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Promoting abstinence from alcohol during pregnancy: implications from formative research

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Key words:

alcohol, pregnancy, FASD, formative, messages, prevention, campaign

Abstract

This research developed messages to promote abstinence from alcohol during pregnancy and identified elements that enhance message persuasiveness. An exploratory phase was conducted in 2009 that comprised four focus groups with 23 women in Western Australia and elicited beliefs and attitudes on alcohol use during pregnancy and motivations for behaviour change. Four television concepts were subsequently developed and appraised in five focus groups with 31 participants using standard advertising pretesting questions. The implications for campaigns addressing prenatal alcohol exposure and further research are noted and limitations discussed. Funding was received from Healthway and the National Health and Medical Research Council.

Introduction

Prenatal alcohol exposure is related to a range of physical and neurodevelopmental effects on the fetus. These effects are collectively known as Fetal Alcohol Spectrum Disorders (FASD). These disorders are estimated to affect approximately 2-5% of live-births in the United States and some Western European countries (May et al., 2009), and the effects have lifelong implications for the affected individuals, their families, and their communities (Lupton, Burd, & Harwood, 2004; Olson, Oti, Gelo, & Beck, 2009; Streissguth, Barr, Kogan, & Bookstein, 1997). Strategies to prevent prenatal alcohol exposure include broad awareness-raising initiatives that target individuals' knowledge, beliefs, and attitudes, and seek to create and reinforce a social context conducive to alcohol abstinence (Deshpande et al., 2005). These campaigns also serve to support tailored and clinical interventions addressing prenatal alcohol exposure such as brief interventions in primary care settings, alcohol screening, and specialised support for pregnant women with alcohol-related problems (Hankin, 2002; Poole, 2008; Stratton, Howe, & Battaglia, 1996).

Though a large number of communication campaigns addressing alcohol use during pregnancy have been conducted, predominantly in North America, campaigns are rarely evaluated beyond measures of campaign recall and general awareness of the topic (Elliott, Coleman, Subebwongpat, & Norris, 2008; Saskatchewan Prevention Institute, 2009). Furthermore, recommendations for messaging are seldom related to theory or based on formative research, and hence there is little evidence to inform the design of effective messages (Cismaru, Deshpande, Thurmeier, Lavack, & Agrey, 2010; Saskatchewan Prevention Institute, 2009). This lack of published information on the development and evaluation of campaigns makes it difficult to determine what campaign elements are most effective with respect to the desired target audiences' behavioural intentions and behaviour change.

Formative research is necessary for developing persuasive, population-based messaging for a sensitive and complex issue such as alcohol use during pregnancy. Such research often involves a number of phases, with a first exploratory phase providing insight into the individual and social contexts into which the messages will be delivered and received. Using qualitative research methods, the exploratory phase can elucidate the knowledge, attitudes, beliefs, and practices of the intended message recipients with regard to their behaviour, along with perceived and actual barriers and facilitators of positive behaviour change (Eitel & Delaney, 2004). These data are then used to develop the communication objectives and overall message strategy, that is, to 'get the right message' (Egger, Donovan, & Spark, 1993). A second concept development phase utilises further research to identify specific content and to ensure that execution elements have credibility, relevance, and appeal, that is, to 'get the message right' (Egger, et al., 1993). Formative research can also identify execution elements which inhibit acceptance of the message, as well as potential unintended messages that could lead to maladaptive responses (Donovan, Jalleh, Fielder, & Ouschan, 2008).

The potential effectiveness of communication campaigns is also enhanced if message strategies are underpinned by behavioural theory (Maibach & Parrott, 1995). Social cognition models such as the Health Belief Model (Becker, 1974; Rosenstock, 1974), Social Cognitive Theory (Bandura, 1977), Protection Motivation Theory (Rogers, 1975) and the Theory of Reasoned Action (Fishbein & Ajzen, 1975) describe constructs important for instigating and maintaining behaviour change, and are widely used in health promotion and health communication. By profiling the context of the behaviour, and the knowledge, attitudes, beliefs, expectancies, and motivations of the target audience in terms of theoretical constructs, the effectiveness of message strategies can be strengthened. Although a number of qualitative and quantitative studies have provided insights into women's knowledge, beliefs, and attitudes with regards to alcohol use during pregnancy (Balachova, Bonner, Isurina, & Tsvetkova, 2007; Baxter, Hirokawa, Lowe, Nathan, & Pearce, 2004;

Kesmodel & Kesmodel, 2002; Raymond, Beer, Glazebrook, & Sayal, 2009; Toutain, 2010), few describe formative research with the target audience that was used to develop message strategies aimed at preventing prenatal alcohol exposure (Branco & Kaskutas, 2001; Glik, Prelip, Myerson, & Eilers, 2008; Mengel, Ulione, Wedding, Jones, & Shurn, 2005). Furthermore, other than a post hoc allusion to Protection Motivation Theory (Cismaru, et al., 2010), we could find no systematic use of theoretical frameworks to develop such campaigns.

