

Articles

It's dangerous: glorification of risk in the media and young people's attitudes towards driving

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Abstract

This article analyzes short-term media effects of car commercials on TV that glorify risk, and long-term associations, such as the use of violent videogames, on the attitudes of young people towards driving experience. The study, a between-subjects experimental design, included 106 undergraduate students from the Universidade de Brasília (University of Brasília, UnB) during the first semester of 2019. The results show that the short-term effects of exposure to car commercials on TV that glorify risk significantly increase risky attitudes in relation to driving, measured by the Driver Thrill Seeking Scale (DTSS). But this only occurs among individuals who like violent videogames such as *Grand Theft Auto* (GTA). No short-term effects were found among the other participants, which does not exclude the existence of other types of effect, such as long-term ones.

Keywords: Glorification of risk. Car commercials on TV. Video games. Traffic safety. Driver Thrill Seeking Scale.

Introduction

This article aims to measure the short-term effects of exposing young people to car commercials on television that glorify risk on their attitudes towards driving an automobile. More specifically, the study replicates Vingilis *et al.*'s research (2015) of Canadian university students on a Brazilian population. That article did not identify any short-term effects of a car commercial on television – showing dangerous driving – on different attitudinal and behavioral measures associated with the driving experience. However, if no short-term effects were found

on risky attitudes to driving among young people in general, do television commercials that glorify risk in traffic have short term effects on specific subpopulations, such as individuals who like to use violent videogames?

This article sought to expand the research on this subject in two ways. First, the study investigated the short-term effects of television commercials on subpopulations that are more susceptible to risky behavior in traffic. Additionally, it sought to refine the dependent variable, the Driver Thrill Seeking Scale (DTSS), by proposing and examining the existence of two distinct factors: one connected to the emotions of driving and another, more specific and dangerous, related to the risk of life.

Road transport collisions in Brazil cause 170,000 hospitalizations in the public healthcare system (SUS) and 43,000 deaths per year, principally among the younger population (CARVALHO, 2016). Mortality in Brazilian traffic – around 20 cases per 100,000 citizens per year – is at least double that found in the majority of European countries (CARVALHO, 2016; WHO, 2018), as well as in Canada and in the United States. Among young people, 20 to 29 years of age, mortality from road collisions is up to three times the observed mean for the European population, which justifies studies that can contribute to clarification of determinants and associated factors with this problem on moral and social grounds.

According to the World Health Organization (WHO, 2018), there are a variety of causes of mortality in traffic, which kill up to 1.4 million people in the world each year. Among the eight most important ones, four are individual and behavioral, therefore potentially susceptible to the influence of social surroundings, including the media. They are: high speed, driving under the influence of alcohol and other psychoactive substances, not using safety equipment and inattentive driving, such as when people are using their cellphones (WHO, 2018)¹.

Despite the diverse and complex reasons for individuals to assume risky behaviors in traffic, there is reason to consider that one of the determining factors is the individuals' exposure to media content. In several countries, Brazil among them, the auto industry's publicity narrative has stimulated risky attitude and behavior to some degree. Shin *et al.* (2005) identified that, among car commercials aired in the United States and Canada between 1998 and 2005, 45% had some sequence of footage of dangerous driving. There are no comparable data for Brazil, but in line with voluntary codes adopted in Australia, New Zealand, Canada and the United Kingdom, the Brazilian Code of Publicity Self-Regulation (art. 33) condemns advertising that, among other information, "manifests a lack of safety" and "encourages dangerous use of the advertised product"². Even so, risky behavior is commonly seen in

¹ The other four are contextual: lack of road safety, lack of vehicle safety, inadequate medical treatment following an accident, and inadequate laws and application of rules.

² The same code, in Annex O (dedicated to advertisements about motor vehicles), prohibits "suggestions of vehicle use that could put the personal safety of third parties at risk, such as prohibited overtaking on highways, excessive speed". Furthermore, since 2009 the Brazilian Traffic Code (Law 9.503) states in article 77-B that "all advertising materials designed to publicize or promote, through social communication channels, a product originating from the automotive industry or related, will include, obligatorily, an educative message on transport to be run in conjunction".

Brazilian commercials, with sequences of rapid acceleration, overtaking and dangerous maneuvers (MENEGUIN, 2016).

