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# Effectiveness of alcohol media literacy programmes: a systematic literature review

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## **Keywords**

programmes, systematic, literature, literacy, review, effectiveness, media, alcohol

## **Disciplines**

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## **Introduction**

There are serious harms that can result from underage drinking, such as injuries, risky sexual behaviour and impaired brain functioning, which can have a detrimental impact on students' learning and academic achievement (Botvin & Griffin, 2007; NHMRC, 2009; Scull, Kupersmidt, & Erausquin, 2013). Earlier initiation to drinking is associated with heavier drinking patterns in adolescence and adulthood, thus increasing the likelihood of adverse physical and mental health conditions (NHMRC, 2009). At the same time, young people are readily exposed to advertising for alcohol (Grube & Wallack, 1994; Jones & Magee, 2011; Victorian Department of Human Services, 2009; Winter, Donovan, & Fielder, 2008).

Exposure to advertising occurs through mainstream avenues such as television and print, as well as outdoor advertising such as on billboards and in shopping centres. Alcohol advertising can also be covert. For example, product placement involves intentionally embedding a brand name or product within a film or music clip, while branded merchandise involves placing an alcohol brand on a product that is purchased and used by consumers, such as clothing products. Alcohol companies also sponsor various sporting and youth music events, which provide naming rights of the event and teams and branding of merchandise and event venues. Finally point-of-sale marketing include free gifts and promotional activities or materials placed in the stores from which the alcohol is purchased (AMA, 2012; ANPHA, 2012).

The rise of digital media has created new avenues for advertising which are less visible to regulators (AMA, 2012; ANPHA, 2012). Facebook and Twitter allow banner advertising and boxed ads on webpages. Alcohol brands have Facebook pages which encourage user-generated advertising through users 'liking' the brand, while official brand websites encourage readership through promotional activities. Further, thousands of 'unofficial' alcohol brand pages exist which are not subject to regulatory oversight. Online services such as Facebook, Google and YouTube also use data-mining technologies which target ads to the individual's online behavioural profile (AMA, 2012; ANPHA, 2012).

While exposure to alcohol advertising is extensive, the system of co-regulation and self-regulation that exists in a number of countries such as Australia, Canada and the UK is arguably weak and contradictory (Jones & Gordon, 2013). For example, while alcohol ads on free-to-air television in Australia may only be broadcast during M, MA or AV classification periods, an exception is made during the live broadcast of sporting events on weekends and public holidays, increasing children's exposure to alcohol ads during this period (FreeTV Australia, 2010; Jones, 2010). These high levels of exposure are concerning given adolescents' positive perceptions of alcohol advertisements including associations between drinking and having fun, and being included by one's peer group (Jones & Donovan, 2001; Jones, Gregory, & Munro, 2009; Wyllie, 1997). Furthermore, several longitudinal studies have established that exposure to alcohol advertising increases the risk of current or future alcohol use for adolescents (Anderson, de Bruijn, Angus, Gordon, & Hastings, 2009; Ellickson, Collins, Hambarsoomians, & McCaffrey, 2005; Grenard, Dent, & Stacy, 2013; Smith & Foxcroft, 2009; Snyder, Milici, Slater, Sun, & Strizhakova, 2006; Stacy, Zogg, Unger, & Dent, 2004; Tucker, Miles, & D'Amico, 2013). Given the serious harms that result from underage drinking, the link between viewing alcohol advertisements, positive expectancies and drinking behaviours needs to be addressed.

Media literacy (ML) is a developing field that aims to address the link between young people's exposure to advertising and subsequent attitudes and behaviours. This is achieved through empowering students to access, analyse, evaluate and communicate messages in a wide variety of forms, as a way of responding to the advertising they are surrounded by (Considine, Horton, & Moorman, 2009; Potter, 2013; Thoman & Jolls, 2005). The Media Health Literacy (MHL) model (Levin-Zamir, Lemish, & Gofin, 2011) comprises four categories that can be used to assess an individual's media health literacy. The four categories form a continuum and include the identification of health messages, awareness of the influence of a message on health behaviour, critical analysis of the message content and action/reaction to the health message.

A number of studies have found ML programs to be more effective and interesting when compared to generic health education programs, for improving perceptions of social norms around adolescent smoking (Primack, Douglas, Land, Miller, & Fine, 2014), lowering levels of weight concern (Wade, Davidson, & O'Dea, 2003) and reducing smoking among adolescents (Primack, Fine, Yang, Wickett, & Zickmund, 2009). However, while a number of ML programs have been developed to address health related concerns such as violence (Rosenkoetter, Rosenkoetter, Ozretich, & Acock, 2004; Scharrer, 2006; Sprafkin, Watkins, & Gadow, 1990; Vooijs & van der Voort, 1993; Vooijs & Vandervoort, 1993), eating disorders (Coughlin & Kalodner, 2006; Kusel, 1999; Neumark-Sztainer, Sherwood, Collier, & Hannan, 2000; Rabak-Wagener, Eickhoff-Shemek, & Kelly-Vance, 1998; Wade et al., 2003; Wilksch, Tiggemann, & Wade, 2006), nutrition (Evans et al., 2006; Toby Jane Hindin, 2001; Toby J. Hindin, Contento, & Gussow, 2004), body image (Fuller, Damico, & Rodgers, 2004), sexual behaviour (Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008) and tobacco use (Austin, Pinkleton, & Funabiki, 2007; Austin, Pinkleton, Hust, & Cohen, 2005; Banerjee & Greene, 2006, 2007; Beltramini & Bridge, 2001; Gonzales, Glik, Davoudi, & Ang, 2004; Primack et al., 2014); relatively fewer have been developed to address alcohol consumption (Austin & Johnson, 1997; Austin & Johnson, 1997; Chen, 2013; Goldberg, Niedermeier, Bechtel, & Gorn, 2006; Kupersmidt, Scull, & Austin, 2010; Kupersmidt, Scull, & Benson, 2012). Furthermore, due to conceptual and methodological differences between alcohol ML programs, their contribution to alcohol prevention is not known. This systematic literature review was considered important and necessary due to the potential implications for future research and practice. The findings will be analysed to determine the effectiveness of existing programs and develop a list of practical and theoretical considerations for designing future programs.

