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Review

# Development of alcohol expectancies and early alcohol use in children and adolescents: A systematic review

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#### HIGHLIGHTS

- Alcohol expectancies (AE) are important in explaining adolescent drinking behavior.
- Adolescents are more likely to develop positive rather than negative AE over time.
- Predictors of AE were divided into individual and environmental factors.
- AE mediate the relationship between various predictors and adolescent alcohol use.

#### ARTICLE INFO

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ABSTRACT

*Purpose:* Developmental changes in alcohol expectancies (AE) have been proposed to lead to alcohol use initiation and later alcohol use in adolescence. This systematic review aims to provide longitudinal evidence of the development of AE and the relation of AE to alcohol outcomes from childhood to late adolescence (4–18 years old).

*Methods*: A computer-assisted search of relevant articles identified 1602 studies, of which 43 studies (conducted between 1996 and 2016) were selected.

*Results*: First, negative AE decline and positive AE increase in early adolescence. Moreover, alcohol use (initiation) seems to strongly influence changes in AE. Second, AE predict alcohol use initiation and drinking patterns over time. Third, longitudinal predictors of AE could be divided into individual predictors (i.e., alcohol-related cognitions, psychopathology, and genetics) and environmental predictors (i.e., family, peer, and media influences). Lastly, the results indicated that AE function as mediators of the relations between the various individual and environmental predictors and adolescent's alcohol use.

*Conclusions:* Alcohol expectancies form an important framework through which drinking behavior can be explained over time. Due to the diverse findings on the predictors of AE, future longitudinal studies should further clarify the factors that are essential in the development of AE and adolescent's later alcohol use.

#### 1. Introduction

Alcohol is one of the most prevalent psychoactive substances worldwide. It is widely acknowledged that alcohol use can lead to negative outcomes, especially when its consumption is initiated during adolescence. Adolescent alcohol use is related to serious adverse short and long-term health related consequences (e.g., a significantly higher risk of heavy problematic use later in life) leading to high costs for the society (DeWit, Adlaf, Offord, & Ogborne, 2014; Donovan, 2004; Pedersen & Skrondal, 1998; Pitkänen, Lyyra, & Pulkkinen, 2005).

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Predictors of alcohol use are divided into individual factors (e.g., alcohol-related cognitions, personality, genetic, and behavioral) and environmental factors (e.g., family, peers, and media) related to adolescent alcohol use (for reviews, see Campbell & Oei, 2010; Donovan, 2004; Ham & Hope, 2003; Zucker, Donovan, Masten, Mattson, & Moss, 2008). Alcohol-related cognitions such as alcohol expectancies (AE), which are considered to be relatively easy to modify and may therefore be of essential strategic value in terms of early prevention, are factors that have been found to be consistently related to drinking (Campbell & Oei, 2010; Jones, Corbin, & Fromme, 2001).

#### 1.1. Theoretical background

Alcohol expectancies (AE) are personal beliefs that a particular behavioral, emotional, and/or cognitive effect will occur to oneself (or others) when drinking alcohol (Jones et al., 2001). The Alcohol Expectancy Model posits that alcohol expectancies represent one significant proximal cognitive factor consistently related to alcohol initiation and subsequent use (Brown, Creamer, & Stetson, 1987; Christiansen, Goldman, & Inn, 1982). Besides being direct predictors, alcohol expectancies constitute important mediational pathways through which the influences of other factors (e.g., personality, genes, environment and culture) are pushed, subsequently resulting in drinking behavior (Goldman, 1994; Jones et al., 2001). The expectancy model may thus be regarded as a general psychological model of cognitive processing, which subsequently influences behavioral outcomes. A particularly useful framework for understanding how AE may exert influence on alcohol initiation and subsequent use is the Dual Process Theory, stating that cognitions can follow two different pathways, either implicit (unconscious) or explicit (controlled) (Strack & Deutsch, 2004). Accordingly, explicit AE rely on non-automatic reflective processes (usually measured with answers to questions such as 'I expect that X [a particular change] will occur from drinking alcohol'), whereas implicit AE rely on automatic underlying motivational processes (usually measured with reaction times to certain stimuli) (Thush & Wiers, 2007). Both explicit and implicit AE may play a role in early alcohol use (Colder et al., 2014; Thush & Wiers, 2007). Following this argumentation, evidence on both implicit and explicit AE and their role in drinking behavior is reviewed.

