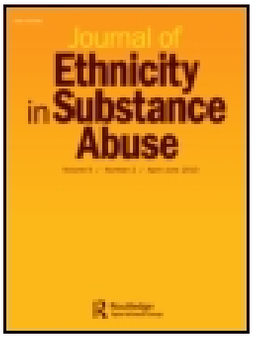

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Journal of Ethnicity in Substance Abuse

ISSN: 1533-2640 (Print) 1533-2659 (Online) Journal homepage: https://www.tandfonline.com/loi/wesa20

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To cite this article: Burt Davis & Carel Jansen (2019): Using a fotonovela to battle crystal meth in South Africa, Journal of Ethnicity in Substance Abuse, DOI: 10.1080/15332640.2019.1568335

To link to this article: https://doi.org/10.1080/15332640.2019.1568335

Published online: 22 Feb 2019.

JOURNAL OF ETHNICITY IN SUBSTANCE ABUSE
https://doi.org/10.1080/15332640.2019.1568335

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Using a fotonovela to battle crystal meth in South Africa

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ABSTRACT
This study evaluated the effects of a health-related fotonovela about crystal meth (S-methamphetamine hydrochloride) among "Colored" people (an ethnic label for people of mixed race) in the Western Cape province of South Africa. Crystal meth use is most common among Colored people in this province and it is considered a major social problem. The fotonovela was compared to a no-message control group and a traditional brochure in a randomized controlled trial ($N = 303$). The fotonovela outperformed the control condition for knowledge level and it outperformed the traditional brochure on intention toward starting conversations about crystal meth. Especially readers with relatively low levels of education clearly preferred the fotonovela over the traditional brochure.

KEYWORDS
Fotonovelas; crystal meth; entertainment-education; health messages; S-methamphetamine hydrochloride

In the Western Cape province of South Africa (SA), the treatment demand for crystal meth, locally known by the street name "tik," is the highest of any province in the country (Dada et al., 2017). Crystal meth (S-methamphetamine hydrochloride) presents as white or translucent crystals (Cruickshank & Dyer, 2009). Crystal meth use is associated with short-term effects (e.g., increased alertness, loss of appetite, anxiety, restlessness, aggression, and violent behavior) and long-term effects (e.g., extreme weight loss, general physical deterioration, delusions, and paranoia) (Watt et al., 2014).

Crystal meth was the most common drug used in the Western Cape in 2016, accounting for 42% of patient admissions at treatment centers/programs (Dada et al., 2017, p. 5). These figures only reveal the tip of the iceberg when it comes to the crystal meth problem in the province.[1] Most crystal meth users in the Western Cape do not report for treatment at all (J. Erasmus, Alcohol Tobacco and Other Drug Research Unit, South

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African Medical Research Council, personal communication, March 14, 2018).

The typical crystal meth user in the Western Cape is a "Colored" (an ethnic label for people of mixed race, found only in SA) young male (Dada et al., 2017, pp. 6–7). Many Colored people live in previously disadvantaged areas (a remnant of apartheid) (Watt et al., 2014). In these areas, drug use in general is a major social problem. Making matters worse is that crystal meth use is associated with community problems common in these areas, such as gang culture, crime, and domestic violence (Pasche & Myers, 2012; Watt et al., 2014).

Numerous efforts such as drug awareness campaigns and programs focusing on the underlying socioeconomic issues at play in dealing with drug abuse in the province over the past few years (City of Cape Town, 2014) have shown little sign of affecting crystal meth use in the Western Cape. This begs the question of whether there are any untapped persuasive health communication strategies that can be utilized to help address the crystal meth problem in this province in a more effective way, especially among its Colored people.

Entertainment-education to address the crystal meth problem among Colored people

A strategy that has proven to be successful in delivering persuasive health messages, specifically to disadvantaged or underprivileged people, is entertainment-education (E-E; Singhal & Rogers, 1999; Unger, Cabassa, Molina, Contreras, & Baron, 2013). E-E narratives involve incorporating health and other messages into stories distributed by popular entertainment media, including television, radio, and the print media, with the aim of positively influencing awareness, attitudes, knowledge, behavioral intentions, and ultimately behavior (Moyer-Gusé, 2008; Singhal, Cody, Rogers, & Sabido, 2004; Unger et al., 2013).

