

Preventing HIV/Aids? A Realistic Evaluation of the CHAMP Prevention Programme

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This research was conducted at Ndlovu Care Group, a non-profit organisation which operates in underserved in rural areas in South Africa since 1994.

The study was conducted under the supervision of prof. dr. G. C. M. Knijn,¹ M. Slabbert,² and dr. S. Aitken.²

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Abstract

Objective: This study aimed to evaluate the CHAMP Prevention Programme; to assess whether and why it is effective in reducing risk-taking sexual behaviour. This study also assessed whether this behaviour is explained by individuals' social identity. Realistic Evaluation theory was used to identify the causal pathways that generate risk-taking sexual behaviour and to identify the manner in which the CHAMP Prevention Programme prevents risk-taking sexual behaviour from occurring. Identity-based motivation theory was adopted, which predicts that behaviour can be explained by social identity.

Methods: This study employed a pre-test post-test control group design among 668 rural black South African learners ($M_{\text{age}} = 15.69$ years, age range: 12 - 25 years) to assess the effectiveness of the CHAMP Prevention Programme in reducing risk-taking sexual behaviour. The main analysis used repeated measures multivariate analysis of covariance with safe sex behaviour and risk-taking sexual behaviour as within-subjects measures (i.e. dependent variables), intervention group/control group, and social identity as between-subjects factors (i.e. independent variables), and mechanisms as covariates.

Results: The analysis of change in safe sex behaviour and risk-taking sexual behaviour between the intervention group and the control group showed that the CHAMP Prevention Programme increases safe sex behaviour among learners in the programme. The programme, however, did not change risk-taking sexual behaviour among these learners. Furthermore, the analysis which included the change in learners' choices and capacities that generate risk-taking sexual behaviour as covariates, showed several significant changes in safe sex behaviour and risk-taking sexual behaviour. Finally, the analysis of risk-taking behaviour among social identities showed no significant difference on risk-taking or risk averse behaviour, but indicated a significant difference in learners' ability to change sexual practices among different social identities.

Conclusions: The CHAMP Prevention Programme was not effective in reducing risk-taking sexual behaviour among learners, but effectively reduced risk-taking sexual behaviour for learners with certain social identities. Future HIV prevention programs aiming at behavioural change should take social identity into account as an explanatory factor.

Keywords: *CHAMP Prevention Programme, Realistic Evaluation, Identity-based motivation, HIV/Aids, South Africa*

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Preventing HIV/AIDS? A Realistic Evaluation of the Intervention of the CHAMP Prevention Programme

In 2014, the republic of South Africa (SA) continues to struggle with a persisting HIV epidemic (Department of Health, 2012). The human immunodeficiency virus (HIV) is a sexually transmitted infection (STI) which can result in acquired immunodeficiency syndrome (AIDS) and eventually death. The late stages of HIV are often referred to as HIV/AIDS. The persistence of HIV in SA is constituted by three processes; non-sexual HIV transmission, sexual HIV transmission, and the high HIV prevalence. HIV is transmitted sexually by behaviour which can be classified as risky, and increases the chance on HIV infection during sexual encounters with HIV positive individuals. The persistence of HIV in SA, however, cannot be ascribed solely to exceptional risk-taking sexual behaviour (RSB) (Pettifor et al., 2010). Rather, the high HIV prevalence together with ordinary RSB is the driver behind the HIV epidemic in SA.

To reduce the prevalence of HIV both the SA government and non-governmental organisations (NGO's) developed social programmes that share the objective of preventing HIV transmission. However, it must be acknowledged that the SA government relies largely on non-governmental non-profit organisations to deliver social services to poor and vulnerable persons (Knijn & Patel, 2012). Intervention programmes with the objective to prevent HIV transmission generally adopt a strategy which consists of a change of two connected factors (i.e. a change in knowledge and a change in sexual behaviour). The success of prevention of HIV transmission is conditional on the performance of safe sex behaviour. Safe sex behaviour is both mitigated by knowledge of HIV and knowledge of HIV prevention and the idea that it is important to act on this knowledge (Fishbein & Yzer, 2003).