#### 1.2. AE and its relation to adolescent alcohol use

Prior research indicated that children as young as six years old start to have explicit, mostly negative, expectancies about the effects of alcohol (Voogt et al., 2017). Two separate processes theoretically underline the development of positive and negative AE among children and adolescents (Campbell & Oei, 2010). First, during the acquisition phase - before alcohol use has initiated - expectancies are based on social learning principles [e.g., observational learning in which explicit expectancies are learned by observing parents'verbal affirmations of the perceived benefits of alcohol and the visible effects of parental drinking (Bandura & McClelland, 1977) and shaped by the environment (e.g., family, peers, and media) (Brown, Christiansen, & Goldman, 1987). Second, during the maintenance phase - once alcohol use has initiated explicit and implicit expectancies are important in eliciting automatic alcohol use responses (Campbell & Oei, 2010). Therefore, we aim to gain more insight about how positive (e.g., 'I expect alcohol makes me more sociable') and negative AE (e.g., 'I expect that I get sick to my stomach after drinking alcohol') develop over time and determine which predictors of AE have been examined.

AE are known to prime anticipatory responses in alcohol-related settings and are therefore considered to be particularly important in alcohol use initiation and subsequent use. Studies were provided that focused on AE as longitudinal predictors of alcohol use. Numerous cross-sectional and longitudinal studies have shown that explicit AE are related to initiation of alcohol use and problematic drinking (Jester, Steinberg, Heitzeg, & Zucker, 2015) in clinical (Pedersen, Harty, Pelham, Gnagy, & Molina, 2014) and non-clinical samples (Colder et al., 2014). Positive and negative AE are both concurrently and prospectively related to respectively higher and lower levels of alcohol use (Dunn & Goldman, 1998, 2000). Moreover, the association between AE and behavior seems to be reciprocal, as alcohol use predicts AE while AE also predict changes in subsequent alcohol use (Jester et al., 2015; Settles, Zapolski, & Smith, 2014). The shift from primarily negative AE in childhood to more positive AE in early adolescence was found to be a crucial precursor of alcohol use initiation (Dunn & Goldman, 1998, 2000; Thush & Wiers, 2007). Researchers investigating the indirect effect of the predictor on alcohol use outcomes via AE have argued that AE function as mediators of the link between different environmental and individual predictors and alcohol use (Settles et al., 2014). Moreover, it is possible that AE interact with other variables, i.e., moderate the link between a given predictor and alcohol use outcomes. Hence, we explored whether AE function as mediators or moderators in the relation between predictors and alcohol use. This knowledge might subsequently be used to tailor prevention efforts to those who are exposed to specific predictors and are at risk of developing stronger positive AE and subsequent alcohol use (mediation) as well as to specific target groups (characterized by a given predictor) based on stronger AE (moderation). Accordingly, the longitudinal data are crucial to gain more insight into the development of AE and the temporal sequence of AE leading to alcohol use.

#### 1.3. Previous reviews

To our knowledge, two previous literature reviews have been conducted on the link between AE and different alcohol outcomes. Jones et al. (2001) reviewed the evidence of the relationships between AE and alcohol use in clinical (e.g., alcoholic veterans) and non-clinical (e.g., adolescents, young adults) samples. Unfortunately, in the early 2000s, the few studies that used longitudinal data have provided little evidence supporting on the longitudinal link between AE and different alcohol outcomes. The more recently published review of Campbell and Oei (2010) used predominantly cross-sectional studies to show explicit AE from a non-developmental perspective (Campbell & Oei, 2010). Taken together, the question then arises as to what extent AE have a prospective function in alcohol use initiation and subsequent use, and whether the differential role of implicit and explicit AE could be identified. Therefore, the current review aims to adopt a developmental perspective to review available longitudinal evidence for the expectancy model among children and adolescents between 4 and 18 years old.

#### 1.4. Current systematic review

To date, no systematic review has been conducted on longitudinal evidence concerning the sequence of explicit and implicit AE and alcohol involvement as well as their relationships over time from age 4 to age 18; thus, focusing on a developmental perspective. Therefore, as shown in Fig.1, the current review aims to provide a summary of longitudinal studies focusing on a) the development of AE over time, b) predictors of AE, c) AE as longitudinal predictors of alcohol use initiation and subsequent use patterns, and d) AE as mediators of the relation between predictors and alcohol use in the developmental period from childhood to adolescence (4–18 years old). Although it was not among the primary aims of the current review, AE possibly also function as moderators of the association between predictors and alcohol use. Therefore, moderation effects of AE were examined in an explorative manner.

#### 2. Methods

A systematic literature search was performed in Pubmed,

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