The scientific literature tends to support these regulatory and self-regulatory concerns. A systematic review with meta-analysis carried out by Fischer *et al.* (2011), for example, concluded that exposure to contents that glorify risky behavior increases the occurrence of individual inclinations to reproduce risky behavior and attitudes associated with risk, including in traffic. Similar conclusions can be taken from the related studies of Fischer *et al.* (2007, 2009), Hull, Draghici and Sargent (2012), Busching, Allen and Anderson (2015) and Vingilis *et al.* (2015), among others.

This study contributes, therefore, to this research agenda, by identifying associations and causal relations between media content and risky behavior in traffic, specifically among young people – the main victims of fatal traffic accidents. The article is divided in five additional sections, which: present a theoretical framework of reference for this research and hypotheses; describe the methodology utilized; discuss the results obtained; highlight limitations of this study and suggest topics for future research; and, finally, indicate the conclusions of the study³.

Literature review

The General Aggression Model (GAM), proposed by Anderson and Bushman (2002) and discussed by Fischer *et al.* (2009), among others, assumes that short term media stimulation can work as a trigger that makes ideas and cognitions associated with risky behavior more evident and available in individuals whose socialization process stimulates the use of violence. In other words, media representations with violent content could affect aggression by stimulating aggressive thoughts, emotions and attitudes, which would increase an individual's readiness to act aggressively in real-world contexts (FISCHER *et al.*, 2009). That is, episodic exposure to media content that glorifies risk would not have the capacity to stimulate risky attitudes and behavior by itself, but it can reinforce pre-existing socially constructed inclinations, including through media content.

In fact, Vingilis *et al.* (2015) did not identify any effect on the attitudes and behaviors of young Canadian university students when exposed to car commercials on television that showed scenes of dangerous driving using three different measures (DTSS, Implicit Attitude Task and Vienna Risk-Taking Test-Traffic). The authors argued that, because it is a passive mode of media consumption, car commercials showing scenes of risk did not create the conditions for active spectator involvement and, therefore, have null or limited effects on the

³ It is important to state, however, that this study is not concerned with questions relating to the psychological processes that result from exposure to content that glorifies risk and antecedes risky attitudes or behavior in traffic. Studies on this subject can be found in Fischer *et al.* (2009, 2012), Greitemeyer and Osswald (2010). The scope of this Communication's study only articulates the exposure to media content and attitudes related to the driving experience.

results associated with risk. Despite this, the authors did not discount the possibility of long-term effects. However, the fact that there was no identifiable effect on young people in general does not discount the possibility that there is an effect on specific segments of the population. Some subgroups can be more susceptible to risky attitudes under short-term stimuli, such as players of videogames that encourage violation of traffic laws (e.g., Grand Theft Auto, Need for Speed or Burnout). Vingilis *et al.* (2013) showed a positive association between the use of these violent videogames and the risky behavior in traffic among members of Canadian automobile clubs.

This finding is in line with the other 88 studies related to the effects of exposure to media content that glorifies risk, analyzed by Fischer *et al.* (2011), which noted that the influence of media content was greater when participation was active (as in videogames) than in situations of passive exposure (as in television commercials). Although there is strong evidence that exposure to videogames stimulates risk and risky behavior in traffic, the duration of this effect is less clear (VORDERER; KLIMMT, 2006 apud FISCHER *et al.*, 2009). As well, the existence of interactive results between their use and short-term exposure to televisual content that glorifies risk is unknown. As stated above, if car commercials do not produce short-term effects on risky attitudes to driving among young people in general, do they have short-term effects on specific individuals, such as those who like to use violent videogames?

Based on the literature, we can say that yes, television commercials could produce short-term effects on individuals whose process of socialization creates a predisposition to risky behavior. Therefore, the central hypothesis of this study is that (H_1) exposure to passive media content (i.e., car commercials on television) that glorify risk increase risky attitudes in traffic among individuals who have been exposed to active media content (i.e., videogames) that glorify risk. In concordance with Vingilis *et al.* (2015), it is expected that (H_2) exposure to passive media content (i.e. car commercials on television that glorify risk) has no effect on the risky attitudes of young people in general. Moreover, based on Fischer *et al.* (2009) and Vingilis *et al.* (2013), we think that (H_3) the exposure to active media content (i.e., violent videogames that glorify risk) is associated with risky attitudes in traffic.