This study sought to develop messages that would promote abstinence from alcohol during pregnancy amongst pregnant women and women of childbearing age. A recommendation for abstinence aligns with the Australian alcohol guideline for women who are pregnant or planning a pregnancy, that recommends that "not drinking is the safest option" (National Health and Medical Research Council, 2009, p. 5) for women who are pregnant or planning pregnancy. The study was considered timely for a number of reasons. First, data showed that almost 60% of West Australian women consume alcohol during pregnancy, with most consuming low to moderate amounts (Colvin, Payne, Parsons, Kurinczuk, & Bower, 2007); second, many women lack specific knowledge about the potential consequences of prenatal alcohol exposure (Peadon et al., 2010); third, the study follows a successful intervention in the state of Western Australia that supported health professionals' knowledge and practice with their clients with regards to alcohol use during pregnancy (Payne et al., 2011); and fourth there had not before been any mass media campaigns targeting alcohol and pregnancy in Western Australia.

Study objectives

The objectives of this study were to:

- identify message strategies that could be effective in population-based communications aimed at preventing prenatal alcohol exposure;

- develop several advertising concept executions based on these message strategies; and
- test the efficacy of the concept executions with a sample of the target audience to identify:
    1. content and execution factors that enhance message effectiveness; and
    2. the content execution with the most potential for use in a mass media campaign aimed at preventing prenatal alcohol exposure.

Study design

The qualitative, formative research comprised focus groups with the target audience and was conducted in Perth, Western Australia during 2009. Guided by social cognition models (Bandura, 1977; Becker, 1974; Fishbein & Ajzen, 1975; Rogers, 1975) a first exploratory phase identified motivations for healthy choices during pregnancy; women's knowledge, beliefs and practice regarding alcohol use during pregnancy; and barriers and facilitators for abstinence from alcohol. From these data, a series of communication and modelling objectives and four television concept executions were developed in story-board format. A second phase exposed the concept executions to a sample of the target audience to identify which concept had most desired impact overall, and to identify specific copy and execution elements that enhanced or detracted from the effectiveness of the messages. The methodology and results for each of the two phases are presented sequentially.

Consumer and community participation

A community reference group comprising six women of childbearing age advised on all aspects of the study design and implementation.

Ethics approval

Approval for this study was granted by the Edith Cowan University Human Research Ethics Committee.

Exploratory phase – Method

Sampling and recruitment

The exploratory phase consisted of four focus groups (FG) with 23 women of childbearing age: two groups with women who had been pregnant within the last three years (FG 1 and 4); one with pregnant women (FG 2); and one with women without children who thought they might have children in the near future (FG 3). This maximum variation sampling method (Patton, 2002) was used to enable insight into a broad range of perspectives while allowing for the identification of ways that groups with certain characteristics may vary from each other. The aim was to include women at different reproductive stages in order to gain insight into the experience of pregnancy and motivations for behaviour change that may be relevant before, during, and after pregnancy. To enhance group interactivity the groups were homogeneous with respect to socioeconomic status and alcohol consumption. To be eligible, all participants - except those who were pregnant - had to screen positive to alcohol use in the previous month. Based on Australian ethical guidelines for research (National Health and Medical Research Council, 2007), pregnant women who were consuming alcohol were not eligible to participate in this research given the exploratory nature of the data collection and the potential for discomfort or harm that may result from participation.

Pregnant women and women who had recently been pregnant were recruited from community-based groups and events. Women were screened for eligibility over the phone using a short questionnaire prior to being invited to participate. A market research company was contracted to recruit women without children from an existing research panel database. Participants who were not pregnant were advised that they were attending a focus group on ‘women’s health’ to prevent priming the participants with the topic of interest. For ethical reasons the topic of alcohol use during pregnancy was fully disclosed to pregnant women

prior to seeking their consent to participate. Approximately half the participants were aged less than 30 years and half were over 30 years. The majority had a tertiary qualification and were married or in a de-facto relationship.

Setting and procedure

The focus groups were held at a centrally-located market research organisation, they lasted one and a half hours, and participants were provided with a cash reimbursement to cover their costs of attending. Signed informed consent was gained prior to each group. The groups were led by the same moderator (K.F.) and were observed by researchers who were positioned behind a one-way mirror.

A semi-structured topic guide sought information on participants' knowledge, beliefs, and experiences regarding pregnancy in general as well as alcohol use during pregnancy, and motivations for any behaviour change during or prior to pregnancy. Data were transcribed verbatim and analysed thematically by the primary author. To build analytical rigour and theoretical relevance, themes and categories were generated with specific reference to constructs within social cognition models (Bandura, 1977; Becker, 1974; Fishbein & Ajzen, 1975; Rogers, 1975). Expert checking of the themes and categories against the data was conducted with two researchers expert in behavioural science theory (R.D, N.H.*).* Quotes which succinctly captured the meaning of categories were sourced and are identified below by the focus group number.

