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An evaluation of a video-based intervention targeting alcohol consumption during aquatic activities

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ABSTRACT

Objective: Alcohol consumption and being male are drowning risk factors. Changing beliefs and intentions to undertake risky aquatic-related behaviours, such as consuming alcohol, is key to reducing loss of life and injury. We evaluated the impact of a video encouraging change in young males' social cognitions and intentions to discourage their mates as well as their own alcohol consumption around the water.

Method: A three-wave non-controlled pre-test-post-test design was adopted. A convenience sample of Australian males aged 18–34 years (N = 97) who self-reported drinking alcohol and engaging in aquatic activities was recruited. Participants were surveyed at baseline (T1) regarding social cognition constructs and intentions, immediately after viewing the video (T2) and at a one-month follow-up (T3).

Results: Repeated measures ANOVAs revealed significant main effects of time on intentions, subjective norms, and attitudes regarding discouraging mates from drinking and swimming, but no significant main effects of time on perceived behavioural control or risk perceptions. The same patterns of effects were observed regarding drinking and swimming on males' own behaviour.

Conclusions: The video has the potential to influence young males' social cognitions regarding their mates' and their own risky drinking behaviour around water in the short term, although sustained interventions are required. Messaging delivered on-site at popular aquatic locations in the lead-up to traditionally risky periods for alcohol-related drowning should be considered. Provision of strategies to combat social pressures among young males to act on their intentions to engage in drinking and swimming are needed.

KEY POINTS

What is already known about this topic:

(1) Drowning is a significant cause of injury-related mortality and morbidity.
(2) Alcohol is a risk factor for drowning, with young males commonly represented in alcohol-related drowning statistics.
(3) Achieving lasting improvement in behaviour among males is challenging, despite the use of water safety interventions based on theory.

What this topic adds:

(1) This study presents the first evaluation of a video that aimed to encourage change in young males' social cognitions and intentions to discourage their mates alcohol consumption around water.
(2) Results indicate significant main effects of time on intentions, subjective norms, and attitudes regarding discouraging mates from drinking and swimming, as well as drinking and swimming themselves.
(3) The video has potential to influence young male's social cognition for their mates' and their own behaviour in the short term, although sustained interventions are required.

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KEYWORDS

Alcohol consumption; behaviour change; injury; programme evaluation; risk-taking; water safety

Introduction

The third leading cause of unintentional injury death worldwide is drowning (World Health Organisation, 2014), with an estimated 295,000 lives lost in 2017 (Franklin et al., 2020). Alcohol consumption in, on, or around water is a key risk factor for drowning with, on average, 50% and 35% of fatal and non-fatal drowning, respectively, involving alcohol (Hamilton, Keech et al., 2018). Males are overrepresented in drowning statistics (Franklin et al., 2010, 2020; Hamilton, Demant et al.,

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2020; Howland et al., 1996), including alcohol-related drowning (Ahlm et al., 2013; Croft & Button, 2015; Peden et al., January 2017). In Australia, 276 people died due to unintentional drowning in 2019, 81% of whom were male, and 27% were aged 18–34 years (Royal Life Saving Society – Australia, 2019). Alcohol has been found to be a key contributor to drowning fatalities in Australia (Driscoll et al., 2004; Franklin et al., 2010), with a particularly high burden in inland waters (Peden et al., January 2017, 2018).

Changing beliefs towards and intentions to undertake risky aquatic-related behaviours is key to preventing death and injury (Hamilton et al., 2021; Hamilton, Peden et al., March 2019; Hamilton, Price et al., June 2018). Previous studies exploring behaviours associated with risky aquatic activity have often applied social cognition theories, such as the health belief model (HBM; Rosenstock, 1974) and theory of planned behaviour (TPB; Ajzen, 1991). These studies have found attitudes, normative beliefs, and perceptions of control and risk to be independent predictors of a range of water safety behaviours (Hamilton,Price et al., 2018b, Hamilton, Keech, Peden and Hagger2019b; Hamilton, Peden et al., February 2018), including intentions to drink and swim for Australian males aged 18–34 years (Abercromby, Leavy, Tohotoa, Della Bona, Nimmo and Crawford, 2020; Hamilton & Schmidt, 2013, 2014).