## **Methods**

### *Literature search*

Uniform searches were conducted of major social science databases (Education Research Complete + ERIC, A+ Education, ProQuest Education Journals, psychinfo database, Scopus, Web of Science, Cochrane, PubMed and Informit). Programs were also identified through

searching gray literature, reference lists of papers that reported meta-analyses or systematic reviews of media literacy programs (Bergsma & Carney, 2008; Jeong, Cho, & Hwang, 2012) and citation follow-up and contacts with authors.

Initial search terms used to guide the searches are listed in Table I. Combinations of these search terms were used to generate lists of articles that were scrutinised for papers relevant to the search purpose. Using key words from the research papers identified, a standardized search algorithm was developed, outlined in Table I. The search algorithm was adjusted for different databases by including subject headings specific to the database.

**Table I.** Search terms

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<b>Initial search terms</b>
Media literacy, advertising literacy, advertising media literacy, persuasion knowledge, school-based, family-based, teacher education, teacher training, dissemination, implementation, drug education, alcohol education, alcohol prevention, alcohol intervention, mass media, literacy programs, health literacy, information literacy, education, drug, alcohol, substance
<b>Search algorithm</b>
("media literacy" OR "advertising literacy" OR "advertising media literacy") AND (alcohol OR drinking) AND (prevention OR intervention OR program*) AND (school OR family OR adolescen* OR teen* OR child*)

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*Study selection*

To be included in this literature review, a study had to meet the following criteria:

- (a) Studies evaluated an intervention, that is, a distinct program or procedure intended to address underage drinking through media literacy education;

(b) Studies directly measured variables relating to media literacy knowledge and skills, and alcohol expectancies or behaviours;

(c) Studies provided quantitative results to allow for objective comparison between programs;

(d) Studies released prior to 1 May, 2014 and published from 1997 to 2014.

Studies were excluded if the program used ML as only a small part of a larger curriculum, as ML education was not the sole focus and this may have influenced effectiveness findings. One study was excluded because the effectiveness of the media literacy intervention was not reported (Hall, Lindsay, & West, 2011). Other studies were excluded because there was not sufficient information provided on the intervention or quantitative evaluation measures used (Banerjee, Greene, Hecht, Magsamen-Conrad, & Elek, 2013; Elek et al., 2011; Moore, Dechillo, Nicholson, Genovese, & Sladen, 2000).

#### *Data extraction and analysis*

To enable comprehensive extraction and analysis of data, the descriptive, methodological and outcome characteristics of the programs were compared. Table III contains descriptive characteristics of each study, Table IV contains the methodological characteristics and Table V contains the outcome variables. Two coders independently recorded the descriptive, methodological and outcome variables of the selected studies using a proforma.

Discrepancies were resolved through discussions to ensure 100% inter-coder reliability.

## **Results**

### Descriptive results

Systematic electronic database searches produced over 500 titles, although titles appeared more than once. A number of papers were also found from other sources. After these titles

and abstracts were previewed, a total pool of 20 publications were reviewed and considered for inclusion. Only eight met the selection criteria detailed above.

### *Intervention Design*

Ten interventions were detailed in the eight papers because two studies employed multiple experimental groups that experienced different media literacy interventions (Austin & Johnson, 1997a & Austin & Johnston 1997b);. Three studies employed two different control groups (Austin & Johnson, 1997a; Austin & Johnsonb, 1997; Peter, Sobowale, & Ekeanyanwu, 2013) and five studies employed one control group (Chen, 2013; Goldberg et al., 2006; Kupersmidt et al., 2010; Kupersmidt et al., 2012; Sivaithamparam, 2011). In three of the studies the control group participated in an alternative program developed by the researcher (Austin & Johnson, 1997a; Chen, 2013; Sivaithamparam, 2011), while in four of the studies the control group was not provided with an alternative curriculum and instead received class lessons as identified by the teacher's program for the duration of the intervention (Austin & Johnson, 1997b; Goldberg et al., 2006; Kupersmidt et al., 2010; Kupersmidt et al., 2012). One study did not indicate whether the control groups participated in an alternative curriculum or received normal class lessons (Peter et al., 2013)

### *Sample*

One of the studies recruited participants from schools in Lagos State (Peter et al., 2013), while the remainder recruited participants from schools in the United States of America. Participant sample size ranged from 171 to 860. Four of the studies targeted children (aged 6 - 12 and in primary school) (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Goldberg et al., 2006; Kupersmidt et al., 2010), while three targeted adolescents (aged 13 - 19 and in high school) (Chen, 2013; Peter et al., 2013; Sivaithamparam, 2011) and one targeted both children and adolescents (Kupersmidt et al., 2012).