E-E narratives have been used for communicating health information on a variety of health topics across different countries (Moyer-Gusé, 2008; Singhal et al., 2004). In SA, E-E narratives have been successfully used to convey messages about HIV. *Soul City* (a multimedia program that disseminates stories including information about HIV prevention, condoms, domestic violence, and rape) was found to have a positive influence on viewers' awareness, knowledge, and attitudes (Moyer-Gusé, 2008, p. 407).

A possible explanation for the persuasiveness of E-E narratives relates to the characteristics of the receivers and the extent to which they engage with the narratives themselves. An influential theory in the narrative persuasion literature, the entertainment overcoming resistance model (EORM; Moyer-Gusé,

2008), suggests that engagement with the narrative helps in overcoming resistance to behavioral changes (p. 414). This engagement aspect triggered by narratives may contribute to its success, possibly making narratives more effective than other persuasive messages such as traditional brochures (Murphy, Frank, Moran, & Patnoe-Woodley, 2011; Slater & Rouner, 2002; Sood, 2002). Here, involvement in the story and involvement with the characters are especially topical. In a meta-analysis by Tukachinsky and Tokunaga (2013), which included 45 health-based studies, the researchers found a positive association between engagement with the narrative and its characters on the one hand and attitudes and intentions implied by the narrative on the other hand. Another explanation for the persuasiveness of E-E narratives relates to the range of emotions evoked by reading narratives. Emotions are assumed to play a role in the narrative persuasion process (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013; Oatley, 2002). Several narrative-based studies have shown that emotions such as fear, happiness, joy, sadness, disgust, and anger may affect message outcomes (see, e.g., Busselle & Bilandzic, 2009; De Graaf, Hoeken, Sanders, & Beentjes, 2009; Green & Brock, 2000; Hoeken & Fikkers, 2014; McQueen, Kreuter, Kalesan, & Alcaraz, 2011; Murphy et al., 2013; Murphy et al., 2011).

A type of print media format of E-E narratives that has shown potential to be a persuasive health education tool is the fotonovela or photo storybook (Ariyani, Nayana, Saregar, Yuberti, & Pricilia, 2018; Hernandez & Organista, 2013; Lee, Yoon, Chen, & Juon, 2013; Unger et al., 2013). Fotonovelas are small booklets that portray a dramatic story, usually set in everyday life, using posed photographs and text bubbles/captions with simple text (Boyte, Pilisuk, Matiella, & Macario, 2014). Fotonovelas have already been successfully used for health promotion purposes in SA. In a study conducted in the KwaZulu-Natal province of SA by James et al. (2005), a fotonovela about sexually transmitted infections (STIs) was presented to secondary school learners. James et al. measured the effect of this fotonovela by comparing it to a control group who had not read the fotonovela as well as by comparing pretest results with post-test results. The authors report a significant increase in knowledge about how STIs are spread and a more positive attitude toward condom use immediately after reading the novel as well as six weeks later.

Fotonovelas may prove particularly effective among Colored audiences for the following reasons. First, fotonovelas have reportedly been successful in communicating health messages to low-literate groups (Cabassa, Molina, & Barron, 2012; Koops van 't Jagt et al., 2017; Lee et al., 2013; Unger et al., 2013). Low-literate groups are not fully able to use printed and written information to adequately function in society (White & Dillow, 2005, p. 4). Although literacy numbers in SA are not reported as such, many Colored

people probably have low levels of literacy. South African data show that 67.4% of Colored people older than 20 years did not complete Grade 12, with 25.4% of this number not having any secondary school qualification whatsoever (Statistics South Africa, 2014).

In view of the relationship between level of education and level of health literacy (see, e.g., Kutner, Greenberg, Jin, & Paulsen, 2006; Parker, Baker, Williams, & Nurss, 1995), it may be assumed that many Colored people could be classified as being low-literate when it comes to processing health education materials. Second, an earlier explorative study by Dick, Van der Walt, Hoogendoorn, and Tobias (1996) revealed promising findings for the possible use of fotonovelas among Colored people. In this study, a fotonovela about tuberculosis (TB), based on feedback from focus group discussions with the target audience about this disease, was developed. Although the actual effectiveness of the fotonovela developed was not empirically tested, results from an informal evaluation of this fotonovela were promising. Participants perceived the fotonovela to be a successful tool to convey messages about TB.