There is very little previously published research on the development and impact of video-based public service announcements targeted to water safety and drowning prevention, with no prior research specifically targeting males and alcohol consumption. Research that has been published has explored television commercials promoting supervision of children around water in the Australian state of Western Australia (Casten et al., 2020) and a flood safety video infographic promoted entirely online which encouraged drivers to avoid driving into floodwaters (Hamilton, Peden et al., February 2018). Child supervision television commercials were shown to have modest recall and positive comprehension, indicating such a medium has a role in reinforcing drowning prevention messages to parents (Casten et al., 2020). With respect to the floodwater infographic, self-reported willingness to avoid driving into floodwater was found to have been maintained among females only at a 1-month follow-up, further highlighting challenges in creating behaviour change among males (Hamilton, Peden et al., February 2018). Given the dearth of research in this space, further evaluation of video-based water safety and drowning prevention messages is required.

The TPB and HBM are considered prototypical of social cognition theories used to predict social and health behaviour, and meta-analytic research has generally supported their predictions (Armitage & Connor, 2001; Carpenter, 2010). Their use, however, has been predominantly to predict behaviour, although evidence exists that shows interventions based on theory can guide the development of persuasive messages aimed at changing beliefs and, consequently, intentions and behaviour (Hagger et al., 2020). For example, a previous study aimed at reducing drowning and aquatic-related injury identified key theory-based constructs (e.g., attitudes, subjective norms, self-efficacy) and mapped these on to relevant behaviour change methods to develop a video infographic designed to discourage people from driving into floodwaters (Hamilton, Peden et al., 2018). Findings showed changes in self-reported likelihood of driving into floodwaters for both males and females immediately after viewing the infographic, with changes retained at 1-month follow-up for females only. Such findings highlight the importance of using theory to design water safety interventions and that the use of videos as a platform for intervention delivery may be an effective tool in promoting safety (Hamilton, Keech et al., 2019), although achieving lasting improvements in behaviour among males is more challenging (Hamilton, Peden et al., February 2018).

Aims and hypotheses

Given the overrepresentation of males in drowning statistics, in particular those known to involve alcohol, this study aimed to evaluate the impact of a video depicting a male discouraging his mates from mixing alcohol and aquatic activities. Specifically, study aims were to: (a) determine whether the video viewed at Time 1 (T1) would change young males' intentions and other social cognitions (attitudes, subjective norms, perceived behavioural control, and risk perceptions) regarding discouraging their mates from drinking alcohol and swimming immediately post exposure at Time 2 (T2); (b) determine whether the video viewed at Time 1 (T1) would change young males' intentions and other social cognitions regarding their own behaviour of drinking alcohol and swimming immediately post exposure at Time 2 (T2); and (c) determine whether any immediate effects of the video were maintained 4 weeks later at Time 3 (T3). We predicted that the video would result in higher intentions, attitudes, subjective norms, perceived behavioural control, and risk perceptions regarding participants discouraging their

Table 1. Demographic data and descriptive statistics for study variables across time points.

Variable	Time 1	Time 2	Time 3	*p-value*[a]
Participants	97	97	47	
Age, *M* years (SD)	22.09 (4.32)	22.09 (4.32)	22.06 (4.24)	.95
Annual personal income (AUD)	72	72	37	.50
Nil – $18,200	11	11	5	
$18,201 – $37,000	12	12	5	
$37,001 – $80,000	2	2	0	
$80,001 – $180,000				
Education level	48	48	26	.29
Completed junior/senior school	25	25	12	
Vocational Education / Diploma	21	21	9	
Undergraduate University degree	3	3	0	
Postgraduate University degree				
Marital status	86	86	42	.26
Never married	4	4	2	
Married registered	3	3	2	
Married defacto	2	2	0	
Separated / Divorced	2	2	0	
Widowed				
Swimming ability	7	7	6	.13
Less than 25 metres (up to 1 length)	23	23	12	
25 up to 100 metres (1 up to 4 lengths)	21	21	8	
100 up to 200 metres (4 up to 8 lengths)	17	17	5	
200 up to 300 metres (8 up to 12 lengths)	7	7	3	
300 up to 400 metres (12 up to 16 lengths)	22	22	13	
More than 400 metres (more than 16 lengths)				

[a]Independent samples t-test used for comparing continuous data, chi-square test used for comparing categorical data between participants with complete data and participants lost to attrition.