Reviewing the SA HIV prevalence rates, approximately 5.000.000 HIV infections in 2004 and approximately 6.100.000 HIV infections in 2014 (UNAids, 2014), it is clear that many of the social programmes that aimed to prevent HIV transmission did not have a substantial effect on the prevalence of HIV. Moreover, several studies suggest that most of them only had little or no effect on the prevalence of HIV (Harrison et al., 2010; Jewkes et al., 2008). Harrison et al. (2010) explain the ineffectiveness of these programmes as a consequence of a lack of attention to structural and institutional contexts of HIV risk factors, which comprises risk factors and social norms. Therefore, these authors suggest an approach which moves beyond individual factors to address social and structural factors underlying HIV risk. In other words, they suggest an approach which incorporates factors on both the micro and the macro level and focus on causal pathways to explain HIV risk.

The Ndlovu Care Group (NCG) is a non-governmental, non-profit organisation, which operates in underserved rural areas in SA since 1994. NCG endeavours to reduce HIV risk through reduction of RSB as part of its community-based intervention programme that promotes community health awareness, mobilisation & prevention (CHAMP) programme principles (Tempelman & Tempelman, 2006; Rakolote & Slabbert, 2010). At present, the intervention of the CHAMP Prevention Programme has not been evaluated and it is not unequivocally clear to which extent its goals are achieved.

The present study evaluates whether the intervention of NCG's CHAMP Prevention Programme reduced HIV risks by reducing RSB. Following Harrison et al. (2010) this study focused on causal pathways that explain HIV risk. To accommodate this focus on causal pathways, this study adopts Pawson and Tilley's (1995; 1997) realistic evaluation (RE). Pivotal to RE is a conception of causality, which does not merely maintain that outcomes can be explained by the constant conjunction of phenomena, but rather that outcomes can be explained as generated by mechanisms in specific contexts. When outcomes are considered undesirable, such as RSB against the background of high HIV prevalence, they can become objects of social programmes. These programmes target the mechanisms that generated these outcomes with blocking mechanisms to prevent them from occurring.

This study was conducted at six schools in the Moutse area, a rural area in the Limpopo province in SA between March and May 2014. The research design of the present study was a pre-test post-test control group design. The convenience sample consisted of 668 learners from grades 8 - 10, age 12 - 25. A quantitative approach was adopted to examine whether there was a significant difference in RSB before and after the intervention and which causal pathways were responsible.

Research theory

Realistic evaluation

Realistic evaluation (RE) was developed by Pawson & Tilley (1995; 1997) as a critique on and an alternative to existing evaluation methodology. Evaluation research at that point was characterised by four approaches (i.e. (quasi-) experimental evaluation, pragmatic evaluation, naturalistic evaluation, and pluralist evaluation). Dissatisfied with these approaches, Pawson & Tilley developed an approach that is rooted in European traditions in epistemology, ontology, and social theory.

Pivotal to RE is a conception of causality that has its origin in realist philosophy (Pawson & Tilley, 1997). The RE framework involves a distinction between successionist and generative theories of causation. Successionist theories maintain that causation is unobservable (i.e. causality is a modification by the human mind) while real inferences can only be made on the basis of observable data. Therefore, causation can only be conceptualised as the constant conjunction of phenomena (Pawson & Tilley, 1997). Generative theories of causation, however, maintain that causality is observable. According to Pawson and Tilley, causality is not merely the constant conjunction of phenomena, rather causality is conceptualised as the generation of outcomes through the interaction between mechanisms and contexts. This process is schematically represented in figure 1.

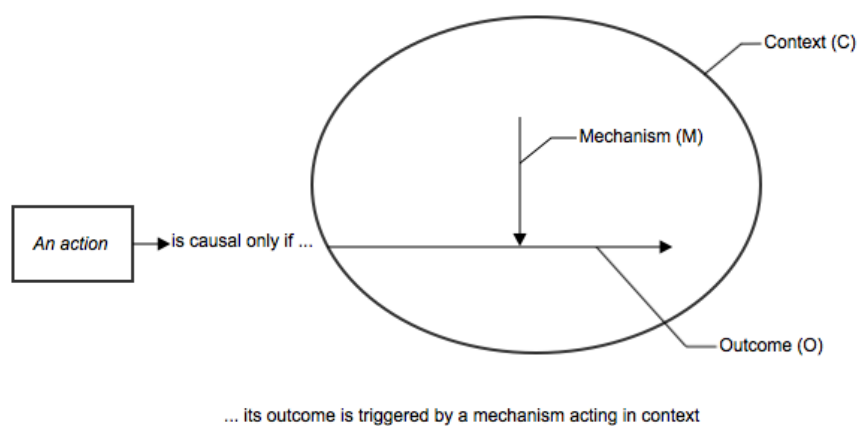


Figure 1. Model of generative causality. Adapted from "Realistic Evaluation" by R. Pawson & N. Tilley, 1997, p. 65. Copyright 1997 by SAGE Publications Ltd.

