Psychological Perspectives on Alcohol: Visions for the Future

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Introduction

The *Handbook of Psychological Perspectives on Alcohol* provides a wide ranging treatment of

psychological research applied to alcohol consumption in multiple social contexts authored by an

eminent cast of contemporary international researchers. This chapter summarises the main messages

arising from the Handbook, reflects on what is currently known derived from psychological inquiry,

considers where the gaps in knowledge lie, and sets out an agenda for future research to assist in

filling these gaps. Specifically, four broad themes arising from the research presented in this

Handbook are identified, and the state of the research and avenues for future research under each

outlined: *samples*, *methods*, *theories* and *applications*.

Section 1 Psychological theories and predictors

Psychological theories play an important role in identifying the key determinants of outcomes,

particularly behaviour, and can aid intervention development by identifying which determinants to

target using behaviour change techniques (Hagger, Cameron, et al., 2020; Kok et al., 2016; Michie et

al., 2013). In the first section of the Handbook, the application of a range of psychological theories to

predict alcohol consumption was summarised. These chapters identified a range of individual

determinants - such as enhancement motives, drinking intentions, drinking refusal self-efficacy – that

were consistently related to alcohol consumption (Chapter 4). However, studies testing these

determinants often fail to capture them all because they tend to be confined to separate models;

when theories are integrated, the factors that are uniquely effective in predicting consumption can be

identified. Unfortunately, few studies have taken an integrated approach—by including predictors

from multiple theories or models—and more comprehensive and systematic application of integrated

theories is needed to identify the unique, independent determinants of alcohol consumption going

forward.

It is said that the road to hell is paved with good intentions, and nowhere is this more clearly symbolized than in research exploring people's drinking behaviours. For example, individuals may form plans to avoid or limit drinking but when these are tested by friends and family (e.g., friends applying social pressure to visit the pub or bar for a drink, offering to pay for drinks, or refusing to take no for answer when faced with a refusal or a drink), such plans often fall by the wayside. Recognising that individuals' plans about controlling consumption can be overridden in drinking contexts, often resulting in them drinking more than they intend to, researchers have started to explore other influences on drinking behaviour. For instance, research on dual-process models highlights the importance of 'implicit' constructs that reflect non-conscious processes that can also influence consumption (Chapter 3, (Hamilton et al., 2020). To date, large-scale studies incorporating these constructs alongside social cognition constructs are rare; one reason for this is that measuring implicit constructs often involves collecting reaction time data, which is harder to collect within a survey. Theories also fail to account for individual differences, such as personality, that are also important predictors of drinking behaviour. In their comprehensive overview of personality factors and alcohol consumption, Mezquita et al. (Chapter 5) consider research on how specific traits link to alcohol consumption, and also how these traits may be harnessed in interventions. They conclude that the role of personality in predicting alcohol consumption may be small, but that it is an important variable to consider when the goal is to encourage people to drink less.

The theories presented Section 1 of the Handbook have provided alcohol researchers with the means to examine determinants of drinking in a great deal of detail, but these theories leave a considerable amount of variance in consumption unaccounted for highlighting their insufficiency as accounts of individuals' drinking behaviour. As these chapters have shown, there are numerous weaknesses in methods and applications in existing research into theories, and there is no single ideal theory that can predict alcohol consumption in all segments of the population, particularly as much of the existing research draws on student populations. In addition, research findings regarding theories are difficult

to generalise due to studies varying in how they define drinking behaviours. Although theories provide a means to make sense of complexity, as Crossley (2001) suggests, such theories have limitations and boundary conditions such that they can never fully capture the determinants of behaviour and often neglect other important influences such as factors in the external environment. Furthermore, theories tend to focus on individual factors, albeit those that are social determined, which may not encompass the influence of the social context in which drinking tends to occur.

Section 2 Social and contextual factors

de Visser's (Chapter 6) opens this section by clearly framing the ways in which drinking alcohol should always be regarded as an inherently social behaviour; social and cultural factors shape drinking behaviours, whether or not drinking takes place with other people in social contexts. However, as Aresi and Bloomfield (Chapter 7) point out, trying to identify nation-specific drinking cultures results in an oversimplification of the drinking behaviours of people in different countries, and there are within-person differences that can help explain why and how and individual might drink in different ways on different occasions. Clapp and Madden (Chapter 8) raised important points on the methods that should be adopted to understand the interacting external environmental, physiological, and social processes that influence drinking behaviour. They advocate the use of innovative research methods to study alcohol consumption in ecologically-valid real-world settings, such as research participants wearing a transdermal sensor during a trip to the pub. Use of such methods may make it challenging to recruit participants, but Monk and Heim (Chapter 9) also make a strong case for more research to be conducted in settings that closely mirror 'real world' settings. For example, more research should be conducted in 'bar labs', as well as in situ in bars and pubs, house parties, or pre-drinking sessions, and other under-researched real-world settings. This is something that Vasiljevic and Pechey (Chapter 10) explored in their chapter about choice architecture, which involves changing the features of small-scale physical environments, such as within bars and restaurants. Changing these features, e.g., by altering glass size or shape, impact behaviour through automatic processes;

for example, individuals are prompted to drink faster or slower depending on whether their glass has straight or curved edges, due to perceptual biases. However, as Vasiljevic and Pechey demonstrated, findings to date have been inconclusive regarding the impact of changes to features of the micro-environment and it is challenging to conduct ecologically valid studies when changes in glassware may impact on sales. Together, the chapters in Section 2 show that an array of contextual features - ranging from the broad social context, through to the specific drinking context and the characteristics of a specific serving of alcohol - can influence individuals' alcohol consumption. The theories described in Section 1 are rarely able to account for these contextual factors in a satisfactory way for a number of reasons including: (1) failure to assess these factors in studies alongside measures of theory constructs; (2) a near exclusive focus on conducting studies in non-drinking contexts; and (3) adoption of theories that focus on how individuals self-report influences on their behaviour. The chapters presented in this section should provide impetus to researchers to modify theory and research practices to encompass a wider range of determinants in research on alcohol consumption.

Section 3: Drinking Identities

The inherently social nature of drinking means that a closer look at social influence can reveal a great deal about people's drinking identities. Section 3 provides various perspectives on processes of social influences, which can take place online, as well as face to face. Lyons and Goodwin (Chapter 11) review research on alcohol identities, which they point out has generally focussed on gender. Their chapter discusses research suggesting that historically men's drinking was seen as a way to demonstrate hegemonic masculinity, whereas women's drinking was considered unfeminine. However, a wide variety of cultural, social, and economic changes mean that psychological research has to move beyond simple binaries to make sense of how gender identity interacts with alcohol consumption. Nowhere have traditional notions of identity been more visible than within the world of social media, where people carefully curate idealised versions of their lives. Alcohol marketing

combined with an airbrushed representation of drinking cultures contributes to the notion that drinking is always positive, fun and enjoyable.