Methodology

Participants

The study was conducted during the first semester of 2019 with 214 undergraduate students from the Social Communications and Statistics courses at the Universidade de Brasília (University of Brasília, UnB), who participated in return for credit or as part of attendance on courses in which they were enrolled. In total, students from seven programs were present in four rounds of data collection: 78 individuals on March 21st, 63 on March 22nd, 42 on April 29th and 31 on June 17th. However, the number of participants included in the data analysis was 106

individuals (49.5% of the total). This was due to the exclusion of six students who were over the age of 29 (maintaining the scope of the study restricted to young people); eight who did not pass the attention check; one who did not pass the manipulation check; and 93 who did not respond to the full set of questions about attitudes related to driving, either because they considered the situation unlikely or because they do not generally drive, even though they possessed driving licenses. In this study, we preferred not to use filter questions in the recruitment of participants to avoid demand effects, which resulted in a high number of participants who did not complete the questionnaire on the block of questions of interest to this research. The three experimental conditions considered in this analysis, therefore, had the following characteristics: control group (n=29, 51.7% male, mean age of 20.6 years [σ =2.7 years old]), car commercial group not considered at risk (n=45, 44.4% men, mean age of 21.6 years [σ =2,8 years old]), and car commercial group considered at risk (n=32, 50.0% men, mean age of 20.2 years [σ =2,5 years old]). ANOVA and Chi-squared tests were used to show that the groups were balanced, concerning age and gender.

Stimuli

A pilot survey carried out in April 2018 evaluated the interest of a convenience sample of 37 students from the UnB in watching five comedy programs on open Brazilian television aimed at families, meaning that they were classified as family-friendly, with every day and domestic themes⁴. The programs "Chaves", "Sai de Baixo", "Grande Família", "Vai que Cola" and "Tá no Ar: a TV na TV" were evaluated. The Mexican program "Chaves" (*El Chavo del Ocho*, originally), broadcasted by SBT since 1984, was the only one known by all of the respondents of the pilot test and the one preferred among them, with 43.2% of responses in a single choice format.

For this reason, an episode of "Chaves" was chosen for the creation of the experimental media context. The video had a total running time of 29'34", with three commercial breaks, each containing five commercials of varied content. To create three versions of the episode, one element was manipulated. Following the procedure adopted by Vingilis *et al.* (2015), the treatment groups had a car commercial introduced in each of the commercial breaks and the control group had a commercial for a different product (cellphone) inserted in the same position. The car commercials were: (i) the Sportage 2018 from Kia, which exhibits the car in slow motion, emphasizing its design, technology, family safety and internal comfort (experimental condition without risk); and (ii) the Cronos 2018 from Fiat, which shows the vehicle at high speed, under different climatic conditions and with more animated music, emphasizing its sporty character (experimental condition with risk). The original commercial from Kia had 30 seconds – the standard length in a television program on Brazilian open television. The Fiat commercial,

⁴ In Vingilis *et al.*'s study (2015), the program *Modern Family* was used.

originally 1-minute-38-seconds long, was reduced to 30 seconds in order to eliminate possible effects of different video durations. The control commercial was from the phone company Oi and were not related to cars or risky activities. The car commercials and the phone commercial were inserted into the three intervals, occupying 5% of the total content exhibited.

Controls

Three questions measured the attention of the participants to the "Chaves" episode and served as proxy variables to evaluate the global attention level of the individuals to the content presented. Each of the questions had a high level of correct answers: 94.9%, 75.7% and 96.3%. None of the participants got all three questions wrong, but eight participants were eliminated (3.7% of the total) because they got only one of the questions right, demonstrating a low level of attention from the questions, which were considered easy due to the high level of correct answers. The majority (70.6%) responded correctly to the three attention controls and 25.7% responded correctly to two of the three questions. The questionnaire also included a manipulation check that asked participants about the types of products and services announced in the commercial breaks. "Car" was one of the 12 items on this list. Only one participant who was selected for one of the two experimental conditions that included the automobile commercial did not respond correctly to the question and, therefore, was excluded from the analysis.