## Content

Five of the eight studies were underpinned by the Message Interpretation Process (MIP) model (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013; Kupersmidt et al., 2010; Kupersmidt et al., 2012); one study drew upon Inoculation Theory (Goldberg et al., 2006); one study drew upon Expectancy Theory (Sivaithamparam, 2011); and one study drew upon Theory of Planned Behaviour and Theory of Triadic Influence (Peter, Sobowale & Ekeanyanwu, 2013). All of the interventions were assessed to determine which of the following five core media literacy concepts and skills taken from the Centre for Media Literacy's 'Core Concepts of Media Literacy' were taught (Thoman & Jolls, 2005). Similar to (Bergsma & Carney, 2008), this was a subjective process that involved scrutinizing each paper and related sources for details on the intervention. Programs ranged from including 1 to all 5 of the core principles.

The core principles (Thoman & Jolls, 2005) are as follows:

- 1.** *All media messages are 'constructed'*. This concept involves understanding that media is carefully crafted by people using particular techniques and can differ from reality.
- 2.** *Media messages are created using a creative language with its own rules.* This concept involves deconstructing or creating advertisements to understand the techniques used to make advertisements appealing.
- 3.** *Different people experience the same message differently.* This concept involves understanding that we each interpret media messages through a unique lens.
- 4.** *Media have embedded values and points of view.* This concept involves identifying the implicit messages which are conveyed in media texts.
- 5.** *Media messages are constructed for a particular purpose.* This concept involves understanding the purpose(s) of media messages which may be to persuade, educate, entertain and/or inform.

## Evaluation

All of the studies used participant self-report questionnaires. However the studies differed in their outcome variables (see Table II for definitions of the variables). All of the studies included an immediate post-test conducted within two hours of completing the intervention. One study (Goldberg et al., 2006) also conducted a post-test one week after the intervention. However no differences between the immediate and delayed post-test results were found, so both groups were combined for analysis. Two studies additionally conducted a 3-month delayed post-test (Austin & Johnson, 1997; Austin & Johnson, 1997). However the behavioural measure was revised at each stage of analysis, thus differences between posttest and delayed posttest need to be interpreted with caution.

**Table II.** Definition of variables

<b>Variable</b>	<b>Definition</b>	<b>Studies</b>
Media deconstruction skills	Students' ability to identify the construction techniques used to make ads appealing	(Kupersmidt, Scull, & Austin, 2010; Kupersmidt, Scull, & Benson, 2012)
Persuasive intent	Students' ability to recognise the motives behind the creation of ads	(Austin & Johnson, 1997a; Austin & Johnson, 1997b; Goldberg, Niedermeie, Bechtel, & Gorn, 2006; Kupersmidt et al., 2010)
Persuasion knowledge	Students' knowledge of the persuasive techniques used by advertisers and the motives behind the creation of ads	(Austin & Johnson, 1997a; Austin &

		Johnson, 1997b; Goldberg et al., 2006; Kupersmidt et al., 2010)
Pre-drinking behaviour	Students' preference for an alcohol or non-alcohol theme product provides an indication of future alcohol use	(Austin & Johnson, 1997a; Austin & Johnson, 1997b; Kupersmidt et al., 2010)
Behavioural intention	Students' intention to drink alcohol, assessed through explicit questions	(Chen, 2013; Kupersmidt et al., 2010; Kupersmidt et al., 2012)
Alcohol consumption	Students recorded their alcohol consumption for a 30-day period immediately prior to and immediately following the intervention	(Sivaitamp aram, 2011)
Realism	Students' perceptions of how closely ads represent reality	(Austin & Johnson, 1997a; Austin & Johnsonb, 1997; Chen, 2013)
Social norms	Students' perceptions of normal drinking behaviours among adolescents	(Austin & Johnson, 1997a; Austin & Johnson, 1997b; Goldberg et al., 2006)
Similarity	Students' perceptions of whether the people in ads are similar to themselves	(Austin & Johnson, 1997a; Austin & Johnson, 1997b)
Desirability	Students' perceived attractiveness of people	(Austin &

	portrayed in ads	Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013)
Identification	Students' desire to emulate the traits of people portrayed in ads	(Austin & Johnson, 1997a; Austin & y Johnson, 1997b)
Expectancies	Students' perceptions of the positive outcomes associated with drinking	(Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013; Sivaithamparam, 2011)
Advertising scepticism	Students' perceptions of the trustworthiness of advertisers and ads	(Chen, 2013; Goldberg et al., 2006)
Media scepticism	Students' perceptions of the trustworthiness of the media	(Chen, 2013)
Coping behaviour	Students' response to media persuasion attempts	(Goldberg et al., 2006)
Self-efficacy	Students' feelings of personal control to refuse substances	(Kupersmidt et al., 2010)

### Methodological characteristics

#### *Intervention format*

All of the reported interventions were conducted in-class. The types of media studied included print and television advertisements, with studies focussing on only television (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013; Peter et al., 2013; Sivaithamparam, 2011), only print (Kupersmidt et al., 2010; Kupersmidt et al., 2012) or both

television and print (Goldberg et al., 2006). Four of the interventions were delivered by the researcher (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013; Peter et al., 2013), while four of the interventions were delivered by the regular classroom teacher (Goldberg et al., 2006; Kupersmidt et al., 2010; Kupersmidt et al., 2012; Sivaithamparam, 2011).