Although taking part in sports is often considered health promoting, the prototypical heavy drinking student is often inextricably linked to membership of student sports teams. The alcohol-sports paradox is the focus of Partington and Partington's (Chapter 12) chapter, illustrating the juxtaposition between 'healthy' and 'unhealthy' behaviours in this population. University students often engage in pre-drinking, which is the focus of Caudwell and Hagger's (Chapter 13) chapter. However, despite knowing that pre-drinking is associated with negative outcomes, very few interventions have targeted this specific pattern of drinking behaviour and doing so presents unique difficulties given the inherently strong social pressure to pre-drink. This point is addressed by Conroy and de Visser (Chapter 14) who illustrate the challenges of managing or refusing alcohol, which requires a high level of knowledge, skills, and motivation.

Section 3 of the Handbook illustrates how specific aspects of identity - from gendered expectations and how individuals present themselves online, sports team membership, social practices associated with pre-drinking, the ways in which individuals try to moderate their drinking– all contribute to understanding drinking behaviour. These identities vary within and between cultures - as illustrated in Section 2 - and it is clear that more cross-cultural work is needed in this sphere.

Returning to the theories in outlined in Section 1, the emphasis on identity is often missing in psychological research. Whereas the Prototype Willingness Model (Gibbons et al., 1998) promotes consideration of social images of drinkers and how individuals might take on aspects of these images if they too drink in similar ways, Section 3 demonstrates that these social images are likely to be markedly different depending on what aspect of identity is salient at the time when the individual is asked to reflect on them.

Section 4: Developmental trajectories for alcohol use

Early experiences within the home are responsible for shaping aspects of individuals' identities, and behaviours, and Cook et al. (Chapter 15) argue that alcohol should not be treated any differently from any other formative experience. They point out that although adolescence is the focus of most alcohol research conducted with young people, early representations of alcohol experienced in childhood can have an important influence on later cognitions and behaviour. A further limit to understanding young people's drinking, according to Rolando and Beccaria (Chapter 16), is the relative lack of research adopting qualitative methods compared to research using quantitative research methods. In comparative research with Finnish and Italian adolescents, they illustrate the potential of qualitative studies to provide rich data. Early representations of drinking are strongly influenced not only by culture, but also by parents' beliefs and behaviour regarding alcohol. Sawyer et al. (Chapter 17) exemplify the important role of parental communication, which in some cases can be a very effective means of reducing alcohol harms, but also has the potential to increase consumption. Two-way, open dialogue is critical, and it is important to avoid lecturing young people. Furthermore, as they get older, young people are increasingly influenced by peers, rather than parents. Modecki et al. (Chapter 18) provide a comprehensive account of the role of peers, social and school environments as both risk and protective factors for alcohol misuse. Chapters in this section of the Handbook provide a stark reminder of the likely disproportionate influence of alcohol on the behaviour of those who, in most regions, are not old enough to legally drink. With such a powerful influence on very early cognitions, it is unsurprising that interventions aimed at reducing alcohol consumption in young people is a priority for researchers as well as governments and organizations interested in the health and welfare of young people.

Section 5: Interventions to reduce alcohol consumption

Efforts to help people reduce or manage their drinking may be targeted at the population level, or targeted at specific groups, such as young people (Perman-Howe et al., 2018). Product labelling is an example of a population-level intervention, universally communicating alcohol health information,

such as drinking guidelines (see Chapter 1) to all consumers. However, as Blackwell et al. (Chapter 19) note, despite a wealth of experimental work on the impacts of labelling, there is a lack of information on alcohol products about guidelines on low risk drinking or the possible health effects of consumption, including information on calories that is provided on other drinks products. In many jurisdictions it is difficult to combat alcohol industry resistance to the inclusion of such information, even if it only has an impact on knowledge rather than behaviour (Wilkinson & Room, 2009) and so individual targeted interventions are needed.

Digital interventions offer advantages over face-to-face interventions because of their potential to engage people outside clinical settings and to reach large numbers of people relatively cheaply (Kaner et al., 2015). However, Bewick et al. (Chapter 20) argue that at present, the potential of electronic personalised feedback interventions is underutilised. Such interventions provide people with tailored advice based on information they provide. In this domain, there are several studies based on student samples, which Cooke et al. (Chapter 21) suggest may be best served by motivational interventions that are delivered before young people go to university, or self-regulatory interventions, such as forming 'if-then' plans, after young people have started university. Motivational interventions often target beliefs that underlie consumption (according to theories covered in Section 1), whereas self-regulatory interventions can be used to address social situational pressures to drink, outlined in Sections 2 and 3. Finally, in this section, Jones and Field (Chapter 22) look at the role of the cognitive bias modification (CBM) in reducing alcohol consumption. CBM attempts to regulate implicit associations that drive alcohol consumption and mean that habitual behaviours are enacted regardless of good intentions to avoid alcohol. Despite the appeal of CBM as a means of overcoming these powerful cues to drinking, Jones and Field caution that this field of research is fraught with failed attempts at replication. Their concluding comments remind us that the field of alcohol research as a whole needs to conduct more high-powered, pre-registered studies, and engage in transparent publishing practices that allow null results to be made available to the research community.

What is clear from each chapter in Section 5 is that currently available intervention strategies are not universally effective and each has limitations and boundary conditions. This signals the need for more systematic evaluation of interventions aimed at reducing alcohol consumption in different populations and contexts, particularly through registered replications, which will assist in identifying which strategies are most effective for particular groups and what interpersonal and contextual factors moderate their effects. It also suggests that people may vary in the intervention type that best suits their needs, and so, intervention studies where participants are allowed a choice of intervention type could also be explored in future studies. Such an approach may prove more acceptable to individuals, and reduce the sample attrition that can bedevil alcohol intervention studies (Radtke et al., 2017) and is consistent with the notion of personalised medicine that is increasingly emphasised in health psychology (Davidson & Cheung, 2017).

Limitations in the field of alcohol research

Before considering research recommendations for the field, the limitations inherent in research methods and evidence used in psychological inquiry into alcohol consumption should be carefully considered. Some of the limitations have already been noted within the section summaries. These limitations are shared across the topics covered in the volume and can be divided into four key categories: samples; methods; theories and determinants; and applications of findings.