In summary, fotonovelas show promise to effectively convey health messages to Colored people in SA about crystal meth. Moreover, there is a growing interest among allied fields such as medical education and public health to pursue the possibility of combining narratives and visualization to communicate health messages as is done in fotonovelas (King, 2017, p. 523; also see Leung, Leung, Liu, Ting, & Lo, 2018).

Health-related documentation about crystal meth available at, for example, provincial clinics and health sites in the Western Cape so far has mainly been limited to traditional brochures that primarily contain facts and figures about the dangers of using this drug (M. McCrea, Western Cape Government Department of Health, personal communication, May 28, 2015). Given this state of affairs, and the evidence presented in favor of fotonovelas possibly being successful as health promotion documents, the present study aimed to establish whether fotonovelas can be an effective health messaging tool to communicate the dangers associated with using crystal meth to Colored people in the Western Cape and to persuade them to avoid this drug.

Method

A three-armed randomized controlled trial (RCT) was conducted by comparing the effects of three message conditions (a group who read a fotonovela, a group who read a traditional brochure, and a no-message control group) in terms of differences in knowledge level, attitudes, and behavioral intentions. It was also determined to what extent participants would prefer a fotonovela or a more traditional type information brochure about crystal meth. To our

knowledge, such information was only collected in one earlier study: Koops van 't Jagt (2018). In a qualitative interview study, she found that most participants preferred photo stories over a non-narrative brochure (p. 160).

Materials

A health-related fotonovela about crystal meth, "Spyt kom te laat" (Regret comes too late), was developed for this study, using an E-E approach involving a six-step production process (Cabassa et al., 2012) that incorporates inputs from the target audience and subject field experts. The development of a cultural-centric narrative for the fotonovela was largely based on constructs contained in the model of culture-centric narratives from Larkey and Hecht, who proposed that factors such as culturally realistic characters and storylines promote audience engagement and ultimately impact message outcomes (Larkey & Hecht, 2010). Garro (1994) already showed that shared cultural models between participants who were asked to recall their experiences with an illness (in this case temporomandibular joint, TMJ) played an important part in better understanding participants' stories about this disease. The model of culture-centric narratives was operationalized as follows. All characters were played by Colored actors, most of the scenes in the fotonovela were shot on location in a typical Colored community, and references to sport teams typically followed by the majority of the target group were included. The fotonovela was developed in Afrikaans, the dominant language of Colored people in the Western Cape. The script was written similar to how the majority of Colored people would converse in a typical informal conversation so that it would culturally resonate with the target audience. For detailed information of how the materials used in this study were developed, see Davis (2017, pp. 76–149).

To be able to compare the fotonovela with an existing traditional brochure about crystal meth, two traditional crystal meth documents were sourced. Neither of these brochures, however, was deemed suitable for this study. For this reason, we decided to develop a traditional kind of brochure ourselves: *Tik: Wat is die feite?* (*Crystal meth—What are the facts?*) for the purpose of this study. The brochure contained information that was highly comparable to the information in the fotonovela; much effort was made to give it a professional look and feel.

Participants

Participants ($N = 303$) were Colored people from previously disadvantaged communities in the rural Western Cape towns of Bredasdorp and Swellendam as well as the farming regions of Ceres and Prince Alfred

Hamlet. The town of Calvinia, though situated in the Northern Cape province, was also included as it borders the Western Cape. Recruitment and data collection took place at participants' places of work in Bredasdorp and Swellendam (both comprising municipal workers) and in Ceres and Prince Alfred Hamlet (both comprising farm workers). Any community member could attend an open town hall gathering in Calvinia where data collection took place. Community workers in these areas helped with the recruitment and assisted with data collection. Participants were offered refreshments at some sites, while at other sites lucky draws were held to show appreciation for participation. No other incentives were offered. In total, 52.5% of the participants who filled in their gender were male ($n = 157$) and 47.5% were female ($n = 142$), with 4 missing values. The average age of the participants who filled in their age was 30.38 years ($SD = 14.07$); 34.6% of these participants were 19 years or younger ($n = 103$), 26.2% were aged 20–34 years ($n = 78$), and 39.3% were 35 years or older ($n = 117$), with 5 missing values. Most of the participants who filled in their level of education were either still at school (34.9%; $n = 98$) or did not have a Grade 10 qualification (29.5%; $n = 83$), while 13.5% ($n = 38$) of the participants had a Grade 10 or 11 qualification, 15.3% ($n = 43$) had a Grade 12 qualification, and 6.7% ($n = 19$) had a higher qualification than this, with 22 missing values. A higher percentage of males (42.9%; $n = 64$) than females (26.8%; $n = 35$) had a Grade 10 or higher qualification. The majority of the participants who were still at school were 19 years or younger (94.9%; $n = 93$); most participants who had left school before obtaining a Grade 10 qualification were in the 35 years or older group (71.1%; $n = 59$), while most of the participants who had a Grade 10 or higher qualification were in the 20–34 age group (51.0%; $n = 51$).