One of the studies did not report the audience involvement (Chen, 2013), while the remainder of the studies were interactive (participants were involved in discussions and/or lesson activities). Two of the studies additionally involved production (participants created a counter-advertisement) (Goldberg et al., 2006; Kupersmidt et al., 2012). Length of intervention was defined as the number of lessons allotted to the intervention, excluding time for pretests, post-test and re-tests. When the intervention took place in a specified number of class sessions, we assigned an average value of 45 minutes to a class session (Bergsma & Carney, 2008). Intervention length ranged from one to ten lessons.

### *Study design*

All of the studies employed convenience sampling. Three of the studies were randomized control trials (Kupersmidt et al., 2010; Kupersmidt et al., 2012; Peter et al., 2013), while the remainder of the studies were quasi-experimental designs (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013; Goldberg et al., 2006; Sivaithamparam, 2011). Three of the studies employed a Solomon four-group design to eliminate potential testing bias (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Peter et al., 2013); one study employed a post-test only design (Goldberg et al., 2006), while the remainder of the studies employed a pre-test-post-test design (Chen, 2013; Kupersmidt et al., 2010; Kupersmidt et al., 2012; Sivaithamparam, 2011). Power calculations were reported in only two of the studies (Austin & Johnson, 1997a; Kupersmidt et al., 2010). Assessor blinding was not reported for any of the studies.

### *Implementation fidelity*

Implementation fidelity refers to the extent to which participants in different classrooms/schools were guaranteed to receive the intervention in the same way.

Implementation fidelity was grouped into the following categories: (i) teacher training (teachers received five to six hours of training on how to deliver the intervention prior to implementation. The training typically included an overview of the conceptual basis of the program and instructions for lesson delivery and protocol), (ii) Set resources (resources such as a video and accompanying discussion guide ensure that the intervention is delivered in the same way), (iii) fidelity checklist (the teacher/researcher is required to complete a detailed fidelity checklist for each component/lesson taught. The checklist included either open-ended questions or a rating scale), or (iv) not reported. Five studies utilised teacher training (Goldberg et al., 2006; Kupersmidt et al., 2010; Kupersmidt et al., 2012; Peter et al., 2013; Sivaithamparam, 2011), while two of the four studies additionally utilised fidelity checklists (Kupersmidt et al., 2010; Kupersmidt et al., 2012). Another three studies utilised set resources (Austin & Johnson, 1997; Austin & Johnson, 1997; Peter et al., 2013) while one study did not report measures used to ensure implementation fidelity (Chen, 2013).

### *Measures*

Percentages are given for the number of participants that completed the posttest in relation to the pretest. There was a high retention rate from pretest to posttest, with percentages ranging from 86 – 97%. Two papers did not report the retention rate ( Austin & Johnson, 1997; Peter et al., 2013). Four of the interventions were taught across multiple lessons, ranging from 5-10. The number of lessons completed by participants was not reported in two of the studies (Goldberg et al., 2006; Peter et al., 2013), while 68% and 73% of participants attended all of the scheduled lessons in the other two studies, respectively (Kupersmidt et al., 2010; Kupersmidt et al., 2012). All of the studies included a manipulation check which confirmed that the groups were fundamentally different in a way that reflects media literacy education took place. Cronbach's alpha was used to measure the internal consistency of the pre/post-test measures, which is how closely related the set of items in the measure are as a group. The measures were categorized as follows: poor internal

consistency ( $0.5 \leq \alpha < 0.6$ ), acceptable internal consistency ( $0.6 \leq \alpha < 0.7$ ), good internal consistency ( $0.7 \leq \alpha < 0.9$ ), excellent internal consistency ( $\alpha \geq 0.9$ ), or not reported. When an existing measure had been used it was reported. All of the studies had a range of alpha scores across their measures, ranging from acceptable to excellent levels of internal consistency. The studies were not checked for bias in measurement such as for the use of leading questions which would bias the results of the study, because there was not sufficient detail provided in all of the papers to do that.

### Outcome variables

The outcome variables were categorized into four groups which include: skills (media deconstruction skills and media scepticism), knowledge (persuasion knowledge, understanding of persuasive intent and understanding of social norms), behaviour (pre-drinking behaviour, behavioural intention and alcohol consumption) and attitudes (realism, similarity, desirability, identification, expectancies, advertising scepticism and self-efficacy).

#### *Skills*

In both studies (Kupersmidt et al., 2010; Kupersmidt et al., 2012) which measured media deconstruction skills, participants in the intervention groups performed significantly better than the control groups as a result of the intervention. In the one study (Chen, 2013) which measured media scepticism, girls in the intervention condition were more sceptical toward the media than boys.

