



## Belief incongruence and the intention–behavior gap in persons with at-risk alcohol use



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### HIGHLIGHTS

- When intentions are stated, people may have biased beliefs towards behavior change.
- These may not hold in real situations when change should actually be performed.
- This may result in a gap between expressed intentions and subsequent behavior.
- We tested belief incongruence as a possible source of the intention–behavior gap.
- Intention–behavior gap was larger when normative beliefs were incongruent.

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### ABSTRACT

**Introduction:** When intentions are expressed, e.g., when filling in a health questionnaire, people may have unrealistic beliefs towards behavior change resulting in strong intentions to change. These may fail to correspond to reality when the behavior actually should be performed. Belief incongruence was tested as a possible source of the intention–behavior gap.

**Methods:** The study sample consisted of 433 job agency clients with at-risk alcohol use (64% men, mean age = 30.6 ( $SD = 11.6$ ) years). Behavioral, normative, and control beliefs, intention, and alcohol use were assessed at baseline and three months later. The influence of belief incongruence on the intention–behavior gap was examined using latent interaction models.

**Results:** The gap between stated intentions and at-risk alcohol use three months later was larger when the according normative beliefs were incongruent (total effect:  $b = -0.44, p < 0.05$  for persons with congruent beliefs vs.  $b = -0.06, p > 0.10$  for persons with incongruent beliefs). When controlling for the mediating effect of changes in intentions, the association between belief incongruence and intention–behavior gap was attenuated (direct effect:  $b = -0.56, p < 0.01$  for persons with congruent beliefs vs.  $b = -0.28, p < 0.05$  for persons with incongruent beliefs). Neither behavioral belief incongruence nor control belief incongruence was significantly associated with the intention–behavior gap.

**Conclusions:** Normative belief incongruence may contribute to the gap between intentions to adhere to recommended drinking limits and subsequent at-risk alcohol use. Focusing on the reduction of misperceptions about drinking norms could help to increase the proportion of persons who succeed in translating their intentions into behavior.

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### 1. Introduction

The opportunity to improve population health by behavior change (Ezzati et al., 2003) has led to growing interest in identifying the most effective strategies to reduce alcohol use among those who

drink above recommended limits. At present, women should not exceed 7 drinks per week and 3 drinks per single occasion, and men should not exceed 14 drinks per week and 4 drinks per single occasion (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2010). To increase the likelihood of intervening successfully in at-risk alcohol use, it is important to understand the processes underlying health behavior change.

One of the most widely used theoretical frameworks to explain health risk behavior such as at-risk alcohol use is the Theory of Planned

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Behavior (TPB, Ajzen, 1991, 2012). The TPB postulates that, given adequate behavioral control, behavior is a function of intention. Intentions are determined by attitude (e.g., evaluation of low-risk alcohol use), subjective norm (e.g., perceived social pressure to quit at-risk alcohol use), and perceived behavioral control (e.g., perceived ability to quit at-risk alcohol use). These factors are formed on the basis of corresponding sets of behavior-relevant beliefs. Attitude is based on behavioral beliefs (e.g., expected consequences of low-risk alcohol use) weighted by the subjective value of these consequences. Subjective norm is based on normative beliefs (e.g., expectation that others would approve of low-risk alcohol use) weighted by the motivation to comply with these norms. Perceived behavioral control is based on control beliefs (e.g., expected resources and obstacles of low-risk alcohol use) weighted by the perceived impact of these control factors on behavior change.

In general, there is strong empirical support for the utility of the TPB in predicting intentions (McEachan, Conner, Taylor, & Lawton, 2011). When applied to alcohol use, there is consistent evidence that attitudinal and normative factors are associated with intentions (Cooke, Dahdah, Norman, & French, 2014; French & Cooke, 2012). Although evidence indicates substantial intentional control over behavior (Cooke et al., 2014; Sheeran, 2002; Webb & Sheeran, 2006), there is a gap between intention and behavior (Orbell & Sheeran, 1998; Rhodes & Dickau, 2012). Sheeran (2002) demonstrated that only about half of the persons act in accordance with their stated intentions. Findings of this kind have led to questioning the validity and utility of major health behavior theories such as the TPB (Snihotta, Pesseau, & Araujo-Soares, 2014). As a result, many researchers have tried to bridge the gap by including constructs beyond the TPB that significantly contribute to the proportion of variance explained in behavior, e.g., anticipated regret, outcome expectancies, and self-identity (Conner & Armitage, 1998; Moan & Rise, 2005; Wall, Hinson, & McKee, 1998).