Limitations linked to sampling in alcohol research

Many of the studies cited in this volume rely on university student participants. Although students are a legitimate population for the study of alcohol consumption because they tend to engage in "binge" drinking frequently (Davoren et al., 2016), this overreliance on student samples means that there is limited evidence about the generalizability of research findings and interventions aimed at reducing alcohol consumption to other populations. In particular, theories have been mostly tested on student samples, and in samples often composed of more women than men. This approach is a concern

because many cross-sectional and population-level surveys show that men drink more than women and men are at greater risk from short term harms such as violence (Bellis et al., 2015; Davies et al., 2020; NHS Digital, 2020). There is a need to confirm that variables shown to predict women's drinking also predict men's drinking because this should not be assumed – Barratt and Cooke (2018) compared prediction of HED among men and women using theoretical variables and past HED. Although drinking intentions predicted HED alongside past HED in women, the only factor that predicted HED in men was past HED. Such findings have implications for application of theories; because theories inform interventions designed to reduce drinking, if they are not based on actual determinants of drinking for men or women, they may not be effective. For example, Murgraff et al. (2007) reported that their implementation intention reduced alcohol consumption in women but not men (see Chapter 21).

Linked to this, it has been noted that alcohol research beyond the gender binary is rare (Flentje et al., 2015; Flentje et al., 2020). Many researchers fail to collect information beyond biological sex (e.g., male/female), which means that the experiences of trans and non-binary people are rarely represented in alcohol research (Connolly & Gilchrist, 2020). Those studies which do identify trans participants frequently fail to present analysis that disaggregates gender minority from sexual minority participants (Cochran et al., 2007; Talley et al., 2016). Although researchers may argue that they lack sufficient numbers of trans or non-binary participants to make statistical comparisons, this is not a compelling reason to overlook the experiences of a sub-group who, evidence has suggested, may typically consume alcohol in higher rates, and experience higher levels of alcohol-related harms, than cisgender individuals (Connolly et al., under review; Hughes et al., 2016).

Alcohol research is also largely based on racially and ethnically homogenous samples. Much of the research is conducted on white participants and conducted by white researchers, indicating that research in psychology applied to alcohol consumption lacks diversity. For example, samples in the Global Drug Survey are often around 85% white (Davies, Conroy, et al., 2017). While research

suggests that white population groups drink more than other ethnic groups (Hurcombe et al., 2010; Wade, 2020), there is a need for more research to determine the reasons, motives and determinants for these differences. Furthermore, minority groups such as indigenous populations in Australia and New Zealand tend to experience a greater burden of alcohol problems (Kypri et al., 2013) suggesting the need to consider greater diversity. There is, therefore, a need for more research into the reasons, motives and determinants of alcohol drinking in non-white populations. Oei and Jardim (2007)showed that psychological variables accounted for a greater amount of variance in alcohol consumption in a sample of white Australian university students' compared to consumption in a sample of Asian Australian university students.

In addition, adolescents and young adults tend to drink less alcohol than in the past (Livingston & Vashishtha, 2019; Vashishtha et al., 2020). Growing interesting in non-drinking, lighter drinking, the fluidity and transitioning nature of drinking 'styles' in recent discussion (Banister et al., 2019; Conroy & Measham, 2019; Davies et al., 2019) has drawn attention to the tendency to focus on alcohol consumption in unhelpful and inaccurate binaries (e.g. 'social' vs. 'problem' drinking). Addressing these limitations will involve greater acknowledge of the diversity of drinking styles (and transition between styles) and this, in turn, can help produce a more accurate, meaningful and measured discussion of theories of alcohol consumption and practical measures involved in promoting moderate drinking. According to recent UK data (NHS Digital, 2020) alcohol consumption is actually more prevalent in older age groups, such as adults aged 45 to 54 years. There is very little psychological research on the determinants of drinking in people in this, or older age groups, which means that interventions delivered to this population are likely to be based on drivers of drinking among younger populations that may be less relevant. There is also a real lack of research on alcohol among young people who do not pursue higher education, even though members of such groups may also engage in heavy alcohol consumption and may lack the support services accessible on university campuses.

Limitations linked to design and methods

The preponderance of cross-sectional designs used in psychological research studies limits inferences of causality. Given that a key feature of a 'strong' or 'good' theory is that it provides causal explanation of relations between constructs and outcomes (Davis et al., 2015), this is problematic as it limits the extent to which theories can be considered as effective in determining consumption. Furthermore, the lack of panel designs and experimental or intervention research of theory effects also means that there is little evidence that theories can effectively account for change in alcohol behaviour (Hagger, Moyers, et al., 2020). In turn, this limits the utility of theories in informing interventions aimed at curbing alcohol consumption.

Further to this, as authors in Section 2 have highlighted, there is a need to conduct alcohol research within the settings that alcohol consumption takes place. There are inherent problems with recall - alongside social desirability and self-concept preservation -that influence the completion of questionnaire measures when a participant is sober, and when these measures are completed a long time after a drinking occasion.

Authors such as Rolando and Beccaria (Chapter 16) propose that one of the reasons that important gaps exist in the understanding of the psychology of alcohol consumption is that there is a relative lack of qualitative research compared to quantitative in the field. They argue that the complexity of alcohol use is better understood by engaging with individuals and giving them a voice within carefully design qualitative studies. This is a compelling argument, and in recent years there are a great many examples where qualitative research has enabled a more nuanced understanding of people's views and experiences related to alcohol behaviours than a quantitative approach would allow. For example, quantitative surveys have shown that alcohol units are not well known or understood (Cooke et al., 2010; De Visser & Birch, 2012) but qualitative studies have revealed a range of reasons for this lack of knowledge and understanding (Furtwängler & de Visser, 2017; Lovatt et al., 2015).

However, as well as increasing use of qualitative methods, it would be beneficial to see more researchers using mixed methods to address research questions about the psychology of alcohol consumption, and to see more engagement in systematic integration of the findings of quantitative and qualitative elements of research studies.

Limitations linked to theories and determinants

Alongside the methodological issues within the current body of research on theories of alcohol consumption, there is a need to consider the fixation of researchers on testing hypotheses derived from a narrow set of theories or constructs in research on alcohol. The problems of repeated application of similar theories with little progression and variation still remain, and may be hindering progress in theory development, and in turn, the development of effective interventions. One of the key problems with these theories is that often the variance they explain in alcohol consumption is relatively small. It is rare for researchers to use an integrated approach to explore the merit of theoretical constructs drawn from multiple theories or varied perspectives, but this could help move the field forward and focus attention on additional determinants and processes that relate to alcohol consumption. For example, Atwell et al. (2011) combined constructs from multiple theories discussed in Section 1, such as drinking motives, self-efficacy, and prototype perceptions, and examined the relative importance of each as well as how they interacted. They found that sensation seeking and age of initiation were better able to account for alcohol consumption in students than many of the theoretical constructs. More research using integrated theories is needed and researchers need to move away from testing theories in isolation. The focus on individual theories is exemplified by Sniehotta et al.'s (2014) critique of the use the Theory of Planned Behaviour, and researchers have advocated the augmenting, extending, and modification of the theory to provide more comprehensive predictions of behaviour (Armitage, 2015; Caudwell & Hagger, 2015; Caudwell et al., 2019; Conner, 2015; Hamilton et al., 2020), including alcohol behaviour (Caudwell & Hagger, 2015; Caudwell et al., 2019; Hamilton et al., 2020). Such models signpost potential avenues for future

research that are not confined to individual theories and focus, instead on key constructs and associated process derived from multiple theories. As with all theory testing, it is important that such theories are subjected systematic rigorous tests to provide robust data to confirm or disconfirm their predictions, with subsequent revision or modification where necessary.