Exploratory phase – Results

Knowledge, beliefs and practice

Table 1 summarizes the key themes for women's knowledge, beliefs, and practice about alcohol use during pregnancy, and describes the potential implications for messaging to prevent prenatal alcohol exposure. A reduction in alcohol consumption during pregnancy was a salient behaviour change in all groups. Women knew that abstinence from alcohol

during pregnancy is recommended over consuming some alcohol during pregnancy: *"a lot of things say none is best but an occasional one is not so bad"* (FG 4). Women also knew that binge drinking or "*get(ting) plastered"* (FG 3) is harmful during pregnancy indicating an understanding between quantity and pattern of consumption, and risk. However there was scepticism and confusion regarding the risk related to low or moderate alcohol use, such as "*a glass here and there"* (FG 2). Despite the high education level amongst the majority of participants, there did not appear to be a high level of specific knowledge regarding the potential consequences for the fetus of alcohol use during pregnancy, and the rationale behind the recommendation for reducing alcohol intake during pregnancy was not salient.

Women spoke of different reasons for continuing to consume alcohol during pregnancy even though they believed they would be better off not drinking. These can also be viewed as barriers to abstinence from alcohol and included feeling social pressure to drink: *"I sometimes felt pressured into it sometimes, you know (they would say) 'it's OK to have one*" (FG 1), receiving conflicting information about the risks of drinking alcohol during pregnancy, and being told by a health professional that it was alright to drink some alcohol during pregnancy.

Women who had had more than one pregnancy spoke about becoming lax about behaviour change in pregnancies subsequent to the first, and there was a perception that women became more lax towards the final stage of their pregnancy. While participants were not asked about their own alcohol use during pregnancy, some participants reflected on consuming alcohol during pregnancy, particularly with reference to the amount that they had drunk: *"I wasn't going out and getting hammered or anything like that"* (FG 1), and in regards to consumption before they knew they were pregnant: "*I didn't intentionally drink, I remember I had a bottle of wine when I was pregnant with (a friend), and I didn't know I was pregnant, anyway that doesn't count*" (FG 1).

Participants described an important social situation early in pregnancy which can undermine decisions to avoid alcohol; namely, when women are not ready to divulge to others that they are pregnant, but the refusal of alcohol may indicate to friends, family, or colleagues that they are: "*I wasn't going to tell anyone… but it was so obvious because they knew I was a drinker*" (FG 4). For some women it was important to keep pregnancy a secret during the early stages, and while their intentions may have been to avoid alcohol during this time, they found themselves in a conflicted position within social situations.

Motivations for reducing or abstaining from alcohol during pregnancy

Table 2 summarizes women's motivations for reducing or abstaining from alcohol during pregnancy, and the associated emotions and implications for messaging. These implications for messaging use Rossiter and Percy's (Rossiter & Percy, 1987) basic motivation and emotions (extended by Donovan (1995)) as a framework for categorising the motivations.

Women described avoiding negative outcomes and reducing fear or worry about these as key motivators for adaptive or healthy behaviour change during pregnancy. This feeling was often described as being *"paranoid"* (FG 2 and FG 4). Other negative motivations included wanting to avoid the feelings of guilt, regret, and responsibility if something went wrong with the pregnancy or child: "*imagine the guilt you would feel if it was through your own carelessness or selfishness that your child now has to deal with that for the rest of their life*" (FG 3).

Along with *avoiding* fear and worry, women were also motivated *towards* the arousal of certain positive emotional states or feelings. These included a desire to feel *"in control"* (FG 1) and doing the best that they could to support the health of the pregnancy and fetus. Having or giving oneself reassurance or peace of mind was another positive motivation: "*I'd like to think that I tried to do everything possible to make the baby as healthy as possible*" (FG 3).

Another strong motivation for modifying alcohol use was the *avoidance* of social disapproval. Women spoke of being *"looked down on"* (FG 2) by others if they drank alcohol during pregnancy, and many thought that there was a strong expectation from others for a pregnant women to abstain from alcohol: "*I wouldn't (drink alcohol) because I think, I think people's opinions of you... I think a lot of people think that you shouldn't drink*" (FG 2). The reverse of this was also relevant: as a positive motivation in the sense of seeking social approval and wanting to fit in with the perceived social norm of abstaining from alcohol or drinking only small amounts.

Women also reported that advice from health professionals was a factor that strongly influenced their choices and behaviour during pregnancy. Hence another positive motivation was to comply with professional advice. Those who had received information from a health professional that it was alright to consume some alcohol during pregnancy, used it as a rationale for their continued consumption. For those who had received advice to abstain, this strengthened their decision to avoid alcohol during pregnancy.

Table 1. Women's beliefs, attitudes and practice about alcohol use during pregnancy and the implications for messaging

Beliefs, attitudes and practice	**Implications for messaging**
A reduction in alcohol consumption during pregnancy is a salient behaviour change and abstinence from alcohol during pregnancy is known to be recommended.	Messaging can go beyond a 'do not drink alcohol in pregnancy' communication objective as this is already known amongst the target audience.
Binge drinking and getting drunk is understood to pose a risk to pregnancy and the unborn child, however there is confusion and scepticism about the risk of low to moderate exposure, and therefore scepticism about whether the risk applies to the pattern of drinking that the target audience engages in.	Messaging should focus on decreasing the ambiguity surrounding the risk of low to moderate patterns of drinking alcohol during pregnancy. Messaging should address a drinking pattern that the target audience sees as relevant to them such as 'a couple of drinks every now and then'.
The specific consequences of prenatal alcohol exposure for the fetus are not salient.	There may be the potential to fill a knowledge gap and strengthen the rationale for an abstinence message through the provision of information regarding the potential effects of alcohol on the fetus.