mates from drinking alcohol and swimming between T1 and T2 (Hypothesis 1). We also sought to examine whether changes following exposure to the video regarding discouraging their mates from drinking alcohol and swimming were maintained at T3 (Hypothesis 2). While the video did not directly target the participants' own drinking and swimming behaviour, we sought to explore whether the video also had an effect on the same social cognition constructs outlined above, but in reference to participants own behaviour. We predicted that the video would result in lower intentions, attitudes, and subjective norms; and, higher perceived behavioural control and risk perceptions regarding participants themselves drinking alcohol and swimming between T1 and T2 (Hypothesis 3). We also sought to examine whether changes following exposure to the video regarding themselves drinking alcohol and swimming were maintained at T3 (Hypothesis 4).

Method

Participants

A non-random convenience sample of Australian males aged 18–34 years (N = 97) who self-reported they drink alcohol and engage in aquatic activities was recruited face-to-face and via email, social media, and a student participant pool. Participants were eligible if they responded "yes" to each of the following three questions: "Are you male aged 18–34 years old?; Do you drink alcohol?; Do you engage in water activities or swimming?" As an incentive for completing the study, participants were offered a coffee voucher, and eligible student participants were offered course credit. The arrangements for receiving course credit were part of the standard curriculum, whereby students were required to participate in research for a specified number of hours throughout the academic term. Sample demographic characteristics are presented in Table 1. Of the participants who agreed to participate (N = 97), 50 were unavailable to provide follow-up data at T3 (attrition rate = 52%).

Design and procedure

The study adopted a three-wave non-controlled pre-test -post-test design. All study data, output, and materials are provided as open access (https://osf.io/8ntfr/). This project received ethical approval from the Griffith University Human Research Ethics Committee (2016/453). Participants completed the study online in surveys hosted by Qualtrics©. At baseline (T1), participants completed an online survey assessing demographic characteristics and all survey measures. Participants were then shown the intervention video, which was embedded within the survey. Immediately after watching the video, participants completed all survey measures

again (T2). One month later, participants were emailed an invitation and link to complete the follow-up survey, which contained all survey measures (T3). Data across each time point were matched using a unique code identifier created by the participant.

Intervention

The intervention comprised a video designed to form part of a drowning prevention campaign targeting males aged 18–34 years. Developed by Royal Life Saving Society – Australia in collaboration with a creative agency, the 30 second video (https://www.youtube.com/watch?v=aPz0R5OKTms) was designed to be played as a community service announcement (CSA) on television and online via social media as part of the "Don't Let Your Mates Drink and Drown" campaign. The video features the main character "Dave" as he tries to keep his mates safe from drowning after consuming alcohol. The advertisement attempts to use humour and mateship to affect behavioural change. We analysed the content of the video to identify the specific behaviour change methods that may target theoretical constructs from prior research. The video used specific behaviour change methods (Kok et al., 2016) that mapped onto key theory-based constructs identified in previous research (attitudes, subjective norms, perceived behavioural control, risk perceptions). See, Table 3 for a description of behaviour change methods, theoretical constructs targeted, and example content from the video. None of the authors of this study were involved in the conceptualization or execution of the video.

Measures

Social cognition constructs

The measures were introduced with the following text: "Swimming relates to activities explicitly related to water that are undertaken for fun, pleasure, or amateur sport. This includes boating and personal watercraft. Drinking and swimming relates to alcoholic beverages and refers to consuming more than one standard drink within 1 hour of swimming. For the next questions, think about the scenario where you are around water having a few drinks with your mates. The weather and water conditions are good for swimming and nothing is stopping you from going for a swim. Now please answer the following questions as if this scenario is currently taking place". Measures of intentions, attitudes (positive and negative evaluations of the behaviour), subjective norms (approval of important others), perceived behavioural control (capacity and confidence to perform the behaviour), and risk perceptions (perceived risk associated with performing or not performing the behaviour), were administered on 7-point Likert scales. All measures have been used in prior research (Hamilton & Schmidt, 2013, 2014), and all measures except risk perceptions were developed based on established guidelines (Ajzen, 2006). The measure of risk perceptions was adapted from Hamilton, Price et al. (2018b). All measures demonstrated good reliability. Each measure was administered twice at each of the three time points. First, the measures were referenced to the behaviour of discouraging mates from drinking alcohol and swimming. Second, the measures were referenced to the behaviour of the participant drinking alcohol and swimming themselves. See Table S1 for reliability statistics and item wording of study measures.