Mechanisms are conceptualised as individual capacities and choices which lead to regular patterns of social behaviour. The concept of mechanism does not only involve capacities and choices on the micro level, but also involves capacities and choices on the macro level. In this manner, RE is able to include both psychological factors and sociological factors that generate an outcome in a specific context. Context refers to the spatial and institutional locations of social situations together with the norms, values and interrelationships found in them. According to Pawson & Tilley (1997), the operation of mechanisms is contingent on context (i.e. individuals act on contextual factors). Together, mechanisms and contexts generate regularities or outcomes. This process can be represented as the following equation:

$$\text{Mechanism} + \text{Context} = \text{Outcome}$$

This equation can be conceived of as a proposition about why certain individuals perform certain behaviour. Propositions which are characterised by this syntax are called CMO configurations (Pawson & Tilley, 1995).

Outcomes that are considered undesirable can become objects of social programmes. These programmes aim to prevent these outcomes from occurring using blocking mechanisms. Blocking mechanisms are programme mechanisms that target the mechanisms that generated the initial outcome in order to prevent this outcome from occurring.

Figure 2 is a representation of an intervention that was effective; its blocking mechanism effectively targeted the mechanism that generated the undesirable outcome. This model shows that a mechanism (M_1) together with a specific context (C_1) generated a specific outcome or regularity (R_1) before the intervention (T_1). Furthermore, it shows that a blocking mechanism (M_2) was able to prevent the generation of regularity (R_1) after the intervention (T_2). At T_2 the blocking mechanism (M_2) together with context (C_1) generated a different outcome or regularity (R_2). The programme outcome (O) was the difference between the regularity at (T_1) and (T_2), the difference between (R_1) and (R_2). In this model, the intervention was able to prevent the initial outcome from occurring and can thus be considered effective.

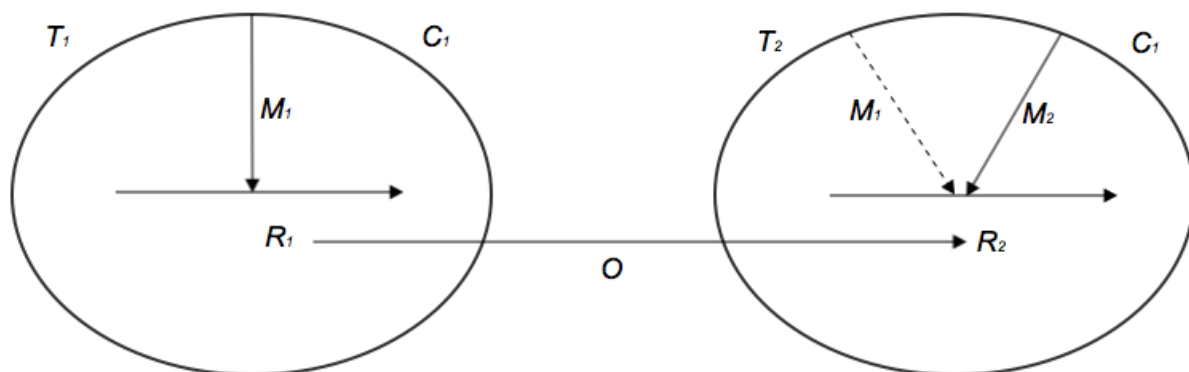


Figure 2. Model of blocking mechanism preventing the initial outcome from occurring. Adapted from “Realistic Evaluation” by R. Pawson & N. Tilley, 1997, p. 74. Copyright 1997 by SAGE Publications Ltd.