A change in alcohol consumption is one of a range of behaviour changes that women make during pregnancy. Other behaviour changes include diet, exercise and tobacco use.	Increase the salience of abstaining from or reducing alcohol consumption during pregnancy by linking to other behaviour changes which are regularly adopted.
A barrier to abstinence from alcohol is advice from health professionals that it is alright to drink some alcohol during pregnancy.	Health professionals' advice has the potential to undermine a population-based abstinence message. Use a health professional within messaging and position them as an un-questionable expert who has the most current information.
Health professionals are a respected source of information during pregnancy.	Messaging could use a health professional as an expert source to deliver information.
Women often do not want to disclose their pregnancy in the early stages, and this is a barrier to abstinence from alcohol during social situations.	Providing strategies for avoiding alcohol during social situations, without disclosing pregnancy, may be useful.

Table 2. Results from exploratory phase: Negative and positive motivations* for modifying alcohol consumption for pregnancy, associated feelings, and the implications for message strategy

Motivation	Associated feelings	Implications for message strategy
Negative		
Reduce fear and worry	Fear, worry and "being paranoid"	Emphasize that these **negative** outcomes, experiences and feelings can be *reduced or avoided* if women abstain from alcohol during pregnancy.
Avoid poor pregnancy and fetal outcomes		
Avoid feeling responsible for poor pregnancy or fetal outcomes	Guilt and regret	
Avoid social disapproval	Shame and embarrassment	
Positive		
Feel efficacious by avoiding threats that are within personal control	Feeling "in control" and having "peace of mind"	Emphasize that these **positive** experiences and feelings can be *obtained or maintained* if women abstain from alcohol during pregnancy.
Gain self approval	Feeling that you are "doing the best that you can"	
Gain social approval	Pride and respect	
Feel socially accepted	Belonging and "fitting in"	
Feel doing "the right thing" by complying with professional advice	Virtuous and good	

* drawing from Rossiter and Percy's (Rossiter & Percy, 1987) hypothesised relationship linking emotions to motivations in advertising; extended by Donovan (1995).

Message strategy and concept development

Based on the results of the exploratory phase, the message strategy objectives were to create and reinforce healthy beliefs and social norms with regards to abstinence from

alcohol use during pregnancy. The specific communication and modelling objectives are outlined in Table 3.

Table 3. Communication and modelling objectives

Communication objectives
Create and reinforce the beliefs that: • if you are pregnant you should reduce your alcohol intake, with abstinence as the primary goal; • alcohol consumption is something that (most) pregnant women can control and that reduction or abstinence from alcohol will support the health of the pregnancy and baby; • no alcohol during pregnancy is the safest option; • the risk to the fetus increases with increasing amount and increasing frequency and there is risk even when a woman is not 'drunk'; • alcohol consumption is related to short-term and long-term negative consequences for the pregnancy and fetus; and • challenge the belief that 'a couple of drinks every now and then' are risk free.
Modelling objectives • Align abstaining from alcohol to other positive behaviour changes for pregnancy such as 'being on a health-kick', eating healthy foods, or taking folic acid. • Show a significant person (i.e. partner or friend) supporting a woman to modify her alcohol consumption when pregnant. • Demonstrate a way of dealing with social situations when women want to abstain from alcohol but do not want others to know that they are trying to get pregnant or are pregnant.

The rationale for the development of each of the four concept executions (Appendices 1-5) is described below.

- **Partner.** This concept is based on the constructs of self-efficacy and social norms, and seeks to appeal to the positive motivations of feeling in control, efficacious, and socially accepted. It models the support of a male partner in helping a woman to abstain during pregnancy through modifying his own alcohol use. It also models a strategy for overcoming a social barrier to avoiding alcohol without disclosing pregnancy.

- **Best Friend.** Like the *Partner* concept, *Best Friend* is based on the constructs of self-efficacy and social norms, and seeks to appeal to the positive motivations of feeling in control, efficacious, and socially accepted. Instead of showing the support of a partner, this concept models the support of a female friend in avoiding alcohol during a social situation, as a facilitator of abstinence. It simultaneously shows social inclusion of the pregnant woman, and addresses the social barrier of avoiding alcohol without disclosing pregnancy by providing an excuse of 'being on a health-kick'.
- **Woman.** This concept focuses on the positive motivations of self-approval, self-efficacy, and control. It seeks to appeal to the notion of a woman 'doing everything that she can' to support the health of the fetus, and hence give herself 'peace of mind'. As with the other concept executions, this concept shows a woman who is in the early stages of pregnancy and demonstrates choosing an alternative beverage to alcohol at a work-related event.
- **Obstetrician.** This concept appeals to the motivations of avoiding fear, worry, and negative consequences for the fetus. This threat appeal addresses a key question regarding the risk of low to moderate exposure and features an expert source of information. To assess the impact of including specific information on the potential consequences of prenatal alcohol exposure on the fetus, two versions of the *Obstetrician* concept were developed:
    - **Obstetrician – risk**. This version provides specific information pertaining to the nature of the risk of prenatal alcohol exposure and related specifically to the theoretical construct of susceptibility to the risk.
    - **Obstetrician – consequences**. This version explicitly details some of the potential consequences of prenatal alcohol exposure for the fetus, and related specifically to the theoretical construct of severity of the outcomes.