#### *Knowledge*

In the three studies (Austin & Johnson, 1997; Austin & Johnson, 1997; Kupersmidt et al., 2012) which measured persuasive intent, participants in the intervention groups performed significantly better than the control groups as a result of the intervention. In the two studies which measured knowledge of the persuasion concepts and topics covered in the intervention (one of the studies used the term 'media literacy knowledge' (Peter et al.,

2013)), participants in the intervention groups performed better than the control groups post intervention (Chen, 2013; Peter et al., 2013); however significance was only reported and obtained in one of the studies (Goldberg et al., 2006).

### *Behaviour*

In two of the three studies which measured pre-drinking behaviour (Austin & Johnson, 1997a; Austin & Johnson, 1997b), participants in the interventions groups had significantly less interest in alcohol-branded products compared to the control groups as a result of the intervention. In the third study which measured pre-drinking behaviour (Kupersmidt et al., 2010), a significantly decreased interest in alcohol-themed products as a result of the intervention was only achieved for boys. The results for intentions to use alcohol varied. One of the studies reported no main effect (Goldberg et al., 2006); one study (Kupersmidt et al., 2012) reported significantly lower intentions to use alcohol for boys in the intervention group compared to boys in the control group; one study (Kupersmidt et al., 2010) reported that significance was only obtained for participants who had used alcohol prior to the intervention; and one study (Sivaithamparam, 2011) reported that participants in the intervention group had significantly lower alcohol consumption in the 30-day period after the intervention in comparison to the control group.

### *Attitudes*

For three of the studies which assessed attitudes based on the MIP model (Austin & Johnson, 1997a; Austin & Johnson, 1997b; Chen, 2013), there were a number of interaction effects rather than main effects observed, with components of the intervention working in different ways for different groups such as boys and girls. For example, there was an interaction effect for treatment with gender on perceptions of realism (Austin & Johnson, 1997a). In three of the five studies which measured alcohol expectancies, participants in the intervention groups had more negative expectancies than participants in the control groups post intervention (Austin & Johnson, 1997a; Peter et al., 2013; Sivaithamparam, 2011); one

study found interaction effects for gender and type of media literacy intervention (Chen, 2013); and one study observed no significant effects (Austin & Johnson, 1997b).

### *Gender analysis*

Three of the interventions did not include an analysis of gender (Goldberg et al., 2006; Peter et al., 2013; Sivaithamparam, 2011). Four of the interventions were more effective for girls (Austin & Johnson, 1997a; Austin & Johnsonb, 1997; Chen, 2013), while three of the interventions were more effective for boys (Chen, 2013; Kupersmidt et al., 2010; Kupersmidt et al., 2012).

## **Discussion**

Media literacy education provides a viable option for addressing the ubiquity of pro-alcohol messages to which young people are exposed. However, there appears to be a lack of standardization regarding approaches, applications and evaluations of curricula (Foxcroft, Lister-Sharp, & Lowe, 1997; McBride, 2003). This systematic literature review provides a critical synthesis of existing alcohol ML programs to determine the effectiveness of existing programs and develop a list of practical and theoretical considerations for designing future programs. Due to the emerging and specific nature of this research area, there were minimal studies available for review and as a result, this review does not contain statistical analyses of results.

Overall, the programs reviewed noted positive effects on most of the outcome variables. However the studies differed in their inclusion, and rationale for inclusion, of variables, suggesting that the variables were valued differently across the studies. For instance, two studies placed importance on participants understanding persuasion strategies (knowledge based outcome) (Goldberg et al., 2006; Peter et al., 2013), whereas other studies emphasised the importance of participants deconstructing alcohol advertisements (skill based outcome) (Kupersmidt et al., 2010; Kupersmidt et al., 2012). Variables that appeared

across multiple studies were generally consistently measured, such as the attitudinal outcomes based on the MIP model. Considerations for future programs are articulated below.

### Program characteristics

#### *Theoretical framework*

The studies drew upon different theoretical models. While Inoculation Theory is appropriate for a specific age group i.e. pre-adolescent before they engage in the risky behaviour (Banas & Rains, 2010), the MIP model is appropriate for all age groups as it is based on improving critical thinking (Austin & Johnson, 1997a). From an inoculation position, the pre-adolescent age group requires more attention as programs have focussed primarily on high-school aged students who may already be engaged in drinking behaviours.

#### *Employ interactive pedagogical approaches within the naturalistic school setting*

All studies reviewed were conducted in a naturalistic setting, whereby the intervention took place in a whole-class school setting rather than a laboratory or one-on-one teaching situation. This is a positive outcome as it provides evidence of the program's potential for sustainability in schools (Martineau, Mamede, St-Onge, Rikers, & Schmidt, 2013; McVey et al., 2010) and students are more likely to retain the skills taught (Stichter et al., 2010).

The majority of the programs included some evidence of hands-on learning experiences such as discussions and problem solving. This approach is supported by educational learning theories such as constructivism which posits that students learn best through being actively involved in the construction of knowledge rather than passive recipients of information (Pritchard & Woollard, 2010). Future research could be explicit in identifying and incorporating constructivism into their program design, implementation and evaluation process, as the current focus has been on health promotion and marketing theories. This view is echoed in a broader review (Bergsma & Carney, 2008) of health promoting ML

programs which emphasised that the pedagogical approach used in programs is of critical importance and yet it was unclear in the studies whether an inquiry approach was used.