Figure 3 is a representation of an intervention that was ineffective; its blocking mechanism did not target the mechanism that generated the undesirable outcome. This model shows that a mechanism (M_1) together with a specific context (C_1) generated a specific outcome or regularity (R_1) before the intervention (T_1). Furthermore, it shows that a blocking mechanism (M_2) was unable to prevent the generation of regularity (R_1) after the intervention (T_2). Because blocking mechanism (M_2) was unable to block mechanism (M_1) effectively, regularity (R_1) and regularity (R_2) were fairly similar. The programme outcome (O) was the difference between the regularity at T_1 and T_2 , the difference between (R_1) and (R_2). In this model, the intervention was unable to prevent the initial outcome from occurring and can thus be considered ineffective.

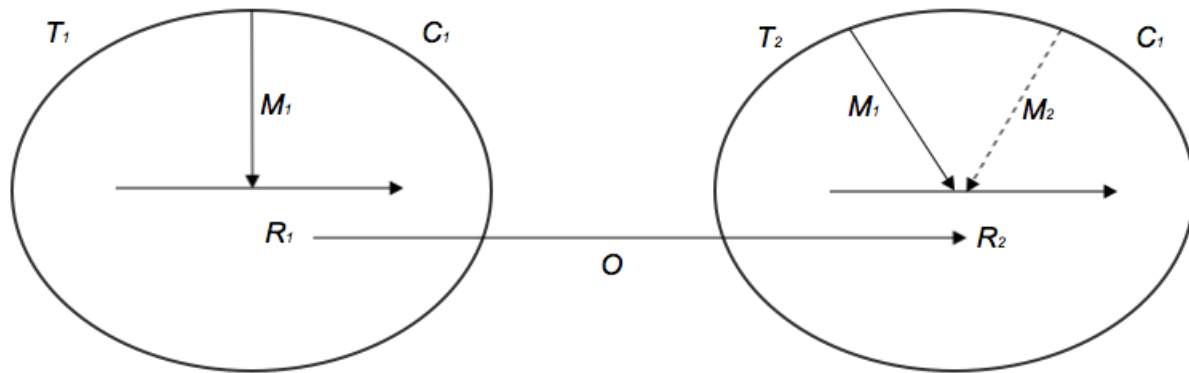


Figure 3. Model of blocking mechanism that does not prevent the initial outcome from occurring. Adapted from “Realistic Evaluation” by R. Pawson & N. Tilley, 1997, p. 76. Copyright 1997 by SAGE Publications Ltd.

The objective of this study was to investigate whether the intervention of the CHAMP Prevention Programme reduces risk-taking sexual behaviour (RSB) (O). To establish this outcome, it was necessary to compare the regularities (R_{1n}) and (R_{2n}). Therefore, it was necessary to first establish which mechanisms (M_{1n}) and contexts (C_n) generate RSB and which blocking mechanisms (M_{2n}) in the CHAMP Prevention Programme might reduce RSB.

Risk-taking sexual behaviour

Risk-taking sexual behaviour (RSB) was conceptualised as a complex concept that covers the infrequent performance of a range of actions with a high risk of HIV transmission. Although risk-taking behaviour might imply an intentional process, and thus implies that the individual who is performing RSB possesses knowledge about HIV and HIV prevention, it is important to note that this study adopts a broader conception of the performance of RSB and includes behaviour which can be classified as risky as the result of a lack of knowledge about HIV and HIV prevention. Following Pawson & Tilley (1997) the performance of RSB is conceptualised as an outcome generated by mechanisms in a specific contexts. Theoretically, this conception allows the same outcomes to be generated by different CMO-configurations.

Contexts

Contexts, conceptualised as the spatial and institutional locations of social situations together with the norms values and interrelationships found in them, can either be physical or psychological. The former are further conceptualised as the social context, the latter as psychological contexts. Both can be relevant in explaining the performance of RSB.

Social context

The social context of this study is the Moutse township in the Elias Motsoaledi municipality, a rural area in the Limpopo province, SA. The Moutse township used to be an area designated for black people during Apartheid and still has an all black population today. Poverty, limited infrastructure, and unemployment are common in the township

(Vermeer & Tempelman, 2006). Several studies indicate that these characteristics are indicators for the performance of RSB and, consequently, HIV transmission (Jewkes, 2009; Jewkes et al., 2011; Lindegger & Quayle, 2009; Pettifor et al., 2010; Shisan, Zungu, & Pezi, 2009).