Concept testing phase – Method

Sampling and recruitment

Five focus groups of 31 participants representing all intended target audiences took part in the concept testing phase: one focus group of women recently pregnant (within the last three years) (FG 5); one of male partners of women recently pregnant (FG 6); one of women without children who thought they might soon be pregnant (FG 7); one of women who were pregnant for the first time (FG 8); and one of women who were pregnant with their second or later child (FG 9). Women were recruited using the same strategy and eligibility criteria as for the exploratory phase. Men were recruited through partners who had previously participated or registered their interest in the project. To be eligible men had to have a child aged three years or younger, currently drink alcohol, and live in a middle socio-economic area. The majority of participants was aged between 30-34 years and had a tertiary qualification. All of the participants were married or in a de-facto relationship. Of the 12 pregnant participants, one was in the first trimester, six were in the second, and five were in the third trimester of pregnancy.

Setting and procedure

Focus groups lasted two hours and were conducted at the same venue and times as those described for the exploratory phase. Groups were led by the same moderator (K.F). Each participant received a booklet in which the four concept executions were provided in story-board format and presented in rotating order to counter against ordering effects. Each concept was followed by a questionnaire comprising open and closed-ended standard copy testing questions. Half of the participants in each group received *Obstetrician – risk* and the other half received *Obstetrician – consequences*.

Open-ended written responses were sought on the perceived main message in each concept (*What is the advertisement trying to tell you, or telling you to do?*). Structured feedback was also gained using the following measures through a five-item response scale comprising the response options *not at all, only a little, small amount, fair amount, great amount:*

- intention to adopt the recommended behaviour as a result of viewing the concept

  To what extent does the advertisement make you want to drink less alcohol or not at all during pregnancy? (females) / make you want to do things to help your partner avoid alcohol during pregnancy? (males);
- engagement with the issue

  To what extent does the advertisement make you think about alcohol use during pregnancy?;
- relevance

  How relevant is the advertisement to you personally?;
- believability

  How believable is the situation shown in the advertisement?; and
- appeal

  How much do you like the advertisement?

After completing the above questions for all concept executions, participants were asked to rank the executions in terms of which one was most motivating, that is, most made them want to abstain from alcohol during pregnancy (females) or do things to help their partner avoid alcohol during pregnancy (males). A group discussion then asked participants to elaborate on their reasons for choosing their top ranking and the content and execution elements that they found to be effective.

Analysis

The data from all five focus groups were compiled and are presented together below. The open-ended written responses and group discussion data were thematically analysed. For the close-ended response data, the proportion of all participants nominating the top two positive responses (*fair amount* or *great amount*) for each measure was calculated (see Figure 1). For the analysis of the open and close-ended responses, the two variations of the *Obstetrician* concept were combined to allow comparison across the four concept

executions. However the group discussion data for each were analysed separately in order to identify any key differences resulting from the content variation between *Obstetrician – risk* and *Obstetrician – consequences*.

Concept testing phase – Results

The concept testing phase results comprise individual, structured feedback and group discussion data. The structured feedback cannot be equated with quantitative data, but rather, is used in combination with the group discussion data to allow a clear and comprehensive assessment of which concept was most effective amongst the target audience and why.

