating, in a long term commitment, engaged, or married. The reliabilities for demographic variables were also good (κ = 0.76–1).

Coders rated the overall valence of characters by reflecting on "how the character is portrayed to the viewer through the script, the way they play the role, and the actions and beliefs of the character." A character could be rated as neutral, mixed positive and negative traits, negative, or positive. For analytical purposes neutral and mixed were combined into one category, and positive used as the reference category (κ = 0.55–0.62).

A character risk behavior index was created, which summed the number of risk behaviors a character participated in during the film (α = 0.58–0.68). These behaviors were: behaving violently, breaking the law, having unprotected sex, driving recklessly, performing acts that put the character's life in danger, as well as gambling. Illicit drug use was assessed as a separated covariate (κ = 0.80–1). The year of film release (2004–2012) was also included as an independent variable.

2.4. Analysis

All analyses were conducted in STATA v13. After limiting the sample to human characters (as opposed to animal, alien, or robot), chi-squares and t-tests were used to compare characteristics across country of production, using US-produced films as the comparison group. These analyses were repeated after limiting the sample to characters that smoke and, separately, characters that drink alcohol. Subsequently, data from all three countries were pooled. In order to account for the clustered (nested) structure of the data, in which characters were nested within movies, Generalized Estimating Equation (GEE) models with

Poisson distribution, log link function, exchangeable correlation, and movie id identified as the cluster unit, were estimated to determine sociodemographics and risk behaviors of characters that smoked and/or drank alcohol. Risk ratios were estimated instead of odds ratios (ORs) because ORs are less directly interpretable when the outcome occurs in >10% of the population (Omidvari et al., 2005). After estimating fully adjusted models that included all covariates, interactions between country of production and each of the independent variables (demographics, character valence, risk behavior, year of film release) were entered into and removed from the model one at a time. No interactions, including interactions with year of movie release, were statistically significant; therefore only results from the full models are presented.

3. Results

3.1. Sample

Of the top grossing films in Mexico and Argentina from 2004 to 2012, 901 films produced in the US, 85 in Argentina, and 92 in Mexico were considered for inclusion. Three films from Argentina and one film from Mexico were excluded because they were unavailable at the time of the study. US-produced films that were not popular in the US were also excluded (n = 133) because they were not coded by the DMRL. The final sample included 82 Argentine films, 91 Mexican films, and 768 US films. The movie character sample consisted of 480 major characters for Argentine films, 364 for Mexican films, and 4962 for US films (Table 1).

3.2. Socio-demographic characteristics of major characters and prevalence of substance use, by country

Regardless of country, most major characters were male, 18 and older, were single, and were portrayed positively. There was less gender bias toward males in Mexico compared to the US. Whereas about 40% of US and Mexico movie characters were portrayed as upper SES, only 25% of Argentine movie characters were (Table 1). Whereas character smoking prevalence mirrored population prevalence in Mexico and Argentina, it was almost half the population prevalence in US movies (11%). Alcohol use was commonly depicted (half the characters in Argentina and Mexico, and 40% in the US), but drug use was uncommon in movies from all three countries. However, drug use was depicted twice as commonly in Mexico (10% of characters) compared with the other countries.

3.3. Sociodemographic characteristics and their association with substance use, by country

Socio-demographic differences were observed between characters that smoked or drank in Mexican and Argentine compared to US-produced films. Bias toward males was strongest for character smokers in the US—81% were male. Among characters who smoked and drank, in both Mexican and Argentine films, a significantly higher percentage were females compared to in US-produced films. There was no bias toward lower socioeconomic status among smokers in any country, contrary to reality that smokers tend to be lower in socioeconomic status. Smoking by underage characters was uncommon in US and Argentine films, but significantly more common in Mexican films (11%). Underage drinking was

rarely depicted in any of the countries. A higher percentage of characters in Argentinian films were shown to be in a relationship, and this trend persisted among the smokers and the drinkers. In all countries, most characters were presented in a positive light, but more smokers were presented as negative, especially in Mexico and Argentina. Similarly, Mexican and Argentine characters that used alcohol were more likely to be portrayed negatively than drinkers in US films (43% and 25% compared to 18%, respectively).

3.4. Characteristics of smokers

In pooled GEE models that adjusted for all covariates, and comparing with non-smoking characters, smokers were more likely to be male, 18 or older, negatively portrayed, use other substances (alcohol and illicit drugs), and participated in more risk behaviors (Table 2). Furthermore, characters from Mexican and Argentine produced films were more likely to smoke than characters in US-produced films. The year of film release was inversely associated with character smoking, indicating that character smoking significantly decreased over time.

3.5. Characteristics of alcohol drinkers

In fully adjusted GEE models that pooled data for all films, and comparing to non-drinking characters, alcohol drinkers were more likely to be 18 or older, of higher social class, in a relationship, smokers, illicit drug users, and participated in more risk behaviors (Table 2). Negatively portrayed characters were less likely to drink, while neutral/mixed characters were more likely to drink than positively portrayed characters. Argentine film characters were also more likely to drink than US film characters.