Psychological context

The psychological contexts which generate the performance of RSB comprises of their institutional setting and the norms and values found within them (Pawson & Tilley, 1997). Identity-based motivation (IBM) theory conceives of behaviour in a similar manner. According to IBM theory, behaviour can be conceived of as motivated action that is dynamically constructed in context (Oyserman & Destin, 2010; Oyserman, Fryberg & Yoder, 2007). Motivation is conceived of as constituted by social identity. The motivational process that connects behaviour to social identity is conceived of as a process that involves three postulates; action readiness, dynamic construction, and interpretation of difficulty. First, action readiness is the postulate that individuals' interpretations of reality and their readiness to act is dependent on their identity. In other words, if individuals interpret social and physical worlds as congruent with their identity, it will cue their behaviour (Elmore & Oyserman, 2012; Oyserman & Destin, 2010). Secondly, dynamic construction is the postulate that individuals' social identities are dependent on context. It assumes that the identity that comes to mind and what this identity is taken to mean is dynamically constructed in a specific context (Elmore & Oyserman, 2012; Oyserman & Destin, 2010). Finally, interpretation of difficulty is the postulate that individual's identities determine whether specific behaviour is meaningful and important or not. Individuals interpret identity-congruent behaviour as meaningful and important and identity-incongruent behaviour as pointless. Therefore, individuals tend to prefer identity-congruent behaviour to identity-incongruent behaviour (Elmore & Oyserman, 2012; Oyserman & Destin, 2010).

The development of social identity is a multifaceted process. It does not only involve the present self, but also past selves and future or possible selves. Past selves constitute a frame of reference against which present behaviour is measured. It comprises subjective assessments of personal characteristics, strengths, and weaknesses. Possible selves can constitute the motivational process for present behaviour. They are working theories of personal development based on subjective assessments as personal characteristics, strengths and weaknesses and evaluations of possibilities for people like oneself (Slabbert, Knijn & de Ridder, Forthcoming). Both present and possible social identities can thus aid the explanation of behaviour. Present social identities can explain behaviour by deriving the norms and values that are important to these identities. Possible social identities, however, can explain future-oriented behaviour, by deriving the underlying conditions (i.e. the possible self feels connected to the present self, the actions needed to attain the possible self feel connected to the present self, and action to attain the possible self is interpreted as important, not impossible or futile) (Slabbert, Knijn, & de Ridder, Forthcoming). To explain behaviour, and specifically the RSB, it is thus important to establish both individuals' present and possible social identities (Eccles, 2009; Slabbert, Knijn, & de Ridder, Forthcoming).

Important social identities include racial-ethnic identity (Eccles, 2009; Oyserman & Fryberg, 2006; Oyserman & Destin, 2010), religious identity (De Ruyter & Conroy, 2010), family identity, national identity (Norris, et al., 2008), and gender identity (Campbell & MacPhail, 2002; Eccles, 2009; Glynn et al., 2001; Jewkes, Sikweyiya, Morrell, & Dunkle, 2011; Lindegger & Quayle, 2009; Oyserman & Destin, 2010; Varga, 2003). A recent study on the social identity of learners in the CHAMP Prevention Programme revealed that gender identity was the most salient social identity (Slabbert, Knijn, & de Ridder, forthcoming). Therefore, it was expected that the mechanisms that generate RSB need to be explained within the context of gender-typical behaviour.

Mechanisms

Mechanisms that generate the performance of RSB are individual choices and capacities which lead to behaviour with a high risk on HIV transmission. The literature suggests that there are four mechanisms that generate RSB (i.e. the choice to have safe sex, the choice of sexual partner, the choice to endure high risk situations, and the capacity to discuss and negotiate safe sex).

The choice to perform safe sex behaviour

The choice to perform safe sex behaviour is one of the mechanisms that determines the possibility of HIV transmission. To be able to make the choice for safe sex individuals require the knowledge about safe sex behaviour. Moreover, awareness of the consequences of having unprotected sex increases the likelihood of safe sex behaviour. In other words, individuals need to understand the risks of RSB, and believe that they are at risk (Fishbein & Yzer, 2003).