Main messages

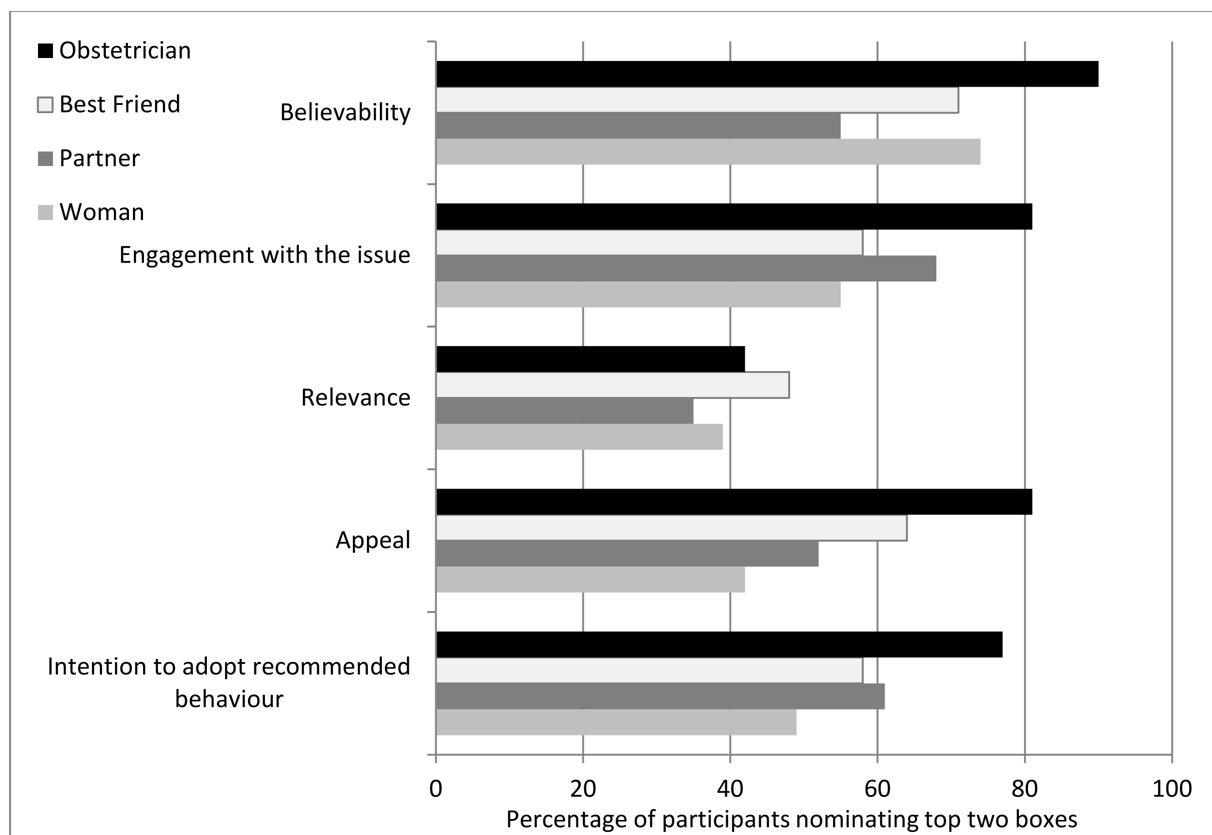
The main messages perceived by participants within all concept executions closely matched the intended communication and behavior objectives. For all executions except *Obstetrician* the main message perceived by participants was 'don't drink alcohol when you are pregnant.' For *Obstetrician* the main message was similar but worded differently: 'the safest choice when you are pregnant is no alcohol at all'. Furthermore, *Obstetrician* had a range of secondary messages that were stronger than for the other concept executions and related to the reasons for not drinking during pregnancy, such as 'any alcohol poses a risk to the baby' and 'alcohol can disturb the development of the fetus'.

Best Friend and *Partner* both successfully conveyed the message that a friend or partner can support a woman to avoid alcohol during pregnancy, and that this support is important. Participants who saw *Woman* perceived a strong main message of 'there is risk to the baby if you drink alcohol during pregnancy, and the risk is lowered if you avoid alcohol', indicating that it was successful in demonstrating the efficacy of personal action to avert the threat.

Individual structured feedback

Individual structured feedback was gained on the following measures: intention to adopt the recommended behavior, engagement with the issue, relevance, believability, and appeal. Figure 1 shows the proportion of participants who selected the top two responses on each measure for each of the concept executions.

Figure 1. Proportion of participants selecting top two responses on each measure for each of the concepts



The *Obstetrician* concept outperformed all other concept executions on all measures except relevance. These ratings also show that all concept executions scored reasonably well on most measures, including the key behavioural intention measure, thus confirming the validity of the conclusions derived from the exploratory phase.

Most motivating concept and effective content and execution elements

Obstetrician was the concept considered most likely to promote alcohol abstinence during pregnancy: 58% of participants chose this concept as most motivating. The ensuing group discussion revealed that in terms of content, the *Obstetrician* concept was favored as it

provided information that participants wanted to know, and included a clear recommendation for abstinence from alcohol during pregnancy. Participants appreciated that *Obstetrician* provided a reason as to why abstinence from alcohol was advised. Posing and answering the question: 'Is a couple of glasses of wine every now and then OK?' appeared to be a good execution device to engage attention. The answer provided by the obstetrician – 'We just don't know how much alcohol it takes to do damage' – was perceived as honest and participants reported that it enhanced the credibility of the overall recommendation of abstinence from alcohol, "*it was honest… that they just don't know and that is why they say that nothing is better than having one glass. That they just don't know how much it takes to do damage and it is different for every person*" (FG 8). Overall, two powerful execution elements of *Obstetrician* were the use of the obstetrician as an expert source and the delivery of information in a clear, direct, and factual way.

Obstetrician was also said to be "*harder hitting"* than the other concept executions "*because it says your baby could be harmed"* (FG 8). A greater proportion of the participants who saw *Obstetrician – consequences* selected it as most motivating compared to those who saw and selected *Obstetrician – risk* and discussion indicated that participants were motivated by the provision of specific information about the negative potential consequences for the fetus of alcohol use during pregnancy.

Those who rated *Best Friend* as the most motivating concept valued the display of friendship and support of the pregnant woman by her friend. Similarly, the most motivating aspect of *Partner* was the display of support for a pregnant woman by her partner. However, several male and female participants thought that the latter scenario was unrealistic because they thought it unlikely that a male partner would abstain from alcohol in support of a pregnant woman: *"it's unrealistic; most guys I know are like 'woohoo! I have two years where I don't have to drive"* (FG 5). For both *Best Friend* and *Partner*, participants responded positively to

the provision of a strategy for abstaining from alcohol without disclosing pregnancy during the early stages.