Demographic variables

Participants self-reported their age in years, annual personal income, education level, marital status, and swimming ability based on how far they can swim without stopping (McCool et al., 2009).

Data analysis

Data were analysed using SPSS v25 (IBM Corp, 2017). The study hypotheses were tested with a series of repeated measures analysis of variance (ANOVA). The intervention was represented by the within-participants independent variable of time (T1, T2, T3), and the psychological variables (intention, attitudes, subjective norms, perceived behavioural control, and risk perceptions) as separate dependent variables. Each dependent variable was measured referenced to the participant discouraging their mates from drinking alcohol and swimming and to the participant drinking alcohol and swimming themselves. We used $\alpha = .05$ as the criterion for statistical significance. Where significant main effects or main effects approaching the threshold for statistical significance were observed, simple effects were examined. The assumption of normality was met for all variables (ratio of skewness and kurtosis to their respective standard errors $< \pm 3.29$). Missing data were imputed using the expectation-maximization (E-M) algorithm. Little's test indicated that data were not missing completely at random (MCAR), and guidelines suggest that imputation reduces bias relative to listwise deletion, even when missing data rates are high and samples are small (Segerstrom, 2020). A post hoc power analysis was conducted using G*Power v3.1 to assess sensitivity given the attained sample size. This indicated the study ($N = 97$) had 80% power to detect main effects up to $\eta_p^2 = .017$.

Table 2. Estimated marginal means and standard errors of study variables by time.

					Time 1		Time 2		Time 3	
Dependent variable	F	*Df*	*p*	η_p^2	M	SE	M	SE	M	SE
Mates										
Intention	10.72	1.70, 163.00	<.001	.100	3.30	.18	3.94	.24	3.63	.24
Attitudes	7.26	1.81, 173.32	.001	.070	3.81	.13	4.35	.14	3.92	.16
Subjective norms	5.01	1.87, 179.75	.009	.050	4.02	.15	4.34	.14	4.41	.20
PBC	.36	1.68, 161.43	.660	.004	5.16	.15	5.08	.15	5.22	.21
Risk perceptions	2.03	1.61, 154.15	.144	.021	4.69	.14	5.00	.14	4.78	.21
Self										
Intention	5.19	1.64, 157.39	.010	.051	3.08	.18	3.13	.19	2.70	.21
Attitudes	3.83	1.79, 172.11	.041	.034	4.08	.17	3.76	.17	3.78	.18
Subjective norms	5.47	1.62, 155.64	.009	.054	3.48	.16	3.42	.15	3.14	.15
PBC	1.86	1.85, 177.12	.162	.019	5.37	.14	5.22	.14	5.14	.15
Risk perceptions	.22	1.65, 182.95	.637	.002	5.11	.15	5.08	.15	5.17	.16

Self = drinking alcohol and swimming behaviour for the participant themself; Mates = discouraging mates from drinking alcohol and swimming; PBC = perceived behavioural control. Mauchley's test indicated that sphericity could not be assumed for all tests. Therefore, the Greenhouse-Geisser correction was applied for these analyses.

Table 3. Behaviour change methods, detailed description, theoretical constructs targeted and example content from video aimed at changing males' social cognitions and intentions to discourage their mates from drinking and swimming.

Behaviour change method	Description	Target construct	Example of video content
Emphasise group behaviour and foreshadow potential risks	Viewers shown risky behaviour of consuming alcohol prior to undertaking aquatic activities	Subjective norm, attitudes	Group of males shown drinking alcohol and preparing to head to the water (wearing lifejackets, holding fishing rods, have kayaks and eskies). One sounds intoxicated as they wonder where their missing mate "Dave" is.
Identify potential consequences of risky behaviours	Highlighting personal risks and negative consequences via safety messaging	Attitudes, risk perceptions	Our hero character "Dave", is building water safety signage to keep his mates keep safe. Signs include "No boozing and boating", 'Strong Current', Alcohol + Water Don't Mix', 'Submerged Objects Below'.
Provide instruction and prompt planning to prevent risk taking behaviour	Instructions on how to perform the behaviour and avoid negative consequences of risky behaviour	Perceived behavioural control, subjective norm	Narrator says "Real men look out for each other. Don't let your mates drink and drown"