Measures

Knowledge level

Knowledge level related to crystal meth was measured with seven statements that could be either true or false. The statements were chosen to create a relatively even representation of the short- and long-term physical and psychological effects related to crystal meth use. Factual information about crystal meth was sourced from the South African National Council on Alcoholism and Drug Dependence. Each answer was scored as 1 = correct or 0 = incorrect (*no answer* was also regarded as incorrect). True statements were the following: "1. Crystal meth causes you to look older than what you really are," "2. Crystal meth makes you aggressive," "4. Crystal meth causes you to do irresponsible things," "5. Crystal meth gives you bad teeth," and "7. Crystal meth causes you to imagine different things." False

statements were "3. Crystal meth causes you to think people are friendly and kind towards you" (the correct answer is crystal meth causes you to think people are antagonistic towards you) and "6. Crystal meth decreases your sex drive" (the correct answer is crystal meth causes an increase in your sex drive). The total score for correct answers could vary between 0 and 7. All answers could be found in both the fotonovela and the traditional brochure.

Attitudes and intentions

Although for statistical reasons using more items per variable would have been preferable, it was decided to measure outcome variables with single items only, not to over burden participants who were not used to filling in questionnaires.

Both Attitude 1 and Intention 1 were modeled on items from the often-used Risk Behavior Diagnosis (RBD) scale (Witte et al., 1996; Witte et al, 2001). Attitude 1 toward the recommended behavioral response was measured using a 5-point scale (1 = *do not feel strongly about at all* and 5 = *definitely feel strongly about*): "To never use crystal meth, is something I … ". Intention 1 toward the recommended behavioral response was measured using a 5-point scale (1 = *strongly disagree* and 5 = *strongly agree*): "I plan to not use crystal meth in the future."

Two more outcome variables were measured: attitude and intention to speak to a friend or family member who is involved with crystal meth about their drug habit. As argued in Lubinga, Maes, and Jansen (2016), for example, the efficacy of mass media health communication campaigns can be enhanced by conversations about the core messages of these campaigns (see also Donné, Jansen, & Hoeks, 2017; Duggan, 2006; Southwell & Yzer, 2007). Such conversations about health messages may lead to changes in relevant beliefs (Hwang, 2012), attitudes (Hendriks, Van den Putte, & De Bruijn, 2014), social norms (Chatterjee, Bhanot, Frank, Murphy, & Power, 2009), and behavioral intentions (Van den Putte, Yzer, Southwell, De Bruijn, & Willemsen, 2011), thus fostering behavior change. From a meta-analysis of 28 studies into the effects of campaign-generated conversations, Jeong and Bae (2017) conclude that such conversations indeed have a positive, albeit small, effect on inducing campaign-targeted outcomes (p. 14).

Using a 5-point scale (1 = *do not feel strongly about at all* and 5 = *definitely feel strongly about*), one researcher-designed item was used to measure Attitude 2: "To speak to a family member or friend who is involved with crystal meth about their drug habit, is something I … ". Also using a 5-point scale (1 = *strongly disagree* and 5 = *strongly agree*), one researcher-designed item was used to measure Intention 2: "I plan to soon

speak to a family member or friend who is involved with crystal meth about their drug habit."

Preference

For measuring *health message preference*, one question was used: "Do you prefer to read a message about crystal meth in the form of a booklet such as *Spyt kom te laat* (*Regret comes too late*), or rather a brochure like *Tik: Wat is die feite?* (*Crystal meth—What are the facts?*). Participants could also respond by being neutral. After having read the health message from their own group and completing a related questionnaire, participants in the fotonovela group and those in the traditional brochure group were given the health message to read from the group they did not form part of in order to complete this question.