Limitations in the application of findings and their impact

It is important that scientific inquiry into the psychological determinants of alcohol consumption and associated processes is sufficiently translatable so that it can be used to improve and extend people's lives. However, as the chapters in Section 5 illustrate, relatively little is known about how to effectively help people who are motivated to reduce their drinking before it becomes a serious problem. The development and implementation of preventive interventions based on sound psychological research has the potential to reduce the number of people who become alcohol dependent, as well as making significant savings in health services and the broader economy. For example, Blackwell et al. (Chapter 19) outline how improving the features and content of alcohol product labelling could make them have more impact. However, this research will only have promise if these research findings are implemented into policy to replace the currently-mandated messaging such as 'drink responsibly' that is strategically ambiguous, vague, and with little basis on evidence (Smith et al., 2006). Nevertheless, the introduction of such messaging may only improve people's knowledge and may not lead to behaviour change (Wilkinson & Room, 2009). The key challenge when it comes to translation is to engage stakeholders and those in leadership positions, such as those working in government, policy, and public health, and advocate the implementation of these messages where they will have most effect. Although awareness of health effects and drinking guidelines is necessary in order to encourage "low-risk" drinking, messages need to actively provide strategies that help people improve their motivation and behavioural skills to manage situations where they might drink to excess or over guideline limits, like refusing the offer of a drink (see Chapter 14). Turning to interventions that focus on personalised feedback and motivational strategies

to promote alcohol reduction, why are these interventions not demonstrating optimal effectiveness? Intervention designers often strongly advocate for theory (Michie et al., 2016), so one hypothesis for the lack of effectiveness may be because many current interventions lack a theoretical basis. There is some evidence to suggest that this is the case. For example, a review of research on digital interventions to reduce alcohol consumption found that few of the apps used mention a theoretical basis, or adopt known behaviour change techniques (Crane et al., 2015). However, as noted above, basis in theory and adoption of identified behaviour change techniques alone are not the sole considerations when developing an effective intervention, one must also consider whether the adopted theory is fit for purpose.

There has also been a tendency for publication bias towards positive results in intervention studies, and there is a need to encourage publication of null findings. This provides a more balanced literature to identify what intervention strategies may work, for whom, and when, and, importantly, identify what interventions may *not* work, or the contexts or populations in which they may be ineffective (Davies, Lonsdale, et al., 2017).

Setting an agenda for future research on the psychology of alcohol consumption

Having considered the limitations of the current body of research on the psychology of alcohol consumption, this section sets out an agenda for future psychological inquiry into alcohol, with specific focus on samples, methods, theories, and applications.

1. Those interested in the psychology of alcohol consumption are urged to conduct research *with* under-represented communities.

The vast majority of psychological studies concerning alcohol consumption have been conducted with samples that are primarily white in ethnicity, with university students over-represented. Alcohol consumption and its harms hold the potential to affect *all* members of society. The authors of

Chapters in this Handbook highlight the need to proactively favour research on samples that are adequately representative of the diversity of populations affected by alcohol, including young people who do not attend university, middle-aged and older adults, people from non-white and ethnic minority populations, and people from diverse sexual orientation and gender minorities.

This suggested shift in research focus is important to reflect the diversity of populations in the world, which will provide better evidence of the generalizability of psychological theories applied to alcohol, but is also important because some underrepresented groups, such as trans people (Connolly et al., 2020), may be at greater risk of harm from alcohol consumption, and may benefit from tailored forms of intervention and support (Connolly et al., 2020). In addition, research on diverse groups is important for the direction and framing of interventions. For example, where minority group identity intersects, for example in terms of race and gender, then greater care and attention may be needed to address alcohol issues with the population in a sensitive way (Wilkerson et al., 2020).

It is also important that psychological research on alcohol in diverse populations is mindful to engage those communities in the design, implementation, and dissemination of the research. Engaging members of these communities, such as patients, and members of target groups from the general public has been a commitment health care research for some time (Brett et al., 2014; Staniszewska et al., 2017) but psychology researchers have been less inclined to do so and could do more to ensure that underrepresented groups are involved in the research process. Such involvement is important in order to ensure that research methods, including intervention content, is culturally sensitive and accounts for perspectives of the target population.

In addition to a commitment to pursuing more diverse samples in psychological research applied to alcohol, there is also a need to diversify those that conduct the research. Promoting greater diversity among those tasked with conducting and producing research evidence may increase the breadth of perspectives and methods used and promote research that is more sensitive and responsive to

cultural and ethnic issues. Means to promote greater diversity in researchers in the field would be to promote diversity in recruitment and access to high quality education and training in research. The onus is on the providers of research training from universities to learned societies to create opportunities and policies to encourage and promote those from minority backgrounds to engage in research in the field of psychology applied to alcohol.

2. Greater methodological diversity can enhance psychological perspectives on alcohol consumption

As Aresi and Bloomfield note in Chapter 7, mixed methods can provide a contextualised account of drinking cultures, which is often needed to understand the complexity of behaviours such as pre-drinking, as illustrated by Caudwell and Hagger (Chapter 13). Research examining determinants of drinking behaviours over time using longitudinal or cross-lagged panel designs, as well as experimental and intervention designs, needs to become more commonplace in order to make inferences of temporal stability, direction, and causality in social psychological theories applied to alcohol consumption. Greater use of ecological momentary assessment methods would also benefit psychological research on alcohol consumption. In a traditional survey, participants are asked to recall how much alcohol they consumed over the past week, fortnight or month. Completing this task is contingent on memory that may well be influenced by drinking alcohol. As an alternative, researchers should consider asking participants to complete surveys in the moment, or as near as possible to performance of consumption as is feasible. The rapid development of smartphone technology and other portable devices (e.g., smartwatches, tablets), and the reduction in their cost, allows for easy delivery of surveys and collection of behavioural data, so researchers should be making greater use of such methods in future research.