*Consider how to maintain the relevance of the program in a rapidly changing society*

All of the studies utilised media clips in their interventions which can become quickly outdated. This raises the question of how programs can retain significance in a rapidly evolving learning environment. One suggestion is the use of online content which is regularly updated to ensure relevance. The studies in this review were also limited to teaching students about print and television advertisements. While television in particular is a prevalent source of information for health among adolescents (Levin-Zamir et al., 2011), these limited types of media are not representative of the wide variety of media to which students are exposed (AMA, 2012; ANPHA, 2012; S.C. Jones & Gordon, 2013). Media literacy programs need to address the wide spectrum of avenues for alcohol advertising, including those which are less visible to regulators and for students to be equipped with skills to assist with the analysis of these multimodal texts (Bull & Anstey, 2010). A meta-analysis of ML interventions (Jeong et al., 2012) emphasised that these skills are of particular importance now with the growth of social media (e.g., Twitter).

*Consider how to achieve program relevance for an international audience*

The majority of the studies reviewed were developed and evaluated in America. There is a need for media literacy programs to be developed in other countries, with particular attention paid to context impacted upon by specific regulation laws and cultural nuances in these different cultures (International Centre for Alcohol Policies, 2001; Jones & Gordon, 2013). The importance of making programs culturally relevant was demonstrated when Project Northland (Perry et al., 1993), an alcohol prevention program that was highly successful with predominantly white, lower-middle-class to middle-class youth (Perry et al., 1996), was implemented in an urban, low-income and multi-ethnic setting. The program was unsuccessful when implemented in a different context, emphasising the importance of cultural considerations when designing a program (Komro et al., 2008). Cultural relevance is

therefore of high priority because until this issue is addressed, alcohol ML programs are unlikely to be successful when implemented in a different cultural context such as the UK, Australia, or subcultures within America.

### Methodological characteristics

#### *Ensure implementation fidelity and a holistic approach to program evaluation*

Most studies addressed the issue of implementation fidelity. Research has identified implementation fidelity as a critical contributor to the success of drug abuse prevention in school settings (Dusenbury, Brannigan, Falco, & Hansen, 2003). This crucial consideration was not reported in other systematic literature reviews of health-promoting media literacy programs (Bergsma & Carney, 2008; Jeong et al., 2012). While the studies reviewed employed measures to ensure high-fidelity implementation, fidelity could have been further enhanced through process evaluations such as interviews or focus groups with the classroom teachers to provide insight into where and why variation occurs (Holliday, Audrey, Moore, Parry-Langdon, & Campbell, 2009). These broader perspectives produce a more comprehensive evaluation and are both valuable and necessary if programs are to be adopted, implemented and sustained long term in schools (Buckley, Sheehana, Shochetb, & Chapmana, 2012; Greene, Caracelli, & Graham, 1989).

#### *Consider gender differences when designing the program*

Gender surfaced as a moderating variable for the effectiveness of the majority of the interventions. This is not surprising given that media health literacy has been found to be higher among girls than boys (Levin-Zamir et al., 2011). Research also suggests that males and females respond differently to information due to both environmental and physiological factors (Pinkleton et al., 2008). For these reasons, all future evaluations in this field should include a gender analysis. If gender differences do exist, it is worthwhile to investigate the particular components of programs which make them more or less effective for boys or girls. This in turn would enable program developers to develop either gender specific programs

i.e. separate programs for males and females, or balanced programs that appeal/are effective for both genders.

#### *Consider the use of follow-up and longitudinal data*

Few studies contained long-term follow-up of results and there was an absence of longitudinal data. It is of concern to the researchers that existing programs are being widely implemented despite only single short-term evaluations of the programs being conducted (Kupersmidt et al., 2010; Kupersmidt et al., 2012; NREPP, 2010a, 2010b). It would be of considerable value to know whether the benefits of the programs are sustained longer term.

### **Conclusion**

This systematic literature review has identified key considerations for the future planning and development of media literacy programs to address young people's alcohol related cognitions, attitudes and behavioural intentions. In the process, it has raised a number of questions, such as the value of education theories such as constructivism in the design, implementation and evaluation of such programs, and the gathering and use of follow-up and longitudinal data. Of particular importance is the need for culturally relevant alcohol media literacy programs. The small pool of studies from which this systematic literature review draws, highlights the emerging nature of this research area and the need for more rigorous evaluations of programs to be conducted.