Results

See Table 2 for ANOVA results, estimated marginal means, and standard errors for all hypothesis tests. Effect sizes have been interpreted based on Cohen's guidelines (Cohen, 1988). Repeated measures ANOVAs revealed statistically significant main effects of time on intentions (medium–large effect size), attitudes (medium effect size), and subjective norms (medium effect size) regarding discouraging mates from drinking alcohol and swimming. However, repeated measures ANOVAs did not reveal statistically significant main effects of time on perceived behavioural control or risk perceptions regarding not discouraging mates from drinking alcohol and swimming. For intentions to discourage mates from drinking alcohol and swimming, tests of simple effects revealed a significant difference between T1 and T2 intention ($p < .001$), no significant difference between T1 and T3 intention ($p = .050$), and a significant difference between T2 and T3 intention ($p = .009$). This indicates that while exposure to the video influenced intentions immediately post-intervention, this effect had started to diminish at follow-up (4 weeks later). For attitudes regarding discouraging mates from drinking alcohol and swimming, tests of simple effects revealed a significant difference between T1 and T2 attitudes ($p < .001$), no significant difference between T1 and T3 attitudes ($p = .525$), and a significant difference between T2 and T3 attitudes ($p = .001$). This indicates that while exposure to the video influenced attitudes immediately post-intervention, this effect had started to diminish at follow-up. For subjective norms regarding discouraging mates from drinking alcohol and swimming, tests of simple effects revealed a significant difference between T1 and T2 subjective norms ($p = .008$), a significant difference between T1 and T3 subjective norms ($p = .009$), and no significant difference between T2 and T3 subjective norms ($p = .562$). This indicates that the intervention had an effect on subjective norms, and that this effect had not significantly

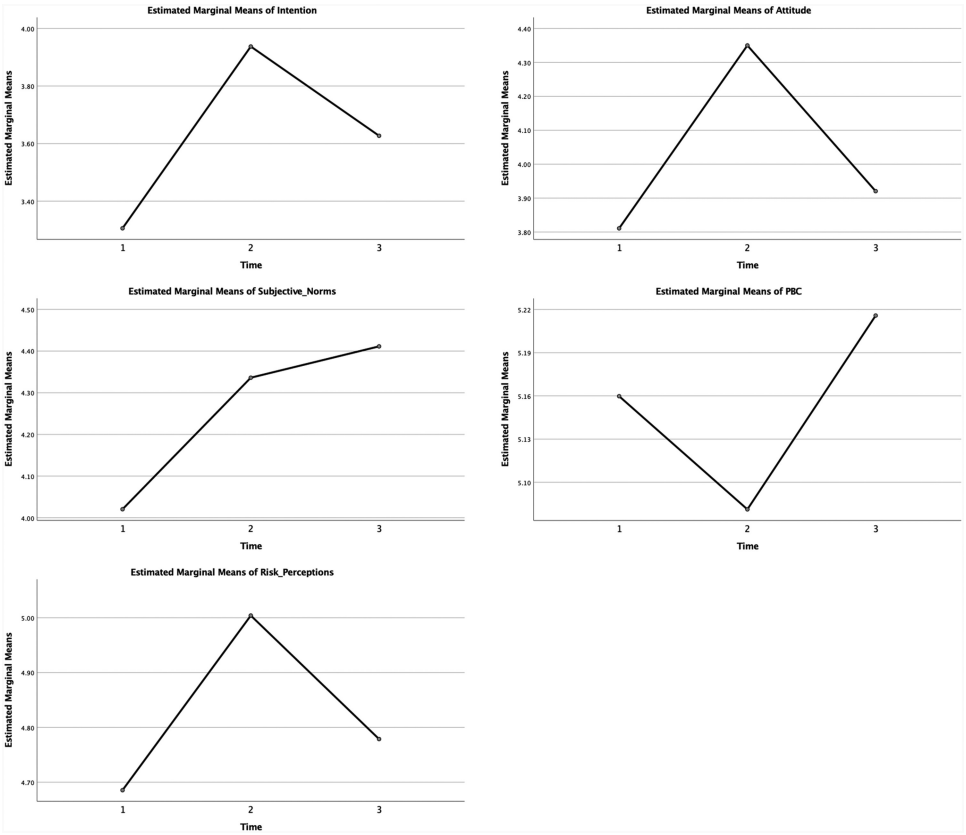

Figure 1. Plot of dependent variables across time for discouraging mates from drinking alcohol and swimming.

diminished at follow-up. See, Figure 1 for plots of dependent variables across time for discouraging mates from drinking alcohol and swimming.