Studies using longitudinal methods are also needed including cohort studies that do more than just measure alcohol consumption. Intervention studies are one potential vehicle for addressing this issue as they typically include longer-term follow-up measurement than traditional survey studies. By

encouraging intervention researchers to measure predictors of consumption as secondary outcomes, such studies will achieve two complementary goals. First, they will afford researchers the opportunity to determine how their intervention works through observation of whether changes in secondary outcomes mediate effects of the intervention. Second, they will allow researchers to determine the extent to which predictors remain stable over time, and whether current theories are able to predict of alcohol consumption over long time periods.

3. A more integrated theoretical approach to the psychology of alcohol consumption is needed.

As with many other areas of psychology, researchers tend to confine their perspectives on exploring phenomena to a single theoretical approach, focusing on testing a narrow set of predictions afforded by such an approach. Given that there are a vast number of theories in psychology (Davis et al., 2015), usually with considerable overlap in the content of their constructs and predictions, this approach can lead to considerable redundancy across theories and stall progress in theory development. In many cases, theories include constructs with almost identical focus, but different names, presenting considerable challenges to those attempting to make sense of trends in determinants and processes (Hagger, 2014). As the chapters in the current volume attest, this phenomenon is highly prevalent in research on alcohol. This focus hinders scientific progress and can make it difficult for practitioners to make sense of research trends and identify the key constructs and processes relevant to determining alcohol consumption. A more integrated theoretical approach specifically for alcohol is needed (Hagger, 2009). It can be argued that alcohol use requires a specific model because it differs from other health behaviours in terms of its importance to identity and social influences, and, as an intoxicant, it impacts people's beliefs and decision making the more they drink. Such an approach will help identify the core constructs and process that are consistently and reliably related to alcohol consumption and, therefore, serve as strong candidates to target in interventions. In addition, research is needed to match these determinants to key behaviour change techniques that are

effective in bringing about behaviour change and testing their mechanisms of action through the mediation of the determinants (Connell et al., 2019; Rothman et al., 2020).

Additionally, more research is needed to compare socio-structural determinants of alcohol consumption with psychological determinants, including considering the role ethnicity as a mediator and moderator of effects of theory constructs like attitudes and intentions (Godin et al., 2010; Hagger & Hamilton, 2020; Schüz et al., 2020; Schüz et al., 2017). Theoretical research also needs to do more to acknowledge how macro-environmental factors, such as availability of alcohol, local cost of alcohol, and density of bars and pubs within living areas, influence individuals' alcohol consumption. These factors meaningfully affect consumption (Anderson et al., 2009; Babor et al., 2010; Radaev, 2019) and so their exclusion will likely lead to a shortfall in the variance explained in alcohol consumption as they may not be fully accounted for by psychological constructs such as beliefs about control, and individuals' behaviour may be influenced by factors and processes beyond their awareness, such as environmental cues. Related to this, research on dual -process models suggest a role for 'implicit' constructs that reflect non-conscious processes as determinants of alcohol consumption (e.g., Chapter 13; (Hamilton et al., 2020). However, large-scale studies incorporating these constructs alongside motivational and social cognition constructs are rare and collecting data on implicit measures may be difficult or lack reliability in large population representative studies.

This move towards using integrated theories needs to happen in both theory and intervention research and provide more stringent tests of predictions using experimental and other designs. For example, with sufficient sample sizes, researchers can test the effectiveness of different components of their interventions (Bedendo et al., 2020; Collins et al., 2005).

There is also a need for theoretical research to take place in situ more as a way to account for contextual/environmental/social influences on drinking beliefs and behaviour. Although it is convenient to send people a link to a survey, this approach assumes that the responses expressed at

that point in time are unlikely to change when in a drinking context, and this is a risky assumption when it comes to alcohol. As mentioned in the previous section, ecological momentary assessment could allow the measurement of theoretical constructs in situ, as could field experiments.

4. Research on the psychology of alcohol consumption needs to make more impact.

As the chapters in this book have demonstrated, research applying psychological theory and methods to alcohol use has provided important theoretical insights as well as potentially translatable findings important to inform practice. However, translation and implementation have hitherto not been as effective as they need to be in order for policy and campaigns introduced by policymakers, governments, and organizations to be evidence-based and highly effective. So, how can insights derived from psychological research be more effectively translated? A worked example may provide an illustration. Consider the use of unit-based alcohol guidelines adopted by the UK government with similar systems used by many other national health authorities to highlight limits considered safe for health. Various studies have indicated that people lack awareness of the guidelines, are not aware of what constitutes a unit of alcohol, and do not consider unit-based guidelines to be relevant to everyday experiences of drinking (e.g. Davies et al., 2020; De Visser & Birch, 2012; Furtwängler & de Visser, 2017). These findings needs to be communicated to policy makers and public health bodies who have the power to make changes to guidelines to make them more relevant to the general public. Although there is a need for standardised units of alcohol measurement for drinkers, clinicians, and researchers, if they are to be used as a basis for guidelines used to inform the general public, they must be framed in ways that make them easily translatable and have utility in everyday contexts.

A further example can be seen in research on warning labels on alcohol product packaging. There is good evidence to suggest that warning labels comprising images accompanied by clear, specific messages are likely to have more of an impact (Chapter 19), although, it seems that governments would need to mandate the use of health warning labels in order for them to become commonplace.

However, a substantive barrier to their introduction is lobbying from the vastly powerful alcohol industry. For example, when Canadian researchers attempted to test the effectiveness of alcohol health warnings in a real world setting, the alcohol industry quickly realised this affected sales, and demanded the study be modified (Vallance et al., 2020). Furthermore, as mentioned previously, voluntary alcohol labelling initiatives with cooperation from the alcohol industry have resulted in labels on alcohol product packaging that contain vague messaging (e.g., "drink responsibly") which may be relatively impotent instruments of behaviour change.

Concluding comments

The five sections of this Handbook have explored and critiqued psychological perspectives on alcohol consumption regarding: theories and predictors; social contextual factors, drinking identifies; developmental trajectories, and interventions to reduce alcohol consumption. By reviewing the content of these sections, this final chapter has outlined limitations within the field as a whole, relating to samples, design and methods, theories and determinants, and the application of findings to improve people's lives. This chapter has set out four key areas of change within the proposed agenda for the future of research on the psychology of alcohol consumption. First, the need to diversify participant samples, and work in collaboration with under-represented communities will broaden generalizability of theories and interventions. Second, a greater methodological diversity was called for, including further recourse to such methods and technologies that allow data to be collected nearer to the time of consumption. Third, it is clear that an integrated theoretical approach, which includes socio-structural determinants of behaviour, will enable researchers to better understand the complexities of alcohol consumption. Fourth, the translation and implementation of findings into policy must be improved for this valuable field of research to have the desired impact on people's health. Greater collaboration across disciplinary and national boundaries, together with careful and considered involvement of people with lived experience of alcohol and its impacts, will enable this exciting field of research to continue to flourish.