Procedure

At the various data collection sites, it was explained to participants what the study was about. After that, written informed consent was obtained. Participants were then randomly divided into three groups (fotonovela group: $n = 110$; traditional brochure group: $n = 107$; control group: $n = 86$). Each participant was given an envelope containing either a fotonovela and accompanying questionnaire, a traditional brochure and accompanying questionnaire, or a questionnaire only (control group). All questions were presented in Afrikaans. All three groups answered questions about the variables *attitudes* and *intentions*, as well as *knowledge level related to crystal meth*. In addition, the fotonovela group and the group who read a traditional brochure on crystal meth answered the question about *health message preference*. Participants who received either the fotonovela or traditional brochure were asked to take their time to read the health document first. These participants were instructed to return the health document to the researchers or field workers before completing the questionnaire. After this, they were asked to read the health message in the other format and to answer the question about which format they preferred. Participants in the control group were also afforded the opportunity to read the fotonovela and the traditional brochure if they wished to do so, although this did not form part of the study.

Statistical analysis

To identify any existing relationships between condition (fotonovela group; traditional brochure group; control group) and demographic variables

(gender, education level, and age group), chi-square analyses were conducted (all these variables were categorical; see Field, 2009). No significant relationships were found between condition, on the one hand, and gender ($\chi^2(2) = 5.63$; $p = .06$), education level ($\chi^2(8) = 12.76$; $p = .12$), and age group ($\chi^2(4) = 5.91$; $p = .21$), on the other. Statistical procedures for the main study included conducting univariate analyses (ANOVAs), a multivariate analysis (MANOVA), and chi-square analyses (see the following).

Results

Knowledge level

An ANOVA was conducted to test the effect of condition on knowledge level. ANOVA was deemed the most fitting test to use as we wanted to compare several mean scores (for conditions) involving one dependent variable (knowledge level) (Field, 2009). No effect of condition on knowledge level was found [$F(2,300) = 1.42$, $p = .24$, $\eta^2 = .003$]. Closer inspection of the percentages of correct scores for each of the individual knowledge statements revealed a possible ceiling effect for Statements 1, 2, 4, 5, and 7. In none of the conditions were knowledge scores for any of these questions less than 90%. It was therefore decided to focus on the two other statements (Statements 3 and 6) and to create a new knowledge variable, *knowledge level* (S3 plus S6).

A second ANOVA was conducted with condition as the independent variable and knowledge level (S3 plus S6) as the dependent variable (scale 0 to 2). A significant effect was found, $F(2,300) = 3.29$, $p = .04$, $\eta^2 = .015$. Post hoc analysis (Least Significant Difference [LSD]) showed that both in the fotonovela condition ($M = 1.03$; $SD = 0.80$) and in the traditional brochure condition ($M = 1.07$; $SD = 0.76$), mean scores were significantly higher compared to the control condition ($M = 0.80$; $SD = 0.77$). No significant difference was found between the fotonovela condition and the traditional brochure condition.

Attitudes and intentions

A MANOVA was conducted to test the effect of condition on outcomes (Attitude 1, Attitude 2, Intention 1, and Intention 2). MANOVA was considered a suitable test to employ as we wanted to compare several mean scores (for conditions) involving more than one dependent variable (outcomes) (Field, 2009). A statistically significant multivariate effect was found, $F(8,528) = 2.37$, $p = .02$, $\eta^2 = .035$. Follow-up ANOVAs only revealed a significant effect of condition on Intention 2. Post hoc analysis (LSD) showed that mean scores for Intention 2 were significantly higher in the fotonovela condition ($M = 4.24$; $SD = 0.76$) compared to the traditional

Table 1. Means and Standard Deviations for Attitudes and Intentions; All Variables Measured on a 5-Point Scale.

	Fotonovela ($n = 103$)	Traditional brochure ($n = 91$)	Control group ($n = 76$)
Attitude 1—toward never using crystal meth	4.27 (1.29)	4.03 (1.52)	4.34 (1.08)
Attitude 2—toward speaking to a family member or friend who is involved with crystal meth about their drug habit	3.92 (1.31)	3.98 (1.16)	4.21 (1.05)
Intention 1—to not use crystal meth in the future	4.28 (1.27)	4.11 (1.39)	4.17 (1.37)
Intention 2—to speak to a family member or friend who is involved with crystal meth about their drug habit	4.24 (0.76)	3.75 (1.26)	3.99 (1.16)

brochure condition ($M = 3.75$; $SD = 1.26$). There was no significant difference between the fotonovela condition or the traditional brochure condition on the one hand and the control condition ($M = 3.99$; $SD = 1.16$) on the other hand. Table 1 shows the means and standard deviations for attitudes and intentions.