Repeated measures ANOVAs revealed statistically significant main effects of time on intentions (medium effect size), attitudes (small–medium effect size), and subjective norms (medium effect size) regarding drinking alcohol and swimming on males' own behaviour. However, a repeated measures ANOVA did not reveal statistically significant main effects of time on perceived behavioural control and risk perceptions regarding not drinking alcohol and swimming. For intentions regarding drinking alcohol and swimming, tests of simple effects did not reveal a significant difference between T1 and T2 intentions (p = .671) but revealed a significant difference between T1 and T3 intentions (p = .027) and a significant difference between T2 and T3 intentions (p = .006). This indicates that while exposure to the video did not influence intentions immediately post-intervention, an effect started to emerge when intention was measured at follow-up. For attitudes regarding drinking alcohol and swimming, tests of simple effects revealed a significant difference between T1 and T2 attitudes (p = .006), a significant difference between T1 and T3 attitudes (p = .039), and no significant difference between T2 and T3 attitudes (p = .895). This indicates that the intervention had an effect on attitudes, and that this effect had not significantly diminished at follow-up. For subjective norms regarding drinking alcohol and swimming, tests of simple effects did not reveal a significant difference between T1 and T2 subjective norms (p = .442) but revealed a significant difference between T1 and T3 subjective norms (p = .011) and a significant difference between T2 and T3 subjective norms (p = .012). This indicates that while exposure to the video did not influence subjective norms immediately post-intervention, an effect started to emerge when subjective norm was measured 4 weeks later. See, Figure 2 for plots of dependent variables across time for drinking alcohol and swimming.

Discussion

Alcohol is a leading risk factor for drowning (Hamilton, Keech et al., 2018), with males

overrepresented in alcohol-related drowning (Ahlm et al., 2013; Croft & Button, 2015; Peden et al., January 2017). This evaluation study sought to provide preliminary evidence for the effect of a video on the behaviour of drinking alcohol and swimming among males surveyed for their own behaviour, as well as on changes on perceptions for their mates. While these preliminary findings did not support changes regarding drinking alcohol and swimming with respect to perceived behavioural control and risk perceptions, the findings did suggest that the intervention might have an effect on intentions, attitudes, and subjective norms for both discouraging mates and one's own behaviour to drink alcohol and swim, with small to medium effects observed. While some effects (intentions and attitudes) for discouraging mates from drinking alcohol and swimming had started to diminish at follow-up, effects (intentions and subjective norms) for one's own behaviour to drink and swim started to emerge at follow-up.

Current findings provide preliminary support for the sustained effects of attitudes (own behaviour) and subjective norms (discouraging mates), suggesting the video intervention may be an effective means to persuade males to change their own behaviour and encourage males to challenge their mates with respect to the social pressures associated with drinking and swimming. Unlike broader health interventions, which largely support attitudinal effects (McEachan et al., 2011), the influence of subjective norms appears to be a consistent predictor of behaviours related to drowning risk (Hamilton & Schmidt, 2013, 2014), as well as for behaviours that are referenced to understanding individuals' decisions for others' behaviour (Hamilton, van Dongen et al., 2020), such as in the context of this study of being mindful of mates' alcohol consumption in and around waterways.

Of note, although current findings suggest that the video did not influence subjective norms immediately (T2) for males' own behaviour, an effect started to emerge at the follow-up 4 weeks later (T3). Similarly, immediately after viewing the video (T2), no positive changes in males' own intentions to drink and swim were observed; however, effects did emerge at the follow-up (T3). There is evidence that positive appeals (such as in the video being evaluated) are more persuasive over time, while negative appeals are more persuasive immediately after exposure (Lewis et al., 2008). Given the differential effects for discouraging