The choice of sexual partner

The choice of sexual partners is decisive for HIV transmission in two ways (i.e. their reliability and their sexual demands). First, the unreliability of sexual partners can lead to HIV transmission. Studies show that HIV is both transmitted between partners in serious relationships and partners in a casual relationships (Glynn et al., 2001; Laga et al., 2001; Leclerc-Madlala, Simbayi, & Cloete, 2009). However, a high percentage of HIV transmissions within serious relationships is the result of adultery (Glynn et al., 2001; Leclerc-Madlala, Simbayi, & Cloete, 2009). Secondly, sexual demands of sexual partners can lead to RSB, especially when individuals are not capable to negotiate safe sex behaviour (Campbell & Macphail, 2002; Jewkes, 2009).

The choice to endure high risk situations

The choice to endure high risk situations, such as relations in which (sexual) abuse and substance abuse are regular practice, can affect HIV transmission in two ways (i.e. direct and indirect). Whereas sexual abuse creates a direct risk (Jewkes, 2009; Lindegger & Quayle, 2009) other forms of abuse and substance abuse create the environment with a high indirect risk on HIV transmission (Jewkes, 2009; Jewkes et al., 2011; Leclerc-Madlala, Simbayi, & Cloete, 2009).

It should be noted, however, that the choice to end relations which are characterised by the prevalence of high risk situations is often limited by factors such as poverty (Jewkes, 2009; Shisan, Zungu, & Pezi, 2009).

The capacity to discuss and negotiate safe sex

The last mechanism that is responsible for HIV transmission is the lack of the capacity to discuss and negotiate safe sex with sexual partners. When individuals lack this capacity, the likelihood of RSB depends on what is considered normal sexual behaviour in the relationship. The capacity to discuss and negotiate safe sex is culturally determined and thus dependent on the context (Campbell & Macphail, 2002; Jewkes, 2009; Lindegger & Quayle, 2009).

Constructing CMO configurations before the intervention

The synthesis of the contexts and the mechanisms which generate RSB provides the CMO configurations (see Table 1). It is important to note that these CMO configurations follow from the theoretical section and that this synthesis does not cover and does not aim to cover all possible CMO configurations that generate RSB. Rather, this synthesis covers the CMO configurations with gender identity as most salient identity as the psychological context and the conditions in the Moutse area as the social context. Other causal pathways to RSB are possible and likely. These are accounted for by measuring other contexts than gender identity. This synthesis of contexts and mechanisms which generate RSB was the starting point for the evaluation of the CHAMP Prevention Programme. The present study assessed how the programme theory of the CHAMP Prevention Programme targets the mechanisms which generate RSB and whether it is effective in doing so.

Programme Theory

The CHAMP Prevention Programme

The CHAMP Prevention Programme is part of NCG's Community Health Awareness Motivation & Prevention (CHAMP) programme, which represents all the community care programmes in NCG's portfolio (i.e. the CHAMP prevention programme, the CHAMP children's programme, the CHAMP sports, arts, and culture programme, and the CHAMP community involvement programme). According to Rakolote & Slabbert (2010) the CHAMP Prevention Programme is:

a social marketing, screening, and staging programme that aims to mobilise the community towards testing for disease, to create awareness in the community around HIV/AIDS TB, and risky behaviours, and to de-stigmatise the communities attitudes towards people living with HIV/AIDS (Rakolote & Slabbert, 2010, p. 166).

The objective of the CHAMP Prevention Programme is to mobilise the community towards testing for disease, create awareness in the community around HIV and AIDS, tuberculosis (TB) and risky sexual behaviour, and de-stigmatise the community's attitudes towards people living with AIDS (Tempelman, Slabbert, & Vermeer, 2010). To reduce the performance of RSB and prevalence of HIV participatory learning approaches are employed to affirm previous knowledge about HIV and teach new knowledge to achieve change in knowledge, attitude, perceptions, and practices that challenges personal and cultural beliefs (Slabbert, 2010; Ndlovu Care Group, 2014b).