Dependent variable

A relevant theoretical-empirical question in this field of study is the selection of a dependent variable in the research design. Despite this, from the perspective of a social problem, the most relevant variable is the behavior of individuals in traffic. This is a difficult scientific phenomenon to observe, especially in experimental research design in which measurement control is favored. Common alternatives are the use of simulators (CAREY; MCDERMOTT; SARMA, 2013) and declarations of intention of behavior, emotions or attitudes (FISCHER *et al.*, 2007; 2009; VINGILIS *et al.*, 2015). For simplicity and replicability, this study opted to analyze an attitude scale; the DTSS, one of the measures used by Vingilis *et al.* (2015).

Based on efforts to identify behavior standards in traffic (DIGMAN, 1990; GLENDON *et al.*, 1993), the DTSS was proposed by Matthew *et al.* (1997) and revised by Stradling, Meadows and Beatty (2004). This measure uses a seven-point Likert scale (VINGILIS *et al.*, 2013; 2015) or 11 points (STRADLING; MEADOWS; BEATTY, 1999) to evaluate eight attitudes in relation to behavior in traffic: "I would like to drive a sports car on a highway with no speed limit"; "I like the sensation of accelerating rapidly"; "I like to listen to lively music at high volume when I drive"; "I like the feeling of driving fast"; "I like to corner at high speed"; "I would like to

risk my life as a racing driver"; "Sometimes I like to feel some fear when I drive"; and "I like to raise my adrenaline levels when I drive". The responses have poles of reference "completely disagree" and "completely agree".

There are different ways to construct a scale from these data. Stradling, Meadows and Beatty (1999) suggest the existence of a single factor after carrying out a factor analysis and that the sum of items produce a highly reliable scale, with Alpha=0.91. Based on the data collected in this study, the simple sum of items did not produce such a reliable scale, with an Alpha of 0.78. Moreover, the factor analysis does not suggest the existence of a single factor, but two factors, although the data adjustment was not ideal (KMO = 0.762). The two factors, however, are theoretically relevant and are associated with different dimensions of a risky experience driving an automobile. One of them is connected to positive attitudes to risky behavior (such as high-speed cornering, risking life as a racing driver, feeling some fear when driving and raising adrenaline levels). The other factor appears to be associated with positive attitudes in relation to behavior that only increases the perception of emotion without necessarily implying risk (such as driving a sports car on a highway with no speed limit, accelerating rapidly, listening to lively music at high volume while driving and the feeling of driving fast).

Instead of taking a single operationalization of DTSS, in this research we chose to analyze and compare two possible measures of the scale: one that results from the extraction of a single factor and another, produced from the extraction of two factors. The results, as seen in the following section, reveal advantages in analyzing the DTSS with two factors. In both versions of the scale, the original values were transformed into an interval of 0-10 to facilitate comparison between the measures.

Contrary to the findings in Vingilis *et al.* (2015), women registered a slightly higher score than men in all of the measurements, although this difference was not statistically significant in ANOVA tests. There was also no statistically significant correlation found between these measures and the age of participants, given that the Pearson coefficients (r) were all negative, conforming to the theoretical expectation that associates the passing of years of life with the reduction of risky attitudes and behavior.

Table 1 shows the descriptive data that composes the DTSS and describes the weight of each one of them in the two versions of the dependent variable to be analyzed. The data suggest that the operationalization of DTSS with two factors presents an important difference between attitudes associated, for example, with listening to loud and lively music and risking life as a racing driver. In the first case, the weighting on a single factor is 0.393, but in two factors it is sometimes -0.146 (in other words, almost non-existent), and sometimes expressive; 0.733. In the second case, the risk of death has a weight of 0.503 on a single factor, but when DTSS is divided into two dimensions this item sometimes has a weight of 0.704 or is irrelevant -0.032.

Table 1 – Attitudes associated with driving emotion and two measures of the DTSS

tems of DTSS Mea	Maan	Mean DTSS 1 factor	DTSS 2 factors	
Items of D155	Miean		Risk	Emotion
I like to listen to lively music at high volume when I drive.	5.1	0.393	-0.146	0.713
I would like to drive a sports car on a highway with no speed limit.	4.3	0.632	0.169	0.732
I like the feeling of accelerating rapidly.	3.9	0.722	0.293	0.733
I like the feeling of driving fast.	3.8	0.757	0.331	0.745
I like to raise my adrenaline levels when I drive.	2.5	0.747	0.719	0.334
I like to corner at high speed.	2.2	0.654	0.770	0.147
I would like to risk my life as a racing driver.	1.9	0.507	0.740	-0.032
Sometimes I like to feel fear when I drive	1.6	0.573	0.659	0.144
KMO		0.762	0.	.762
Explained variance	-	40.3%	57	7.8%

Source: created by the author.