4. Discussion

Our study addresses the prevalence of and risk factors for smoking and alcohol use in US and domestic films in Mexico and Argentina. With regards to smoking prevalence, we found marked differences, with the foreign films depicting smoking about as commonly as it is seen in the adult population in those countries, whereas in US films it was about half. The halving of character film prevalence in US films since a decade ago (Worth et al., 2006) is the result of a downward trend that began with the implementation of the Master Settlement Agreement in 1999 (Morgenstern et al., 2016). That the downward trend in movie smoking also corresponds with a downward trend in youth smoking during this same period is coherent with a causal interpretation of the movie smoking – youth smoking relation (Sargent and Heatherton, 2009). Character smoking prevalence in Mexico and Argentina may be higher because product placement of cigarettes is allowed in those countries. Finally, this study found declines in character smoking over time, regardless of country, suggesting that trends in movie smoking in all countries are paralleling small annual population declines in smoking.

Consistent with prior research on smoking among US film characters, only one in five smokers were female (Dalton et al., 2002; Dozier et al., 2005), in part because of the predominance of male characters overall, but also because being male was a risk factor for smoking; this contrasts to what we see in the US population, where male—female smoking

rates are similar. Compared to US films there were more female smokers (about one in three) in Mexican- and Argentine produced films; in both countries, smoking is more common among males (Hitchman and Fong, 2011). Unlike previous studies that found more smoking among those of high SES (Everett et al., 1998a; Hazan et al., 1994), this study found no associations between smoking and socioeconomic status for films produced in any country. However, high SES among film characters (at 40% in the US in Mexico) is more common than in reality, so this overall character bias contrasts with the reality that smoking is much more common among low SES groups (Centers for Disease Control and Prevention, 2015; Campuzano et al., 2004). The association between film character smoking and multiple risk behaviors and other substance use is consistent with published literature on the association between smoking and use of multiple substances in the population (Everett et al., 1998b; Lewinsohn et al., 1999).

Finally, smoking was also associated with being a negative as opposed to a positive character, again consistent with prior research (Dalton et al., 2002; Omidvari et al., 2005). In this way, it appears that smoking is being used as a plot device to communicate negative, or bad guy personality traits. This is suggestive in Mexican films, which had a low percentage of negative characters overall (8%), but a relatively high percentage of characters who smoked who were also negatively portrayed (45%). Negative portrayals of smoking on screen may not protect youth from emulating the smoking in movies. One study that examined the prospective association between positively and negatively valenced film smoking and youth smoking suggested that exposure to smoking in films increases the hazard of initiating smoking for youth regardless of film type (Tanski et al., 2009).

Compared to smoking, alcohol use was far more commonly depicted in films, and film character prevalence is consistent with population prevalence, as about half of adults in the world do not use alcohol (FORUT, 2013). Thus, alcohol consumption in films appeared more normative than smoking, as it is in society generally. High*er prevalence drug use in Mexican films is likely a result of a thematic emphasis on* narcotrafficking in that country. Nevertheless, illicit drug use was uncommon in movies from all three countries, much less common than it is in society. For example, past month use of illicit drugs in the US population is about 25%, mostly due to marijuana use (US Department of Health and Human Services, 2013).

Aside from increased likelihood of engagement in multiple risk behaviors, drinkers had a different sociodemographic profile from smokers. There was no gender bias to the depiction of drinking, and characters with higher socioeconomic standing were more likely to drink than characters from the low/middle classes. Drinkers also tended to be more positively portrayed, whereas the opposite was found for smoking characters. This positive portrayal of alcohol mirrors earlier content analyses of smoking (Everett et al., 1998a; Hazan et al., 1994) prior to widespread denormalization of smoking in many countries. Finally, there was significantly higher prevalence of drinking in the Mexican and Argentinian movies and no downward trend of drinking portrayals over time.

4.1. Limitations

This study has several limitations, including potential biases associated with the selection of films for analysis. Although we analyzed the top 100 films that made money in movie theaters In Mexico and Argentina every year, this sampling frame may have missed important exposures from the widespread practice of illegal downloads and sale of pirated DVDs that the national systems do not register. However, box office data are reliable indicators of youth exposure in other countries (Hanewinkel and Sargent, 2009), and the films sold or downloaded illegally are also likely to be popular at the theaters. There were also many fewer Mexican- and Argentine-produced as compared to US-produced films included in the sample. However, this reflects the reality of the box office in these countries. Further research is necessary to determine the relative contribution and impact of substance use portrayals in entertainment media from national (i.e. Mexican and Argentine) compared to US-produced films, as well as from different media modalities (e.g., television, Internet, films). In addition we did not account for film genre in our analysis. Some evidence suggests the quantity of tobacco use differs by genre (Mekemson et al., 2004), so future research should include exploring differences in tobacco and alcohol content by genre. Finally, the inter-rater reliabilities for the risk behavior index and character valence was lower than for other character variables used in the analysis although it is unclear whether the low reliability would have systematically increased or decreased the strength of association. In addition low reliability for character valence was mainly due to disagreement in identifying characters as positive versus mixed/neutral. There was little disagreement in identifying characters as negative.