The CHAMP Prevention Programme's Blocking Mechanisms

The choice to have safe sex

To prevent the generation of RSB by the mechanism the choice to have safe sex the intervention of the CHAMP Prevention Programme targets individuals' choices which lead to behaviour with a high HIV transmission risk. The choice to have safe sex was conceptualised as dependent on two factors (i.e. the knowledge of safe sex behaviour and awareness of the consequences of having unprotected sex). The first factor consists of knowledge about the body and knowledge about sexual health. Knowledge about the body was provided during the discussions with the topics *body mapping*, *know your body*, and *which are private parts?* Knowledge about sexual health was provided during the sessions with the topics *STI's*, *what is HIV?* and the *HIV transmission game*. In this manner, the CHAMP Prevention Programme aimed to contribute to learners' knowledge and understanding of STIs, HIV/AIDS and HIV transmission (Ndlovu Care Group, 2014a). The second factor was discussed during the topics *expectations of life*, *my goals in life*, and *personal barriers in achieving goals*. During these discussions the CHAMP Prevention Programme aimed to promote safe sex behaviour by making learners aware of the consequences of their choices.

The choice of sexual partner

To prevent the generation of RSB by the mechanism the choice of sexual partners the intervention of the CHAMP Prevention Programme targets individuals' choices which lead to behaviour with a high HIV transmission risk. The choice of sexual partner was conceptualised as dependent on two factors (i.e. their reliability and their sexual demands). First, when sexual partners are unreliable, the choice for such a partner can be considered RSB. Secondly, when sexual partners sexual demands involve RSB, the choice for such a partner can be conceived of as RSB. The sexual behaviour of partners and its influence on their partners was discussed during the session "Gender equality", especially during the topic *understanding gender roles*, which had the objective to teach learners about different gender roles (Ndlovu Care Group, 2014a). The sexual behaviour of partners was also discussed during the topics *what's on / what's not on - acceptable behaviour?*, and *sexual an reproductive health (SRH) rights & responsibilities*.

The choice to endure high risk situations

To prevent generation of RSB by the mechanism the choice to endure high risk situations the intervention of the CHAMP Prevention Programme targets individuals' choices that lead to behaviour with a high HIV transmission risk. The choice to endure high risk situations was conceptualised as the choice to stay in relations with high HIV transmission risks. This includes relations characterised by sexual abuse and other forms of abuse. The choice to endure high risk situations depends on knowledge of three factors (i.e. about gender relations, acceptable behaviour and abuse). The first, knowledge about gender relations, was provided during the topics *understanding gender roles*. The second, knowledge about acceptable behaviour, was provided during the topics *what's on / what's not on - acceptable behaviour?* and *sexual an reproductive health (SRH) rights & responsibilities*. Finally, knowledge and discussion about abuse was provided during *abuse in relationships*, and *physical abuse v.s. mental abuse*. The objective of these topics was to think about abuse in relationships and to be able to distinguish between physical abuse and other forms of abuse (Ndlovu Care Group, 2014a).

The capacity to discuss and negotiate safe sex

To prevent generation of RSB by the mechanism of the incapacity to discuss and negotiate safe sex the intervention of the CHAMP Prevention Programme targets individuals' incapacity that lead to behaviour with a high risk on HIV transmission. The capacity to discuss and negotiate safe sex was conceptualised as dependent on the knowledge of sexual health. The objective of topics such as *STIs, what is HIV?* and the *HIV transmission game* was to understand STIs, to learn about HIV/AIDS and to learn about HIV transmission (Ndlovu Care Group, 2014a). Having this knowledge is a condition for the negotiation of safe sex. Moreover, the objective of topics as *what's on on/ what's not on - acceptable behaviour, good and bad feelings during sex, the law - what is legal?* and *sexual and reproductive health rights & responsibilities* was to understand acceptable and non-acceptable behaviour and which they rights have in their relation-

ships (Ndlovu Care Group, 2014a). In this manner the programme aims to empower young adolescents' negotiation position. Finally, by discussing the topics *basic feelings*, *getting comfortable with discussing sex* and *freedom of expression*, the CHAMP Prevention Programme aims to contribute to learners' recognition of feelings and assertion of feelings. Furthermore, it aims to encourage their freedom of expression (Ndlovu Care Group, 2014a). Assertive behaviour was reinforced by discussing the topic *assertiveness*. With this discussing, the CHAMP Prevention Programme aimed to promote the communication of what learners really want in a clear fashion, and learners' respect of their and others' rights and feelings. (Ndlovu Care Group, 2014a).