Preference

The participants ($n = 217$) who were part of either the fotonovela condition or the traditional brochure condition completed the question regarding health message preference. In total, 120 participants (60.6%) preferred the fotonovela when reading a health message about crystal meth, while 62 participants (31.3%) preferred the traditional brochure; 16 participants (8.1%) were undecided. There were 19 missing responses. For the participants who did not answer undecidedly ($n = 182$), a binomial test showed that the proportion of participants in favor of the fotonovela (65.9%; $n = 120$) was significantly higher than the expected .50, $p < .010$.

In addition, chi-squares were calculated to find possible associations between health message preference, on the one hand, and condition and gender on the other hand (all these variables were categorical, see Field, 2009). No significant relationships were found: health message preference and condition: χ^2 (2) = 2.80, p = .25; health message preference and gender: χ^2 (2) = 3.54, p = .17.

To investigate whether health message preference was related to education level or age group, Fishers' exact test was performed: In these cases the statistical condition for a chi-quare test that the expected frequencies in no more than 20% of the cells should be below 5 was not satisfied (Field, 2009, pp. 690–691). A significant relationship was found between health message preference and education level (p = .01). For the participants who did not answer undecidedly ($n = 171$), binomial tests revealed that participants who were still at school ($n = 52$), participants who had left school before Grade 10 ($n = 53$), and participants who had completed Grade 10 or

Table 2. Health Message Preference over Education Level (for Participants Who Had Read Either the Fotonovela or the Traditional Brochure First).

	Still at school ($n = 57$)	Left school before Grade 10 ($n = 56$)	Grade 10 or 11 ($n = 31$)	Grade 12 ($n = 29$)	Higher qualification ($n = 13$)	Total ($n = 186$)
Fotonovela	59.6% ($n = 34$)	71.4% ($n = 40$)	64.5% ($n = 20$)	41.4% ($n = 12$)	38.5% ($n = 5$)	59.7% ($n = 111$)
Traditional brochure	31.6% ($n = 18$)	23.2% ($n = 13$)	22.6% ($n = 7$)	58.6% ($n = 17$)	38.5% ($n = 5$)	32.3% ($n = 60$)
I am neutral	8.8% ($n = 5$)	5.4% ($n = 3$)	12.9% ($n = 4$)	0.0% ($n = 0$)	23.1% ($n = 3$)	8.1% ($n = 15$)

Table 3. Health Message Preference over Age Group (for Participants Who Had Read Either the Fotonovela or the Traditional Brochure First).

	$\leq$19 years ($n = 61$)	20–34 years ($n = 61$)	$\geq$35 years ($n = 76$)	Total ($n = 198$)
Fotonovela	60.7% ($n = 37$)	44.3% ($n = 27$)	73.7% ($n = 56$)	60.6% ($n = 120$)
Traditional brochure	29.5% ($n = 18$)	44.3% ($n = 27$)	22.4% ($n = 17$)	31.3% ($n = 62$)
I am neutral	9.8% ($n = 6$)	11.5% ($n = 7$)	3.9% ($n = 3$)	8.1% ($n = 16$)

11 ($n = 27$) preferred the fotonovela over the traditional brochure (binomial tests: $p = .04$, $p < .001$, $p = .02$, respectively). Participants who had completed Grade 12 ($n = 29$) preferred the traditional brochure over the fotonovela. However, a binomial test indicated that in this group the proportion of participants in favor of the traditional brochure (58.6%) did not differ significantly from the expected .50: $p = .46$. In the group of participants with a higher level of education ($n = 10$), there proved to be no difference in preference for the two documents at all; see Table 2.

A significant relationship was also found between health message preference and age group ($p = .01$). For the participants who did not answer undecidedly ($n = 182$), binomial tests revealed that in the 20–34 age group ($n = 54$) there was no difference at all in preference for the fotonovela or the traditional brochure. In the other two age groups the fotonovela was preferred over the traditional brochure (binomial test in the age group below 20 ($n = 55$): $p = .01$; in the age group over 34 ($n = 73$): $p < .001$); see Table 3.