However, many of these variables are assumed to influence the intention–behavior relationship because they influence the stability of intentions over time (Ajzen, 2011). That is, the intention–behavior gap might be explained by changes in intentions prior to behavioral enactment. Given that intentions can vary largely over time, this may interfere with the precision of how well intentions predict a behavior (McEachan et al., 2011; Sheeran & Abraham, 2003). Causes for the temporal instability of intentions still need to be explored.

Reconsiderations of stated intentions may result from changes in the underlying beliefs caused by intervening events occurring between the assessment of intentions and the assessment of behavior (Ajzen, 2011). What is more, when intentions are initially expressed (e.g., in response to a questionnaire), people may have unrealistic expectations towards behavior change resulting in strong intentions to change. After gaining experience with carrying out the intended behavior in daily life, however, initial expectations fail to correspond to reality. As a result, people do not succeed in translating their previously stated intentions into behavior (Fishbein & Ajzen, 2010).

It seems plausible that the information considered when filling in a questionnaire and the information considered when the behavior actually should be performed are not the same. For example, during the assessment people may realize the advantages of low-risk alcohol use and they may intend to drink less. At a party, however, they end up drinking more than originally planned. A possible explanation is that more positive or less negative beliefs are activated when an intention is expressed (e.g., positive health effects) compared to situations in which the intended behavior actually should be performed (e.g., fun and socializing). According to the belief congruence hypothesis (Ajzen & Sexton, 1999), intention–behavior consistency can only be expected when the beliefs activated when intentions are expressed and the beliefs activated when the behavior actually should be performed are the same. Ajzen, Brown, and Carvajal (2004) have demonstrated the importance of belief congruence for accurate prediction of behavior.

The aim of this longitudinal study is to examine belief incongruence as a possible source of the intention–behavior gap among persons

drinking above recommended limits using the TPB as a theoretical framework. In accordance with the belief congruence hypothesis (Ajzen & Sexton, 1999), we expect that the effect of intentions to adhere to the low-risk drinking limits on subsequent at-risk alcohol use depends on belief congruence. More precisely, the intention–behavior gap can be explained by differences between the beliefs expressed while filling in a health questionnaire and those expressed later after people have found themselves in situations in which low-risk alcohol use actually should have been performed (Fishbein & Ajzen, 2010). Further, as people's beliefs changes, their intentions should also change (Ajzen, 2011). Thus, we expect that the effect of the interaction between intentions and belief congruence on subsequent alcohol use can be explained by changes in previously stated intentions.

## 2. Methods

### 2.1. Study sample

The study was based on data of the randomized controlled “Trial Of Proactive Alcohol interventions among job-Seekers” (TOPAS, Freyer-Adam et al., 2014; ClinicalTrials.gov: NCT01311245) developed to compare the efficacy of a stage and a non-stage tailored intervention based on the TPB. Informed written consent was obtained from all trial participants. The ethics committee of the University of Greifswald approved the study.

As described elsewhere (Freyer-Adam et al., 2014), over 12 months, all 18 to 64 year old job-seekers from three German job agencies were approached by study assistants. Those who agreed to participate in the screening answered questions on health behaviors by handheld computers. Persons who screened positive for at-risk alcohol use but negative for particularly severe alcohol problems were asked to participate in the trial. At-risk alcohol use was determined using the Alcohol Use Disorder Identification Test-Consumption (AUDIT-C, Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) and values  $\geq 4$  for women and  $\geq 5$  for men (Reinert & Allen, 2007). Particularly severe alcohol problems were determined using the AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) and values  $\geq 20$  (Donovan, Kivlahan, Doyle, Longabaugh, & Greenfield, 2006). One third each was assigned by random and by handheld computers to one of the three study groups: stage tailored intervention, non-stage tailored intervention, or assessment only. Three months after baseline, a follow-up assessment was conducted primarily via computer-assisted telephone interview.

Of the 9913 eligible job-seekers, 7920 (80%) responded to the screening. Of the 7396 respondents with evaluable data, 1711 (23%) screened positive for at-risk alcohol use and negative for particularly severe alcohol problems. Of these, 1243 (74%) agreed to participate in the trial. Because questions on the TPB constructs were answered by the participants of the non-stage tailored group only, they constitute this study's sample ( $n = 433$ ). After baseline, they received individualized feedback letters based on the TPB and self-help manuals (Freyer-Adam et al., 2014). Letters were created by an expert system software selecting text modules based on assessment data on all TPB constructs and pre-defined selection rules.

### 2.2. Measures

#### 2.2.1. Alcohol use

At-risk alcohol use was assessed at baseline and 3-month follow-up and was determined using the AUDIT-C (Bush et al., 1998). It contains three items on alcohol use (frequency of drinking, typical quantity of drinking, frequency of heavy episodic drinking), with a maximum score of 12. Values  $\geq 4$  for women and  $\geq 5$  for men indicated at-risk alcohol use (Reinert & Allen, 2007).

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