**Table III. Descriptive Characteristics**

Study	Number of interventions	Target population (n)	Target age-group	Intervention Groups	Concept/skills taught	Outcome variables	Post-Test & Follow-Up Duration	Theoretical Framework
(Austin & Johnson, 1997b)	1	Third grade students from three schools in a northern mid-western town (246)	Children	(1) Pretest, treatment, and posttest; (2) Treatment and posttest (3) Pretest and posttest (4) Posttest only	1, 2, 3, 4	- Pre-drinking behaviour - Persuasion knowledge - Realism - Social norms - Similarity - Desirability - Identification - Expectancies	Immediate post-test  Delayed post-test: 3-months after the intervention	MIP model
(Austin & Johnson, 1997a)	2	Third grade students from Roseville, MN (225)	Children	(1) Pretest, general treatment, posttest; (2) General treatment, posttest; (3) Pretest, posttest only; (4) Posttest only (5) Pretest, specific treatment, posttest; (6) Specific treatment, posttest	1, 2, 3, 4	- Pre-drinking behaviour - Persuasion knowledge - Realism - Social norms - Similarity - Desirability - Identification - Expectancies	Immediate post-test  Delayed: 3-months after the intervention	MIP model
(Chen, 2013)	2	Seventh- tenth grade students, 50.9% male, from four middle and senior high schools in the US	Adolescents	(1) Negative condition (2) Balanced condition (3) Control condition	1, 5 (negative condition only)	- Behavioural intention - Realism - Desirability - Expectancies - Advertising	Immediate post-test	MIP model and parental mediation

		(specific location not reported) (171)				scepticism - Media scepticism		
(Goldberg, Niedermeier, Bechtel, & Gorn, 2006)	1	Sixth-grade students, 49% male from 15 classrooms across 3 schools in central Pennsylvania (414)	Children	(1) Intervention and immediate testing (2hrs later) (2) Intervention and delayed testing (1-week later) (3) Control	1, 2, 3, 4, 5	- Persuasion knowledge - Social norms - Media skepticism - Advertising skepticism - Behavioural intention	(1) Immediate post-test  (2) Delayed: one week later	Inoculation theory and reactance theory
(Kupersmidt, Scull, & Austin, 2010)	1	Third-fifth grade students, 51% female, from 12 elementary schools in North Carolina (679)	Children	(1) Intervention group; (2) Control group	1, 2, 3, 4, 5	- Deconstruction skills - Persuasion knowledge - Pre-drinking behaviour - Behavioural intention - Self-efficacy	Immediate post-test	MIP model and the health belief model
(Kupersmidt, Scull, & Benson, 2012)	1	Sixth-eight grade students, 43.5% male, from 24 classes in North Carolina (399)	Children and adolescents	(1) Intervention group; (2) Control group	1, 2, 3, 4, 5	- Behavioural intention - Deconstruction skills	Immediate post-test	MIP model
(Sivithamparam, 2011)	1	Ninth to twelfth grade students from three high schools in Central Florida (368)	Adolescents	(1) Intervention group; (2) Control group	1, 3, 4, 5	- Expectancies - Alcohol consumption	Immediate post-test	Expectancy theory

(Peter et al., 2013)	1	13 to 18 years grade students from twelve schools in Lagos State (860)	Adolescents	(1) Pretest, treatment, posttest (2) Pretest, posttest (3) Treatment, posttest (4) Posttest only	1, 2, 3, 4, 5	- Expectancies - Persuasion knowledge	Immediate post-test	Theory of planned behaviour and theory of triadic influence
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**Table IV. Methodological Characteristics**

Study	Types of media studied	Who delivered the intervention	Study design	Power calculations reported	Audience involvement	Intervention length	Implementation fidelity	Types of materials	Retention/complete data	Measure validated	Manipulation checks
(Austin & Johns, 1997a)	TV ads	Researcher	Quasi-experiment  Solomon four-group design	Yes	Interactive	1 lesson	Set resources	Media clips, discussion guide, bookmark-style handouts	Not reported	Measures tested and refined  Cronbach averaging .60  Test-retest reliability was provided	Yes
(Austin & Johns, 1997b)	TV ads	Researcher	Quasi-experiment  Solomon four-group design with two experimental groups	No	Interactive	1 lesson	Set resources	Media clips, discussion guide, sticker handouts	Posttest: 225 Delayed Posttest: 194/225 (86%)	Cronbach values ranged from .53 - .82  Test-retest reliability was provided	Yes
(Chen, 2013)	TV ads	Researcher	Quasi-experiment  Pre-test-post-test design with two experimental groups	No	Passive	1 lesson (45 minute intervention)	Not reported	Media clips, magazine	Not reported	Manipulation check for perceived lesson differences between conditions was successful ( $p < .001$ ).	Yes

											Variability in Cronbach values for measures, ranging from .63 - .92
(Goldberg, 2006)	Print and TV ads	Teacher	Quasi-experiment  Post-test only design	No	Interactive and production	Five 50-minute lessons over one week	Teacher training	Media clips, print advertisements	Not reported	Measures tested and refined  Cronbach values of .66 for persuasion knowledge and .70 for attitudes towards advertising and advertisers	Yes
(Kuper smidt, Scull, & Austin , 2010)	Print ads	Teacher	Randomized control trial  Pre-test-post-test design	Yes	Interactive	Ten 45-minute lessons administered just over two wks (mean: 16.68 days)	Teacher training and fidelity checklist	Media clips, teacher manual, poster, student workbooks, bookmarks	Pretest: 723 Posttest: 679/723 (94%)  68% of students attended all scheduled lessons	Cronbach's alpha ranging from .72 - .94  Test-retest reliability was not provided	Yes