Discussion

This study evaluated the effects of a health-related fotonovela about crystal meth, *Spyt kom te laat*, among "Colored" people in the Western Cape province of SA. Colored people mostly live in previously disadvantaged areas of the province (a remainder of apartheid). Crystal meth use is most common in the Westen Cape among this ethnic group, and it is viewed as a major social problem. The evaluation entailed an RCT that compared the effects of three different message conditions (a group who read the fotonovela, a group who read a traditional brochure, and a no-message control group) in terms of participants' knowledge level, attitudes, and intentions in a between-groups experimental design. The fotonovela was also evaluated by determining whether people would prefer the fotonovela about

crystal meth or a more traditional type of information brochure about this topic.

Comparisons in terms of participants' knowledge level did not yield conclusive evidence for one of the two health documents being superior to the other. Knowledge scores in the fotonovela group were not significantly higher than in the traditional brochure group. This result was different from the results found by Koops van 't Jagt et al. (2017) and Unger et al. (2013), who also compared a fotonovela to a traditional brochure. Both studies found a significant difference in knowledge level in favor of the fotonovela. A possible explanation may be that in the current study, perhaps even more than in the earlier studies, the fotonovela and the traditional brochure were comparable, not only in content but also in quality. Both the fotonovela and the traditional health brochure that was developed for this study received very positive feedback from participants in a related, explorative study.[2] The comparable content and the high quality of the traditional brochure that was created so as to make it a serious competitor of the fotonovela may explain why in the present study this document also had a significant positive effect on knowledge level when compared to the control condition. The finding that the fotonovela, just like the traditional brochure, outperformed the control condition here was not surprising in view of similar outcomes reported in previous fotonovela studies (Hernandez & Organista, 2013; James et al., 2005; Koops van 't Jagt et al., 2017).

In the current study, scores for attitudes and intentions after reading either one of the two health documents did not differ significantly from scores in the control condition. Comparing attitudes and intentions after reading one of the documents also did not yield conclusive evidence in terms of either one being superior to the other. One significant difference was found, however. Intention toward speaking to a family member or friend who is involved with crystal meth about their drug habit was significantly higher in the fotonovela condition than in the traditional brochure condition. This finding is different from outcomes of earlier studies into fotonovelas. In none of these studies did the fotonovela outperform a traditional brochure regarding an effect on intentions (see Koops van 't Jagt et al., 2017; Unger et al., 2013).

The lack of conclusive evidence for either health document being superior to the other when comparing attitudes and intentions may partly be explained by the high quality of both health documents. Another possible explanation pertains to the specific issues probed, namely, using/not using crystal meth and speaking/not speaking to a family member or friend who is involved with this substance about their drug habit. Participants may have wished to give answers deemed as socially acceptable, resulting in relatively similar mean scores (in this case high) for behavioral attitudes

and behavioral intentions across all three conditions. Subsequently, only one significant difference was found.

The fotonovela was superior to the competing traditional brochure in terms of health message preference. Almost twice as many participants preferred reading health information about crystal meth in fotonovela format compared to the traditional brochure, and this preference was independent from the order in which the documents were presented to participants. A possible explanation for this clear preference might be the novelty factor of fotonovelas and this fotonovela's attractiveness at first sight, which was also observed in the explorative study in a South African waiting room referred to in Note 2.

No significant association was found between health message preference and gender. For educational level, however, such an association was found. Participants who were still at school, participants who had left school before Grade 10, and participants who had completed Grade 10 or 11 significantly preferred to read the fotonovela. Only in the groups of participants who had completed Grade 12 or had a higher qualification, no statistically significant differences in preference were found. There also proved to be an association between health message preference and age group. Both in the younger age group (19 years or younger) and in the older age group (35 and older), the fotonovela was significantly preferred; the 20–34 age group did not prefer one document over the other. A possible explanation here may perhaps relate to level of literacy: This group included a relatively high proportion of participants with a Grade 12 or higher qualification (48.7%).

The current study was not without its limitations. First, budget constraints did not allow for either the fotonovela or the traditional brochure to be printed in full color. Doing so might have made both health documents more persuasive. Second, the literacy level of participants was not assessed prior to the study. Some participants may not have fully understood all questions given the generally low level of literacy among the study's target population, although all questions were pretested for understanding among the target group. Furthermore, it could not be decided whether the differing preference in one of the age groups could be associated with a divergent mean level of literacy. Third, some of the measures had psychometric limitations (single-item measurements, ceiling effects). Conducting preliminary psychometric research (e.g., by adding a full-blown pilot study of the questionnaire with the target population prior to the fotonovela evaluation study to develop and improve the measures) would perhaps have been a better approach. However, this was not possible as the researchers had to deal with time and financial constraints to conduct the overall study. Last, the behavioral attitudes and behavioral intentions in the study were captured immediately after exposure to the message. A

follow-up session to measure long-term effects, also on actual behavior, would have been a more ideal scenario.