References

Anderson, P., Chisholm, D., & Fuhr, D. C. (2009). Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *The Lancet, 373*(9682), 2234-2246. https://doi.org/10.1016/S0140-6736(09)60744-3

Armitage, C. J. (2015). Time to retire the theory of planned behaviour? A commentary on Sniehotta, Presseau and Araújo-Soares. *Health Psychology Review, 9*(2), 151-155. https://doi.org/10.1080/17437199.2014.892148

Atwell, K., Abraham, C., & Duka, T. (2011). A Parsimonious, Integrative Model of Key Psychological Correlates of UK University Students' Alcohol Consumption. *Alcohol and Alcoholism, 46*(3), 253-260. https://doi.org/10.1093/alcalc/agr016

Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., Grube, J. W., Hill, L., Holder, H., Homel, R., Livingston, M., Österberg, E., Rehm, J., & Room, R., Ingeborg. (2010). *Alcohol No Ordinary Commodity - research and public policy*. Oxford University Press. <Go to WoS>://WOS:000239617400012

Banister, E., Conroy, D., & Piacentini, M. (2019). Non-drinkers and Non-drinking: A Review, a Critique and Pathways to Policy. In D. Conroy & F. Measham (Eds.), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice* (pp. 213-232). Springer International Publishing. https://doi.org/10.1007/978-3-030-28607-1_11

Barratt, J. M., & Cooke, R. (2018). Do gender and year of study affect the ability of the theory of planned behaviour to predict binge-drinking intentions and episodes? *Drugs: Education, Prevention and Policy, 25*(2), 181-188. https://doi.org/10.1080/09687637.2016.1257564

Bedendo, A., McCambridge, J., Gaume, J., Souza, A. A. L., Formigoni, M. L. O. S., & Noto, A. R. (2020). Components evaluation of a web-based personalized normative feedback intervention for alcohol use among college students: a pragmatic randomized controlled trial with a dismantling design. *Addiction, 115*(6), 1063-1074. https://doi.org/10.1111/add.14923

Bellis, M. A., Quigg, Z., Hughes, K., Ashton, K., Ferris, J. A., & Winstock, A. (2015). Harms from other people's drinking: an international survey of their occurrence, impacts on feeling safe and legislation relating to their control. *Bmj Open, 5*(12). https://doi.org/e01011210.1136/bmjopen-2015-010112

Brett, J., Staniszewska, S., Mockford, C., Herron-Marx, S., Hughes, J., Tysall, C., & Suleman, R. (2014). Mapping the impact of patient and public involvement on health and social care research: a systematic review. *Health Expect, 17*(5), 637-650. https://doi.org/10.1111/j.1369-7625.2012.00795.x

Caudwell, K. M., & Hagger, M. S. (2015). Predicting Alcohol Pre-Drinking in Australian Undergraduate Students Using an Integrated Theoretical Model [Article]. *Applied Psychology-Health and Well Being, 7*(2), 188-213. https://doi.org/10.1111/aphw.12044

Caudwell, K. M., Keech, J. J., Hamilton, K., Mullan, B. A., & Hagger, M. S. (2019). Reducing alcohol consumption during pre-drinking sessions: testing an integrated behaviour-change model. *Psychology & Health, 34*(1), 106-127. https://doi.org/10.1080/08870446.2018.1518527

Cochran, B. N., Peavy, K. M., & Santa, A. F. (2007). Differentiating LGBT Individuals in Substance Abuse Treatment: Analyses Based on Sexuality and Drug Preference. *Journal of LGBT Health Research, 3*(2), 63-75. https://doi.org/10.1300/J463v03n02_07

Collins, L. M., Murphy, S. A., Nair, V. N., & Strecher, V. J. (2005). A strategy for optimizing and evaluating behavioral interventions. *Annals of Behavioral Medicine, 30*(1), 65-73. https://doi.org/10.1207/s15324796abm3001_8

Connell, L. E., Carey, R. N., de Bruin, M., Rothman, A. J., Johnston, M., Kelly, M. P., & Michie, S. (2019). Links Between Behavior Change Techniques and Mechanisms of Action: An Expert Consensus Study. *Annals of Behavioral Medicine, 53*(8), 708-720. https://doi.org/10.1093/abm/kay082

Conner, M. (2015). Extending not retiring the theory of planned behaviour: a commentary on Sniehotta, Presseau and Araújo-Soares. *Health Psychology Review, 9*(2), 141-145. https://doi.org/10.1080/17437199.2014.899060

Connolly, D., Davies, E. L., Lynskey, M., Barratt, M. J., Maier, L., Ferris, J., Winstock, A., & Gilchrist, G. (2020). Comparing intentions to reduce substance use and willingness to seek help among transgender and cisgender participants from the Global Drug Survey. *Journal of Substance Abuse Treatment, 112*, 86-91. https://doi.org/https://doi.org/10.1016/j.jsat.2020.03.001

Connolly, D., Davies, E. L., Lynskey, M., Maier, L. J., Ferris, J., Winstock, A., & Gilchrist, G. (under review). Differences in alcohol and other drug use and dependence between transgender and cisgender participants from the 2018 Global Drug Survey.

Connolly, D., & Gilchrist, G. (2020). Prevalence and correlates of substance use among transgender adults: a systematic review. *Addict Behav*.

Conroy, D., & Measham, F. (2019). Book Introduction: Young Adult Drinking Styles. In D. Conroy & F. Measham (Eds.), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice* (pp. 1-17). Springer International Publishing. https://doi.org/10.1007/978-3-030-28607-1_1

Cooke, R., French, D. P., & Sniehotta, F. F. (2010). Wide variation in understanding about what constitutes 'binge-drinking' [Article]. *Drugs-Education Prevention and Policy, 17*(6), 762-775. https://doi.org/10.3109/09687630903246457

Crane, D., Garnett, C., Brown, J., West, R., & Michie, S. (2015). Behavior Change Techniques in Popular Alcohol Reduction Apps: Content Analysis. *Journal of Medical Internet Research, 17*(5), Article e118. https://doi.org/10.2196/jmir.4060

Crossley, M. L. (2001). Rethinking psychological approaches towards health promotion [Article]. *Psychology & Health, 16*(2), 161-177. https://doi.org/10.1080/08870440108405497