When probed, none of the participants indicated that the concept executions triggered any discomfort about their own drinking during current or previous pregnancies. There were also no negative comments with respect to the tone of the concept executions; that is, participants did not feel they were being judged or lectured to.

Discussion

This study demonstrates the value of formative research and theoretical frameworks in the development of effective messages to promote abstinence from alcohol during pregnancy. Research identified insights into women's knowledge, attitudes, beliefs, and motivations and the implications for message strategy. Women knew that abstinence from alcohol was recommended during pregnancy, but were sceptical about the risk associated with low to moderate amounts. The reduction of ambivalence is understood to be a pre-cursor to behavior change (Miller & Rollnick, 1991) and hence the communication objectives sought to decrease women's ambivalence with regards to small amounts of alcohol, and to challenge the belief that 'a couple of drinks every now and then' are risk free.

Pregnancy is a known "window of opportunity" (DiClemente, Dolan-Mullen, & Windsor, 2000, p. iii16) for behavior change given the intrinsic motivation of having a healthy baby. However, an assumption that motivation begins and ends with the baby would preclude many powerful motivations that can be used in creating persuasive communication. This study identified both positive and negative motivations for women to abstain from alcohol during pregnancy. These included wanting to minimise a generalised fear that something could go wrong, and wanting to believe they were in control and doing the best that they could to support the health of the pregnancy and the fetus. The implications drawn were that messages could either aim to emphasize that the negative outcomes, experiences, or

feelings could be reduced or avoided and/or that positive outcomes, experiences, or feelings could be obtained or maintained if women abstained from alcohol during pregnancy. The results clearly indicated that the concept appealing to negative motivations, *Obstetrician,* was most effective at promoting women's intentions to abstain from alcohol during pregnancy. This suggests that the avoidance of negative feelings and outcomes for the pregnancy and fetus are greater motivators for abstinence than positive motivators. This is consistent with much research around the efficacy of fear (or threat) appeals (Sutton, 1982; Witte & Allen, 2000) which shows that, provided the promoted response is under volitional control, the negative motivation of avoiding the threat is a powerful instigator of behavior change.

Some authors have noted the potential risk of using threat appeals within alcohol and pregnancy communication (Burgoyne, Willet, & Armstrong, 2006; Saskatchewan Prevention Institute, 2009). However, even a positive message strategy may carry an implicit threat. Furthermore, the provision of information about the risks and consequences of prenatal alcohol exposure may be particularly important for campaigns in Australia given the relative lack of public awareness around this (Peadon, et al., 2010). The concern is if threat-based messages are seen by the audience to be over-stating the risk or sensationalizing the severity of the consequences, then they are likely to be rejected and argued against, and this could work to promote maladaptive responses. What this study shows is that if a threat appeal is delivered in a way that is perceived to be honest, factual, and supportive of women making informed choices about their health behavior during pregnancy, it is likely to be accepted and persuasive. Several execution elements were identified that appear to be important to this. Credibility of the message was enhanced by acknowledging uncertainty about the risk to the fetus with low to moderate alcohol exposure. Rather than undermine an abstinence-based message, this information served as a clear rationale for the recommendation. An honest and scientific framing of the message and delivery by an expert

source were also shown to minimize counter-argument and strengthen the message's persuasiveness.

While the concept executions appealing to positive motivations were not as persuasive as the concept based on negative motivation, the data indicate potential for positive messaging to be used in conjunction with a threat-based message. As identified by Cismaru and colleagues (Cismaru, et al., 2010), messages targeting alcohol use during pregnancy often focus on increasing perceived severity of the threat, and the audiences' perceived susceptibility to the effects of prenatal alcohol exposure, without adequate attention given to perceived self-efficacy as important for instigating protection motivation (Rogers, 1975) or a danger control process (Witte, 1992). In this study, a display of social support and acceptance for a pregnant women abstaining from alcohol was well-received by participants, as were specific strategies for avoiding alcohol during social situations. Elements such as these may be used to promote feelings of self-efficacy, and further support the effectiveness of threat-based messaging that appeal to fear and other negative motivations.

Study limitations

It is important to recognise that these messages were designed to target those who drink alcohol, but generally not to excess. It is unlikely that women with alcohol problems would respond to these concept executions with respect to abstinence. Further testing with this group may be important to ensure that there are no maladaptive outcomes of the messaging for women who cannot consider abstinence from alcohol during pregnancy. The sample of participants was skewed towards an educated, middle-socioeconomic sample of women (and men). While we would expect the same motivations for abstinence during pregnancy for women of lower socioeconomic status, it would be necessary to test any further concept development with such women to ensure that the language and terminology were at an understandable level.

As with any advertising creation there are numerous ways to execute particular message strategies. There may well be more effective ways to execute these messages. Importantly though, this study demonstrates the application of insights from exploratory research and social cognitive theory within creative concept development.

Summary and future research

This study is one of the first to report results from formative research development and testing of persuasive messages to prevent prenatal alcohol exposure. The study provides an assessment of several potentially efficacious advertising concept executions that, subject to further confirmatory quantitative assessment and refinement for particular target audience characteristics, could be used in a communication campaign to persuade women to abstain from alcohol during pregnancy.