5. Conclusion

Character prevalence of smoking in US movies released in Argentina and Mexico was about half that of domestically produced movies, likely due to limits on product placement in US movies imposed by the US Master Settlement Agreement—there is no similar restriction on product placement Mexico or Argentina. These countries should consider WHO-FCTC recommended policies that aim to reduce youth exposure to tobacco in films such as prohibiting tobacco use in films that receive government subsidies, prohibiting brand imagery in films, and/or assigning adult ratings for films that contain tobacco (WHO, 2011). In all countries, smoking in movies is unrealistically presented as a predominantly male behavior and similar prevalence across all socioeconomic groups. Smokers are also more likely to be negative characters, compared to all characters. The prevalence of character alcohol use was much higher, did not differ greatly by country, and alcohol use was more positively depicted, compared to smoking. Given lack of any restriction on alcohol product placement in movies in any country, further policy development will be necessary to reduce alcohol portrayals.

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Table 1

Characteristics of major movie characters by country of production and smoking and drinking status.

Characteristics	All characters			Characters who smoked			Characters who drank alcohol		
	US	Mexico	Argentina	US	Mexico	Argentina	US	Mexico	Argentina
	(n = 4962)	(n = 364)	(n = 480)	(n = 523)	(n = 75)	(n = 126)	(n = 1985)	(n = 182)	(n = 240)
Gender									
Male	68%	56%***	62%*	81%	62%***	68%**	70%	61%**	61%**
Female	32%	44%***	38%*	19%	38%***	32%**	30%	39%**	39%**
Age									
18 and older	88%	82%**	89%	98%	89%***	98%	98%	96%	97%
Socioeconomic status									
Upper	40%	41%	25%***	40%	44%	27%*	45%	48%	33%***
Relationship status									
In a relationship	28%	30%	40%***	31%	24%	42%*	36%	38%	47%**
Character valence									
Positive	70%	59%**	70%	56%	41%**	58%	73%	49%***	69%*
Negative	13%	8%***	9%*	26%	45%**	30%	18%	43%***	25%*
Mixed/neutral	17%	33%***	21%*	19%	15%**	12%	9%	9%***	7%*
Substance use									
Smokes	11%	21%***	26%***	NA	NA	NA	18%	30%***	38%***
Drinks alcohol	40%	50%***	50%***	67%	72%	73%	NA	NA	NA
Uses drugs	3%	10%***	5%*	7%	22%***	10%	6%	15%***	7%
Risk behavior index, mean (SD)	1.49 (1.53)	1.23 (1.52)**	1.01 (1.33)***	1.83 (1.66)	1.95 (1.89)	1.35 (1.51)**	1.55 (1.66)	1.61 (1.65)	1.05 (1.42)**

* $p < 0.05$ compared to US.

** $p < 0.01$ compared to US.

*** $p < 0.001$ compared to US.

Table 2

Crude and adjusted correlates of character smoking and drinking.

Characteristics	Character smoking		Character drinking	
	RRadj	(95% CI)	RRadj	(95% CI)
Gender				
Male	Ref.		Ref.	
Female	0.74**	(0.61–0.89)	0.99	(0.90–1.07)
Age				
17 and under	Ref.		Ref.	
18 and older	3.08***	(1.80–5.27)	5.81***	(4.30–7.83)
Socioeconomic status				
Low/middle	Ref.		Ref.	
Upper	0.90	(0.74–1.07)	1.21***	(1.10–1.32)
Relationship status				
Single	Ref.		Ref.	
In a relationship	0.89	(0.74–1.06)	1.09*	(1.00–1.19)
Character positivity				
Positive	Ref.		Ref.	
Negative	1.33*	(1.03–1.71)	0.78**	(0.65–0.92)
Neutral/mixed	0.67***	(0.55–0.81)	1.11*	(1.00–1.23)
Substance use				
Smokes	NA		1.40***	(1.24–1.56)
Drinks alcohol	2.33***	(1.91–2.82)	NA	
Uses drugs	1.50**	(1.12–2.00)	1.38***	(1.16–1.63)
Risk behavior index	1.08**	(1.02–1.13)	1.07***	(1.04–1.10)
Country of production				
US	Ref.		Ref.	
Mexico	1.62**	(1.15–2.27)	1.22	(0.98–1.50)
Argentina	2.44***	(1.81–3.28)	1.28*	(1.04–1.58)
Year film release	0.94**	(0.89–0.97)	1.00	(0.97–1.02)

RRadj = Risk Ratio adjusting for all variables listed in the table.

* $p < 0.05$ compared to US.

** $p < 0.01$ compared to US.

*** $p < 0.001$ compared to US.