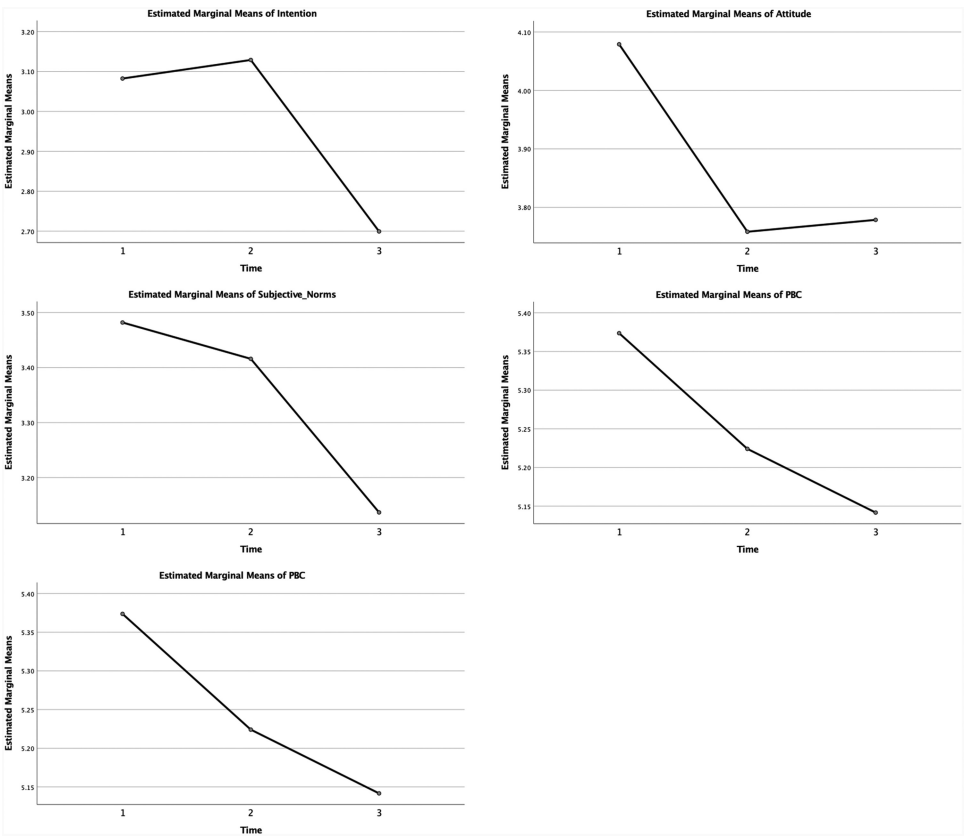

Figure 2. Plot of dependent variables across time for participants drinking alcohol and swimming.

mates from drinking alcohol and swimming, where some effects started to diminish at follow-up and for one's own behaviour to drink and swim, where some effects started to emerge at follow-up, it could be the case that males are evaluating the video differently when reflecting on their own actions or their actions for their mates. This is an empirical question for future research to unpack as recent research suggests that a combined emotional appeals approach to designing messages around risky alcohol use may be most effective (Yousef et al., 2021).

However, the lack of sustained effects, particularly for discouraging mates from drinking and swimming, may suggest the need for sustained communication of messages to the target group, as has been shown in successful rock fishing interventions (Moran, 2017), ideally immediately prior to consuming alcohol with their mates at aquatic locations. Future iterations of the intervention, therefore, could be strengthened through the delivery of campaign resources on-site at popular aquatic locations, particularly in the lead-up to traditionally risky periods for alcohol-related drowning, such as public holidays and the summer period (Barnsley & Peden, 2018; Peden et al., 2018). Another strategy may be the use of targeted placement of campaign resources on key websites and "apps" young males may be viewing prior to drinking and swimming (e.g., weather, alcohol suppliers). Such approaches will require evaluation and long-term funding support for successful strategies.