Procedures

In each of the data collection rounds, the participants were randomly assigned to one of three classrooms in which one of three versions of a television episode was shown simultaneously in typical between subjects design. Exposure to the content occurred at the Faculty of Communication at UnB's classrooms, which have large projectors and speakers, with ambient lighting switched off, offering an adequate context, without distraction or noises that would distract attention from the episode. When arriving at the classrooms, the students were informed of the duration of the video and about the questionnaire to be administered afterwards. When the screening was finished, the participants were invited to respond to the questions on an online platform using their personal cellphones. Students at an advanced stage of undergraduate studies, under the supervision of the corresponding author of this study, conducted the screening and data collection, reducing the influence of expectation or Hawthorne effect. The aim of the research was not informed at the end of each round of data collection (avoiding undue communication with potential participants of later rounds), but the team of researchers offered to present the research results when it was concluded.

Results

Following Green and Aronow (2009), the data analysis was done through linear regressions, since over 20 observations were collected and, in this case, it is expected that the estimations made were not biased. Using linear regressions also benefits the study by increasing the precision of the estimated effects, because the different treatments are accompanied by covariables in the models.

Table 2 summarizes the tests, indicating the direction and the statistic relevance of the variables in three linear regressions: one for the unidimensional version of DTSS and two for the bidimensional version of that scale. All models include two sociodemographic variables (age and gender). They also included a dummy variable that informs whether the participant played the game Grand Theft Auto (GTA), which promotes violence, glorifies risk, especially in traffic, and is not recommended for those under the age of 18 according to the classification by the Ministry of Justice of Brazil. It also includes variables that indicate the experimental conditions under which the participants were immediately prior to responding to the questionnaires. In this study, the media manipulation variable was therefore exposure to commercials about vehicles on television and not violent videogames.

Table 2 – Non standardized coefficients of linear regression (standard error in parentheses)

	DTSS	DTSS 2 factors		
Variables	1 factor (1)	Risk (2)	Emotion (3)	
(H ₁) Interaction: Cronos treatment (with risk) x likes GTA	1.968*	2.174*	1.043	
	(.884)	(1.071)	(.994)	
(H ₂) Treatment: Cronos (with risk)	541	-1.018	.113	
	(.655)	(.795)	(.737)	
Treatment: Kia (without risk)	.446	.458	.269	
	(.504)	(.611)	(.566)	
(H ₃) Likes GTA	101	382	.204	
	(.540)	(.654)	(.607)	
(H ₄) Age	100	090	073	
	(.077)	(.094)	(.087)	
(H ₅) Gender (Male)	586	192	744	
	(.455)	(.552)	(.512)	
Constant	5.969**	4.984*	6.714**	
	(1.657)	(2.008)	(1.863)	
R ²	.090	.057	.054	

Obs.: * p<.05; ** p<.01

Source: created by the author.

The main hypothesis of this study (H_1) , which expected to observe the existence of short-term effects on individuals who like videogames that glorify risk, reached a statistically significant response (p<0.05) in two of the three models, which points to the existence of short term effects of television commercials that glorify risk related to driving experience. This effect, however, did not happen among young people in general who participated in the experiment. Only among those who like violent videogames such as GTA. This result does not reduce the importance of this short-term effect. On the contrary, they increase their relevance, since the effect occurs in exactly a group that tends to naturalize violence more in traffic.

Another notable finding is that the highest coefficient was found in the regression that had the dimension of risk as a dependent variable in the two factor DTSS. In other words, not only TV commercials that glorify risk can have short-term effects on young people who use violent videogames, but apparently, they do not encourage the dimension of emotion of DTSS but that of risk.

In consonance with the findings observed by Vingilis *et al.* (2015), mere exposure to car commercials with scenes of risk with images of acceleration or high speed in dangerous circumstances does not appear to have a short-term effect on young people's attitudes towards dangerous driving experiences, reinforcing H_2 . Neither the exhibition to the Cronos commercial nor the Sportage commercial resulted in statistically significant coefficients.