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Appendix 1: ***Partner***

Image not available for publication

Scene One

A woman aged approximately 30 years comes out of the bathroom, she is holding a pregnancy test stick. She says to her partner “Two lines. I think we are pregnant!”

He says, “Are you sure?”

She says, “I think so!”

They look at each other with excitement as the news ‘sinks in’.

Image not available for publication

Scene Two

A party scene, and the same couple have just arrived.

The woman gets offered a glass of wine by a host, and she shakes her head.

She says, “No thanks, just two orange juices, we’re on a health-kick”.

Her partner is standing next to her and he holds up a bottle of orange juice that they have brought with them.

The host says, “Good on ya, I should be too.”

The woman looks at her partner and they smile at each other.

Appendix 2: *Best Friend*

Scene One

A woman aged approximately 30 years walking along the beach with her friend. The woman says with a smile, “Can you keep a secret?”

Her friend replies, “Of course I can! Why?” She slows down her walk.

The woman says, “You have to promise you won’t tell anyone, yet...”

The friend stops walking, nods, and looks at her with excitement.

The woman stops walking and says “I’m pregnant!”

They scream and laugh and the friend gives the woman a big hug.

Scene Two

It is a ‘girls night out’ party scene and the same woman and her friend are arriving together.

The woman gets offered a glass of wine by the host, and the woman says “No thanks, just an orange juice for me.”

The host says “What? That’s not like you!”

The friend is standing next to the woman and says “Oh, we are on a health-kick, I’ll have an OJ too.”

The host says with a roll of her eyes “Good on you, I should be too!”

The woman and her friend smile at each other while the host turns away to get them the drinks.

Appendix 3: *Woman*

Image not available for publication

Scene One

A woman aged approximately 30 years is gazing down at a take-home pregnancy test stick.

There is a voice-over of her thoughts. She says to herself, “Two lines. I’m pregnant!” (Happy, excited).

She pokes out her tummy in the mirror and laughs at herself.

She then rubs her stomach gazing down with a look of love and nurturing

Image not available for publication

Scene Two

The same woman is at a work-function and standing with a small group of colleagues.

One of her colleagues finishes off a sentence, he says “... so while there are many things you can’t control, there are some things you can do to lower the risk and put yourself in the best position.”

A waiter approaches and offers the group drinks. There are glasses of red wine, white wine, water and orange juice.

The woman picks up an orange juice.

There is a voice-over of her thoughts “Just an OJ for me thanks. I’m doing what I can to lower the risk and put myself in the best position to have a healthy pregnancy!”

Appendix 4: ***Obstetrician - risk***

Scene One

A woman and her partner are in a clinic room with an obstetrician. The obstetrician hands to the woman an ultrasound picture that she has been looking at.

The obstetrician says, “So you are doing really well, everything is looking very good. Is there anything else you would like to ask?”

The woman says, “And how about alcohol? I’ve heard different things.”

The obstetrician says, “We recommend that you don’t drink any alcohol during pregnancy. If you do drink alcohol, the more you drink, and the more often you drink, the greater the risk that your baby could be harmed.”

The woman asks, “Is a couple of glasses of wine every now and then OK?”

The obstetrician says, “We just don’t know how much alcohol it takes to do damage. No amount of alcohol has been proven safe for the fetus. No alcohol is the safest choice.”

Appendix 5: *Obstetrician - consequences*

Scene One

A woman (who is not visibly pregnant) and her partner are in a clinic room with an obstetrician. The obstetrician hands to the woman an ultrasound picture that she has been looking at.

The obstetrician says, "So you are doing really well, everything is looking very good. Is there anything else you would like to ask?"

The woman says, "And how about alcohol? I've heard different things."

The obstetrician says, "Alcohol can disturb the development of the fetus. The baby could be born with brain damage, birth defects, low IQ, and possibly behavioural problems which become more obvious as the child grows. We recommend that you don't drink any alcohol during pregnancy."

The woman asks, "Is a glass of wine every now and then OK?"

The obstetrician says, "We just don't know how much alcohol it takes to do damage. It is different for different women and different babies. And that is why we say no alcohol is the safest choice."

Glossary

FASD - Fetal Alcohol Spectrum Disorders

formative research - Research that aims to inform the development of interventions, products and communication materials.

concept executions - A concept is an idea upon which an advertisement is based and a concept execution is the material that represents, conveys or communicates that concept.

thematic analysis - A process whereby descriptive data is sorted and grouped into themes and categories. The themes and categories may be dictated by the topic of interest or area of inquiry, or may ‘emerge’ and become apparent through analysis of the data.

threat appeal - A message containing a threat that aims to elicit a response of threat-avoidance in the recipient of the message. An recipient's perception of the threat is said to comprise the level to which they feel susceptible to the threat (perceived susceptibility) and the extent to which they feel the threat would affect them (perceived severity).

self-efficacy - An individually held belief that one possesses the ability to perform a specific behaviour or behaviour change. As such, messages that seek to promote self-efficacy seek to promote this belief amongst the recipients of the message.

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Declaration of Interest:

The authors report no conflicts of interest.