Limited support, however, was shown for perceived behavioural control and risk perceptions. This may suggest that young men believe they have the control over deciding at will whether they drink and swim (Hamilton & Schmidt, 2014), especially as the behaviour is not illegal. For example, Armitage et al. (1999) found that illegal substance use, but not legal substance use, was determined by perceived behavioural control. It is also argued that if potential issues arising from doing a behaviour are perceived as controllable, then there is a tendency to underestimate one's risk (Van der Pligt, 1998). Research has shown males overestimate their ability to cope with and underestimate the risks associated in aquatic situations (McCool et al., 2009). Thus, it could be that men are not accurate in their perceptions regarding control factors due to low exposure of potential problematic situations from drinking and swimming. It might therefore be useful to use other models, such as the integrated behavioural model (see https://www.med.upenn.edu/hbhe4/part2-ch4-integrated-behaviour-model.shtml), which provide more specificity in measuring the nuances associated with attitude, perceived norms, and personal agency or test moderation effects among the social cognition constructs (in press). Findings may also suggest a need to strengthen males' perceptions of risk towards consuming alcohol when intending to participate in aquatic activities and their confidence and skills to act on their intentions. Future campaigns aimed at males could use more persuasive communication techniques in the messaging scripts related to the risks (Hamilton & Johnson, 2020), especially given young males tend to experience optimism bias in relation to their own personal risk (Weinstein & Klein, 1996). Such campaigns should be complemented by resources, such as the depiction and modelling of real-world scenarios, to give males the tools to have what they may perceive to be difficult conversations with their mates (Warner & French, 2020). Future research could also seek to integrate theoretical insights derived from social psychological bystander intervention research. For example, a recent meta-analysis in this area suggests that bystander intervention is more likely when there is an imminent dangerous emergency (Fischer et al., 2011). Therefore, promoting recognition of such a dangerous situation may help to prompt bystander action in this context.

Study limitations

Current findings should be considered in light of the limitations. This study evaluated only one part of a multi-faceted campaign (including social media, radio, print, and TV promotion methods), focusing only on the video component (promoted via TV and social media). As this study evaluated the intervention video only, an evaluation of the multi-faceted campaign on the target audience is warranted to determine true effects, although this requires a more complex evaluation strategy. It must also be acknowledged that traditional media, such as videos, continue to play a role in reinforcing drowning prevention messages (Casten et al., 2020). In addition, a small convenience sample was recruited through social media and university networks . Further research is therefore required with a broader segment of the population to determine if current findings are indicative of the target audience. This is important given the average age of participants was 22 years. Further testing with older males (i.e., 30–40 years) should be considered to determine if the "mateship" messages resonate across the entire target age group. Although study eligibility criteria meant all participants self-reported drinking alcohol and engaging in aquatic activity, actual behaviour was not measured; however, social cognitions and intentions are necessary antecedents to changing behaviour (Armitage & Connor, 2001). Further, the behaviour (drinking alcohol and swimming) is difficult to assess due to its opportunistic nature, and to objectively assess would be

time consuming and expensive. Nonetheless, future pre-registered large-scale trials should aim to assess the ecological validity of intervention material in raising individuals' awareness of this key water safety behaviour and promoting adoption of the water safety behaviour measuring behaviour objectively via breath testing (breathalysers; Peden et al., 2018). Further, social bias in responses may be present, especially as incentives were offered and self-report methods were used. In addition, the 4-week follow-up precludes evidence for long-term sustained behaviour change and future research should support follow-up of individuals over extended time-periods. It is important to acknowledge, however, that support for assumption-testing research prior to providing support for testing "definitive" behavioural trials is also important to ensure large-scale trials have appropriate efficacy and effectiveness (Kwasnicka et al., 2021). Finally, there was a high rate of attrition at the follow-up, which suggests that findings should be viewed with caution. Despite study limitations, however, few intervention evaluation studies have been published to measure the effect of drowning prevention interventions among adults, and less so within young adult male groups.

Conclusion

Alcohol is a leading contributory factor among fatal drowning in young males in Australia. This study sought to measure the impact of a drowning prevention video targeting drinking and swimming behaviour among young males. Findings showed that the intervention has the potential to influence young males' subjective norms, intentions, and risk perceptions regarding their mates' and their own risky drinking behaviour around water in the short term. Future interventions may benefit from considering strategies aimed particularly at combating social pressures to engage in this risky aquatic-related behaviour to strengthen young males to act on their intentions to curtail their mates and their own consumption of alcohol while participating in aquatic activity.

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Disclosure statement

Authors KH and JK declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Author SWP is employed by Royal Life Saving Society – Australia. Author AEP is an honorary senior research fellow with the Royal Life Saving Society – Australia. Data collection, analysis and interpretation of the findings were conducted independent of SWP and AEP.

Ethics approval statement

This project received ethical approval from the Griffith University Human Research Ethics Committee (2016/453).

Data availability statement

The data described in this article are openly available in the Open Science Framework at https://osf.io/8ntfr/

Open scholarship

This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at https://osf.io/8ntfr/

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