(Kuper smidt, Scull, & Benso n, 2012)	Print ads	Teacher	Randomize d control trial	No	Interactive and production	Ten 45-minute lessons administered over approximately two wks	Teacher training and fidelity checklist	Media clips, teacher manual, poster, student workbooks, bookmarks	Pretest: 412 Posttest: 399/412 (97%)  73% of students attended all scheduled lessons	Cronbach's alpha was .90 for alcohol and .83 for tobacco  Test-retest reliability was not provided	Yes
(Sivait hamp aram, 2011)	TV ads	Researcher	Quasi- experiment	No	Interactive	1 lesson (90 minute intervention)	Teacher training	Media clips	Pretest: 383 Posttest: 368/383 (96.1%)	Existing measures were used - Both the Comprehensiv e Effects of Alcohol questionnaire and Timeline Followback (TLFB) procedure are well- established instruments with acceptable levels of reliability and validity	Yes

(Peter , Sobo wale, & Ekean yanwu , 2013)	TV ads	Researcher	Solomon four-group design	No	Interactive	Five 30 minute lessons administered over five days	Discussion guide and training	Media clips and discussion guide	Not reported	Validity ranged from .72 - .82 and reliability ranged from .74 - .89	Yes
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**Table V. Outcome Variables**

Study	Skills	Knowledge	Behaviour	Attitudes	Results	Gender Analysis
(Austin & Johnson, 1997b)	N/A	Understanding of persuasive intent, social norms, realism	Pre-drinking behaviour	Expectancies, desirability, identification, similarity	Short-term effects were found for persuasive intent, realism, desirability, social norms and pre-drinking behaviour. Results retained significance at delayed posttest for realism and identification.	Treatment more effective among girls than boys
(Austin & Johnson, 1997a)	N/A	Understanding of persuasive intent, social norms, realism	Pre-drinking behaviour	Expectancies, desirability, identification, similarity	Short term effects were found for increased understanding of persuasive intent and realism, desirability, identification, positive expectancies and pre-drinking behaviour.  Results retained significance at delayed posttest for expectancies and behaviour.  The treatment was more effective when alcohol specific	Treatment more effective among girls than boys
(Chen, 2013)	Media scepticism (critical thinking)	Realism	Behavioural intention	Advertising scepticism, realism, negative expectancies	<b>Media scepticism:</b> 1&2 (girls) > 1 & 2 (boys) ( $p < .05$ ); 2 (girls) > 3 (girls) ( $p < .05$ ) <b>Perceived realism:</b> 1 (boys) < 3 (boys) ( $p < .05$ ) <b>Negative expectancies:</b> 1 > 2 ( $p < .05$ ); 1, 2 & 3 (girls) > 1, 2 & 3 (boys)	The negative ML lesson was more effective among boys than girls  The balanced ML lesson was more effective among girls than boys
(Goldberg, Niedermeier,	N/A	Persuasion knowledge	Coping behaviour, behavioural intentions, normative	Advertising scepticism,	<b>Persuasion knowledge:</b> 1&2 >3 ( $p < .001$ ) <b>Coping behaviour:</b> 1&2>3 ( $p < .001$ ) <b>Advertising scepticism:</b> 1&2>3 ( $p < .001$ ) There was no main effect for <b>behavioural</b>	Not reported

		perceptions		intentions or normative perceptions		
Bechtel, & Gorn, 2006)						
(Kupers midt, Scull, & Austin, 2010)	Media deconstructi on skills	Realism	Pre-drinking behaviour, intentions to use alcohol in the future	Similarity	<b>Media deconstruction skills:</b> 1>2 ( $p < .0001$ ) <b>Persuasive intent:</b> 1>2 ( $p < .05$ ) <b>Pre-drinking behaviour:</b> 2 (boys) > 1 (boys) ( $p < .05$ ) <b>Intentions to use:</b> 1>2 (Students who had used before only) ( $p < .05$ ). <b>Self-efficacy:</b> 1>2 ( $p < .05$ )	Treatment more effective among boys for decreasing interest in alcohol-branded merchandise
[56]	Media deconstructi on skills	Understanding of persuasive intent	Intentions to use alcohol in the future, intentions to use tobacco in the future	Self-efficacy	<b>Intentions to use alcohol:</b> 2 (boys) > 1 (boys) ( $p < .05$ ) Scores for girls were not significant <b>Media deconstruction skills</b> 1 > 2 ( $p < .005$ )	Treatment more effective among boys for decreasing intention to use alcohol in the future
(Sivaitha mparam , 2011)	N/A	N/A	Alcohol consumption	Alcohol expectancies	<b>Alcohol expectancies</b> 1 > 2 ( $p < .05$ ) <b>Alcohol consumption</b> 1 < 2 ( $p < 0.05$ ) for average estimated BAC, average number of drinks consumed in one sitting, peak number of drinks consumed in one sitting and average number of drinking days per week, for students who reported past-month drinking in at pretest and/or follow-up.	No gender effects were found
(Kupers midt, Scull & Benson , 2012)	N/A	Persuasion knowledge	N/A	Alcohol expectancies,	<b>Negative alcohol expectancies</b> 1&2 > 3&4 ( $p < .05$ ) <b>Persuasion knowledge</b> 1&2 > 3&4 (significance not reported)	Not reported

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