Davidson, K. W., & Cheung, Y. K. (2017). Envisioning a future for precision health psychology: innovative applied statistical approaches to N-of-1 studies. *Health Psychology Review, 11*(3), 292-294. https://doi.org/10.1080/17437199.2017.1347514

Davies, E. L., Conroy, D., Winstock, A. R., & Ferris, J. A. (2017). Motivations for reducing alcohol consumption: An international survey exploring experiences that may lead to a change in drinking habits. *Addictive Behaviors, 75*, 40-46. https://doi.org/http://dx.doi.org/10.1016/j.addbeh.2017.06.019

Davies, E. L., Cooke, R., Maier, L. J., Winstock, A. R., & Ferris, J. A. (2020). Drinking to excess and the tipping point: An international study of alcohol intoxication in 61,000 people. *International Journal of Drug Policy, 83*, 102867. https://doi.org/https://doi.org/10.1016/j.drugpo.2020.102867

Davies, E. L., Lonsdale, A. J., Hennelly, S. E., Winstock, A. R., & Foxcroft, D. R. (2017). Personalized Digital Interventions Showed no Impact on Risky Drinking in Young Adults: A Pilot Randomized Controlled Trial. *Alcohol and Alcoholism*, 1-6. https://doi.org/10.1093/alcalc/agx051

Davies, E. L., Smith, J., Johansson, M., Hill, K., & Brown, K. (2019). Can't Dance Without Being Drunk? Exploring the Enjoyment and Acceptability of Conscious Clubbing in Young People. In D. Conroy & F. Measham (Eds.), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice* (pp. 233-252). Springer International Publishing. https://doi.org/10.1007/978-3-030-28607-1_12

Davis, R., Campbell, R., Hildon, Z., Hobbs, L., & Michie, S. (2015). Theories of behaviour and behaviour change across the social and behavioural sciences: a scoping review. *Health Psychology Review, 9*(3), 323-344. https://doi.org/10.1080/17437199.2014.941722

Davoren, M. P., Demant, J., Shiely, F., & Perry, I. J. (2016). Alcohol consumption among university students in Ireland and the United Kingdom from 2002 to 2014: a systematic review. *Bmc Public Health, 16*(1), 1-13. https://doi.org/10.1186/s12889-016-2843-1

De Visser, R. O., & Birch, J. D. (2012). My cup runneth over: Young people's lack of knowledge of low-risk drinking guidelines. *Drug and Alcohol Review, 31*(2), 206-212. https://doi.org/10.1111/j.1465-3362.2011.00371.x

Flentje, A., Bacca, C. L., & Cochran, B. N. (2015). Missing data in substance abuse research? Researchers' reporting practices of sexual orientation and gender identity. *Drug and Alcohol Dependence, 147*, 280-284. https://doi.org/10.1016/j.drugalcdep.2014.11.012

Flentje, A., Barger, B., Capriotti, M., Lubensky, M., Tierney, M., Obedin-Maliver, J., & Lunn, M. (2020). Screening gender minority people for harmful alcohol use. *Plos One, 15*, e0231022. https://doi.org/10.1371/journal.pone.0231022

Furtwängler, N. A. F., & de Visser, R. O. (2017). University students' beliefs about unit-based guidelines: A qualitative study. *J Health Psychol, 22*(13), 1701-1711. https://doi.org/10.1177/1359105316634449

Gibbons, F. X., Gerrard, M., Ouellette, J. A., & Burzette, R. (1998). Cognitive antecedents to adolescent health risk: Discriminating between behavioral intention and behavioral willingness. *Psychology & Health, 13*(2), 319-339. https://doi.org/10.1080/08870449808406754

Godin, G., Sheeran, P., Conner, M., Bélanger-Gravel, A., Gallani, M. C. B. J., & Nolin, B. (2010). Social structure, social cognition, and physical activity: A test of four models. *British Journal of Health Psychology, 15*(1), 79-95. https://doi.org/10.1348/135910709X429901

Hagger, M. (2014). Avoiding the "déjà-variable" phenomenon: social psychology needs more guides to constructs [General Commentary]. *Frontiers in Psychology, 5*(52). https://doi.org/10.3389/fpsyg.2014.00052

Hagger, M. S. (2009). Theoretical integration in health psychology: Unifying ideas and complementary explanations [Editorial Material]. *British Journal of Health Psychology, 14*, 189-194. https://doi.org/10.1348/135910708x397034

Hagger, M. S., Cameron, L. D., Hamilton, K., Hankonen, N., & Lintunen, T. (2020). *The Handbook of Behavior Change* (M. S. Hagger, L. D. Cameron, K. Hamilton, N. Hankonen, & T. Lintunen, Eds.). Cambridge University Press. https://doi.org/DOI: 10.1017/9781108677318

Hagger, M. S., & Hamilton, K. (2020). Effects of socio-structural variables in the theory of planned behavior: a mediation model in multiple samples and behaviors. *Psychology & Health*, 1-27. https://doi.org/10.1080/08870446.2020.1784420

Hagger, M. S., Moyers, S., McAnally, K., & McKinley, L. E. (2020). Known knowns and known unknowns on behavior change interventions and mechanisms of action. *Health Psychology Review, 14*(1), 199-212. https://doi.org/10.1080/17437199.2020.1719184

Hamilton, K., Gibbs, I., Keech, J. J., & Hagger, M. S. (2020). Reasoned and implicit processes in heavy episodic drinking: An integrated dual-process model. *British Journal of Health Psychology, 25*(1), 189-209. https://doi.org/10.1111/bjhp.12401

Hughes, T. L., Wilsnack, S. C., & Kantor, L. W. (2016). The Influence of Gender and Sexual Orientation on Alcohol Use and Alcohol-Related Problems: Toward a Global Perspective. *Alcohol Res, 38*(1), 121-132. https://pubmed.ncbi.nlm.nih.gov/27159819

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4872607/

Hurcombe, R., Bayley, M., & Goodman, A. (2010). *Ethnicity and alcohol: A review of the UK literature*. J. R. Foundation.