As mentioned, the cultural-centric narrative developed for the fotonovela was largely based on related constructs contained in the model of culture-centric narratives. In general, there is a lack of theories guiding our understanding of how cultural elements may influence health behavior change, which "limits our ability to more rigorously assess cultural narratives" (Hernandez & Organista, 2013, p. 233; also see Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008). As a result, these authors argue, this avenue of research continues to be understudied. As far as could be ascertained, there is also a lack of research that has empirically tested the model of culture-centric narratives. Future researchers can therefore consider developing and testing theories to help guide our understanding of how cultural elements included in narratives, such as the elements included in the narrative used in the current study, may impact message outcomes. A further avenue to explore could include the utilization of so-called webnovelas, or digital versions of the fotonovela, for example by disseminating information about crystal meth in fotonovela format using the Internet, smart device applications, or social media platforms (see Boyte et al., 2014). It also seems worthwhile for future researchers to further investigate whether the general preference found for the fotonovela evaluated in this study would indeed play out in, for example, a health care setting where people are exposed to health information about crystal meth presented in fotonovela format amidst other health documents about this issue. Put simply, would people in their daily life actually prefer to read about crystal meth in fotonovela format if presented with this option? Findings from the explorative study in a South African waiting room referenced earlier suggest that people seem to prefer a fotonovela. For a similar study in the Netherlands, see Koops van 't Jagt (2018, pp. 190–208).

In summary, two main findings from the study presented here add to the potential shown by fotonovelas as an effective health communication tool that is also shown in earlier research. The first main finding was the advantage found for the fotonovela, albeit small, over the traditional brochure in terms of conversation prompting (intention to speak about crystal meth). The fotonovela's ability to boost the chances of people starting conversations about crystal meth is an encouraging result. As discussed earlier, empirical studies support the link between personal discussions of health messages after campaign exposures with changes in motivation and behavior. In this way then, presenting health messages about crystal meth in fotonovela format can possibly help to indirectly affect related behavior change.

The second main finding was the clear preference found for the fotonovela over the traditional brochure as a health communication tool. Especially readers with relatively low levels of education clearly preferred the fotonovela,

which might be a good reason for using fotonovelas when trying to reach this target group. For people with relatively high levels of education, no difference in preference was found between the fotonovela and the traditional brochure, which suggests that this target group might not feel hindered when fotonovelas would be used in health communication.

These outcomes are a promising indication that especially people with relatively low levels of education are more likely to notice health-related documents if presented as fotonovelas. As Koops van 't Jagt (2018) note, increasing the chances of the intended target group noticing the health message is, among others, a prerequisite for effective health communication messages (p. 15). Given our results, employing a fotonovela-based commmunication approach to disseminate health information about this drug may be a viable option to consider. In this sense, the fotonovela can, as Unger et al. (2013) put it, "act as a door opener for attitudinal and behavioral change" (p. 405).

To the best of our knowledge, the research presented here is the first quantitative health-related fotonovela study to combine the following elements: (a) using a three-armed RCT to compare the effects of a fotonovela to another health document format and a no-message control group and (b) gathering evidence about preferences of people in different groups for reading a fotonovela over a comparable health document. As a result, this study showed how E-E as an alternative health communication strategy may be utilized to help address the crystal meth crisis facing many Colored communities in the Western Cape province of SA. Our study also provided more insight into ways to develop and test information formats about health-threatening topics that are attractive enough for the target group to really start—and keep—reading, and to talk about with friends and family members.

Notes

1. South Africa has no regular representative surveys on substance use, making it difficult to describe trends and changes over time (Pasche & Myers, 2012, p. 339). No statistical records are kept of the number of crystal meth users in the Western Cape (J. Erasmus, Alcohol Tobacco and Other Drug Research Unit, South African Medical Research Council, personal communication, March 14, 2018).
2. In this small-scale study, an indication of actual preference for the fotonovela or the traditional brochure that was also used in the current study was explored in the waiting room of a primary health care clinic in Prince Alfred Hamlet by comparing the numbers of documents taken home by patients. Results showed that patients took home the fotonovela more frequently than the traditional brochure (for detailed information, see Davis, 2017, pp. 185–201).

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