Contrary to what was predicted by $\rm H_3$, however, there did not appear to be a direct association between the fact that young people with an affinity for GTA and level scored on DTSS. This result was consistent not only in the models that include an interactive term between liking to play GTA and short-term exposure to television commercials with risk, but also in the other models that did not include this variable.

Among the sociodemographic variables, counterintuitively, the gender coefficients (male) were all negative, although not statistically significant. Age also had a negative sign in all models, suggesting that increasing age diminishes the inclination to take risks in traffic, but here again the coefficients were not statistically significant in any of the model, perhaps due to the strict age interval observed by the sample (17-29 years). Although these variables are expected to be balanced between treatments, they were introduced in the model due to theoretical reasons, as risk behaviors are usually associated with males and younger individuals.

Limitations

If on the one hand the experimental study design reported here presents worrying results about the short-term effects of narratives in television commercials that glorifies risk in driving experiences, on the other they should be interpreted in terms of the empirical framework of the study. Firstly, the findings are circumscribed by the specific combination of television program episode chosen, the manipulated commercials and the other commercials that compose the videos exhibited. In other words, it is possible that other equivalent contents

could produce larger, smaller or no effects at all. Further studies are warranted to establish generalizable conclusions.

Secondly, this was a laboratory experiment, which tends to increase the participants attention to the exhibited content and reduces the external validity of the study. Therefore, it is possible that in other contexts — with less attention — the effects may be smaller or even non-existent. Nevertheless, with regards to stimulation that could increase viewer's risk to life, the doubt should suggest more caution, not the contrary.

The study also faces limitations from the sample used. College students are generally different from the same age population. Although they can be seen as an at-risk subgroup (as they are young and usually have more access to automobiles than lower educated people at the same age), college students do not represent all drivers that could be affected by risky car commercials.

Another limitation of the study arises from the choice of a dependent variable measuring the attitude of participants, which cannot necessarily be converted into intention for behavior or in behavior itself. Future research should utilize more subtle variables, such as implicit association tests, for instance the Vienna test, to evaluate the extension of the effect observed here.

Finally, it should be remembered that this experiment sought to measure short-term effects in a laboratory context. In that sense, it is possible that individuals began their participation in the research already "pretreated" (DRUCKMAN; LEEPER, 2012). In other words, the largest effect has already occurred over the course of the participants' lives and it is only possible to observe a small residual effect of this short-term exposure. Furthermore, even if no effect had been observed, the null hypothesis could not have been rejected without running the risk of committing a Type II Error.

Other research designs, that expose individuals to commercials that glorify risk for long periods could offer better conditions to identify the cumulative effect of exposure to this content. However, research design of this type brings up obvious ethical questions. A more promising path seems to be improving the measurement of the effects refining the study of the dependent variable and segmenting the audience in search of individuals more prone to risky behavior.

Conclusion

The main conclusion of this study is that short-term exposure to car commercials on TV that glorify risk can increase risk attitudes towards the driving experience. This may occur, specifically, with individuals who enjoy violent video games, whose interaction is likely to have been developed in the long-term esphere. No short-term effects were found for individuals who dislike violent games like GTA. However, this does not allow us to rule out the existence of long-term effects on these individuals.

The results reported above increase the scope of research on exposure to television car commercials that glorify risk in two aspects. First, there does seem to be a short-term effect of this exposure on risky attitudes in traffic among young people who like violent videogames, which supports the prediction make by the GAM. The results obtained by Vingilis *et al.* (2015) should, therefore, be circumscribed to a general sample of students and not to those whose process of socialization contemplated the use of other actively consumed media, such as aggressive videogames. The second relevant aspect of this study indicates that a two-factor version of the DTSS – and not one factor – could be more sensitive to short-term effects of television commercials.

The research problem discussed here inevitably touches on the debate about the necessity for regulation (or self-regulation) of the media narrative of the automotive industry. As other industries have suffered limitations in their right to free commercial persuasion — such as tobacco and alcohol —, it seems to be an opportune moment to consider restrictions on the use of glorification of risk in the attempt to increase the sales of automobiles. Given the gravity and scale of thousands of transport accidents in Brazil and the world over, especially among young people, a more conservative attitude to the topic would be advisable.

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Conflict of interest

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