Kok, G., Gottlieb, N. H., Peters, G. J., Mullen, P. D., Parcel, G. S., Ruiter, R. A., Fernandez, M. E., Markham, C., & Bartholomew, L. K. (2016). A taxonomy of behaviour change methods: an Intervention Mapping approach. *Health Psychol Rev, 10*(3), 297-312. https://doi.org/10.1080/17437199.2015.1077155

Kypri, K., McCambridge, J., Vater, T., Bowe, S. J., Saunders, J. B., Cunningham, J. A., & Horton, N. J. (2013). Web-based alcohol intervention for Māori university students: double-blind, multi-site randomized controlled trial. *Addiction, 108*(2), 331-338. https://doi.org/10.1111/j.1360-0443.2012.04067.x

Livingston, M., & Vashishtha, R. (2019). Have Recent Declines in Adolescent Drinking Continued into Young Adulthood? In D. Conroy & F. Measham (Eds.), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice* (pp. 21-46). Springer International Publishing. https://doi.org/10.1007/978-3-030-28607-1_2

Lovatt, M., Eadie, D., Meier, P. S., Li, J., Bauld, L., Hastings, G., & Holmes, J. (2015). Lay epidemiology and the interpretation of low-risk drinking guidelines by adults in the United Kingdom. *Addiction, 110*(12), 1912–1919. https://doi.org/10.1111/add.13072

Michie, S., Carey, R. N., Johnston, M., Rothman, A. J., de Bruin, M., Kelly, M. P., & Connell, L. E. (2016). From Theory-Inspired to Theory-Based Interventions: A Protocol for Developing and Testing a Methodology for Linking Behaviour Change Techniques to Theoretical Mechanisms of Action. *Annals of Behavioral Medicine*. https://doi.org/10.1007/s12160-016-9816-6

Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M. P., Cane, J., & Wood, C. (2013). The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions. *Annals of Behavioral Medicine, 46*(1), 81-95. https://doi.org/doi: 10.1007/s12160-013-9486-6

Murgraff, V., Abraham, C., & McDermott, M. (2007). Reducing friday alcohol consumption among moderate, women drinkers: Evaluation of a brief evidence-based intervention. *Alcohol and Alcoholism, 42*(1), 37-41. https://doi.org/10.1093/alcalc/ag1083

NHS Digital. (2020). *Statistics on Alcohol, England 2020*. https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-alcohol/2020

Oei, T. P., & Jardim, C. L. (2007). Alcohol expectancies, drinking refusal self-efficacy and drinking behaviour in Asian and Australian students. *Drug Alcohol Depend, 87*(2-3), 281-287. https://doi.org/10.1016/j.drugalcdep.2006.08.019

Perman-Howe, P. R., Davies, E. L., & Foxcroft, D. R. (2018). The Classification and Organisation of Alcohol Misuse Prevention with a Focus on Environmental Prevention. *Current Addiction Reports, 5*(1), 87-92. https://doi.org/10.1007/s40429-018-0190-2

Radaev, V. (2019). Making Sense of Alcohol Consumption Among Russian Young Adults in the Context of Post-2009 Policy Initiatives. In D. Conroy & F. Measham (Eds.), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice* (pp. 313-332). Springer International Publishing. https://doi.org/10.1007/978-3-030-28607-1_16

Radtke, T., Ostergaard, M., Cooke, R., & Scholz, U. (2017). Web-Based Alcohol Intervention: Study of Systematic Attrition of Heavy Drinkers. *J Med Internet Res, 19*(6), e217. https://doi.org/10.2196/jmir.6780

Rothman, A. J., Klein, W. M. P., & Sheeran, P. (2020). Moving from theoretical principles to intervention strategies: Applying the experimental medicine approach. . In M. S. Hagger, L. D. Cameron, K. Hamilton, H. N, & T. Lintonen (Eds.), *The Handbook of Behavior Change* (pp. 285-299). Cambridge University Press.

Schüz, B., Brick, C., Wilding, S., & Conner, M. (2020). Socioeconomic Status Moderates the Effects of Health Cognitions on Health Behaviors within Participants: Two Multibehavior Studies. *Annals of Behavioral Medicine, 54*(1), 36-48. https://doi.org/10.1093/abm/kaz023

Schüz, B., Li, A. S.-W., Hardinge, A., McEachan, R. R. C., & Conner, M. (2017). Socioeconomic status as a moderator between social cognitions and physical activity: Systematic review and meta-analysis based on the Theory of Planned Behavior. *Psychology of Sport and Exercise, 30*, 186-195. https://doi.org/https://doi.org/10.1016/j.psychsport.2017.03.004

Smith, S. W., Atkin, C. K., & Roznowski, J. (2006). Are "drink responsibly" alcohol campaigns strategically ambiguous? *Health Commun, 20*(1), 1-11. https://doi.org/10.1207/s15327027hc2001_1

Staniszewska, S., Brett, J., Simera, I., Seers, K., Mockford, C., Goodlad, S., Altman, D. G., Moher, D., Barber, R., Denegri, S., Entwistle, A., Littlejohns, P., Morris, C., Suleman, R., Thomas, V., &

Tysall, C. (2017). GRIPP2 reporting checklists: tools to improve reporting of patient and public involvement in research. *BMJ, 358*, j3453. https://doi.org/10.1136/bmj.j3453

Talley, A. E., Gilbert, P. A., Mitchell, J., Goldbach, J., Marshall, B. D., & Kaysen, D. (2016). Addressing gaps on risk and resilience factors for alcohol use outcomes in sexual and gender minority populations. *Drug Alcohol Rev, 35*(4), 484-493. https://doi.org/10.1111/dar.12387

Vallance, K., Stockwell, T., Hammond, D., Shokar, S., Schoueri-Mychasiw, N., Greenfield, T., McGavock, J., Zhao, J., Weerasinghe, A., & Hobin, E. (2020). Testing the Effectiveness of Enhanced Alcohol Warning Labels and Modifications Resulting From Alcohol Industry Interference in Yukon, Canada: Protocol for a Quasi-Experimental Study [Protocol]. *JMIR Res Protoc, 9*(1), e16320. https://doi.org/10.2196/16320

Vashishtha, R., Livingston, M., Pennay, A., Dietze, P., MacLean, S., Holmes, J., Herring, R., Caluzzi, G., & Lubman, D. I. (2020). Why is adolescent drinking declining? A systematic review and narrative synthesis. *Addiction Research & Theory, 28*(4), 275-288. https://doi.org/10.1080/16066359.2019.1663831

Wade, J. M. (2020). Is it Race, Sex, Gender or All Three? Predicting Risk for Alcohol Consumption in Emerging Adulthood. *Journal of Child and Family Studies*. https://doi.org/10.1007/s10826-020-01780-8

Wilkerson, J. M., Di Paola, A., McCurdy, S., & Schick, V. (2020). Covariates of hazardous alcohol use among sexual and gender minorities in Texas: Identifying the most vulnerable [Article]. *Addictive Behaviors, 105*, 7, Article 106327. https://doi.org/10.1016/j.addbeh.2020.106327

Wilkinson, C., & Room, R. (2009). Warnings on alcohol containers and advertisements: International experience and evidence on effects. *Drug and Alcohol Review, 28*(4), 426-435. https://doi.org/10.1111/j.1465-3362.2009.00055.x