Table 1.

CMO Configurations of the manner in which the CHAMP Prevention Programme Reduces the Outcome Risk-Taking Sexual Behaviour.

		CMO Configurations		
Context		Mechanism	Blocking Mechanism	Outcome
Psychological	Gender identity			
Social	Poverty, limited infrastructure, unemployment	+ Choice to perform safe sex behaviour	+ Knowledge of Safe Sex Behaviour, insight in the risks of unprotected sex	= Reduction of risk-taking sexual behaviour
Psychological	Gender identity			
Social	Poverty, limited infrastructure, unemployment	+ Choice of sexual partner	+ Knowledge of gender rights, frame of reference of acceptable behaviour	= Reduction of risk-taking sexual behaviour
Psychological	Gender identity			
Social	Poverty, limited infrastructure, unemployment	+ Choice to endure high risk situations	+ Knowledge about forms of abuse, knowledge of gender rights, frame of reference of acceptable behaviour	= Reduction of risk-taking sexual behaviour
Psychological	Gender identity			
Social	Poverty, limited infrastructure, unemployment	+ Capacity to negotiate safe sex	+ Knowledge of Safe Sex Behaviour, knowledge of gender rights, frame of reference of acceptable behaviour, assertiveness, comfort to discuss sex	= Reduction of risk-taking sexual behaviour

Note: Only CMO-configurations with the most salient psychological context are included.

The present study

This study contributes to HIV prevention literature using Realistic Evaluation methodology to identify both the causal pathways to the performance of risk-taking sexual behaviour (RSB) and the manner in which the CHAMP Prevention Programme can be able to reduce the performance of RSB. This approach to the explanation of RSB involves the identification of mechanisms, the individual capacities and choices which lead to regular patterns of social behaviour, and contexts, the spatial and institutional locations of social situations together with the norms values and interrelationships found in them, which generate RSB. Therefore, this approach provides a detailed perspective on the causes that underly the performance of RSB. Furthermore, this approach provides a detailed perspective on the manner in which the blocking mechanisms of the CHAMP Prevention Programme target the mechanisms that generated the performance of RSB. The purpose of the present study is to evaluate whether the CHAMP Prevention Programme is effective in reducing RSB and to identify why the CHAMP Prevention programme is effective. Therefore, the research questions are:

Research questions

1. Is the CHAMP Prevention Programme effective in reducing risk-taking sexual behaviour?
2. Which causal pathways explain the extent to which the CHAMP Prevention Programme is effective in reducing risk-taking sexual behaviour?

Because the CHAMP Prevention Programme's blocking mechanisms are expected to target the mechanisms that, together with specific contexts, generate the performance of RSB, it is expected that the intervention reduces the performance of RSB. The extent to which the intervention reduces the performance of RSB is the extent to which it effectively targets these mechanisms. Because RSB can be generated in various psychological contexts, the study assesses the most salient social identity of the learners that participate in the CHAMP Prevention Programme. It is, however, expected that the extent in which the intervention is effective varies among learners with different social identities.

Hypotheses

1. The CHAMP Prevention Programme reduces risk-taking sexual behaviour.
2. The extent to which the CHAMP Prevention Programme reduces risk-taking sexual behaviour is explained by the extent to which its blocking mechanisms effectively
 - a. target the mechanism 'the choice to perform safe sex behaviour'.
 - b. target the mechanism 'the choice of sexual partner'.
 - c. target the mechanism 'the choice to endure high risk situations'.
 - d. target the mechanism 'the capacity to negotiate safe sex'.
3. The psychological context in which risk-taking sexual behaviour is generated is constituted by gender identity.

Methods

Participants

Participants for Ndlovu Care Group's CHAMP Prevention Programme were recruited from grades 8, 9, and 10 at six secondary schools in the rural township Moutse, Limpopo Province, South Africa in February 2014. This convenience sample ($n = 668$, $M_{\text{age}} = 15.69$ years, age range: 12 - 25 years) consisted of young black learners with parental consent. Participants received a refreshment (i.e. a cupcake and a drink) during the questionnaires and the sessions of the intervention.

The baseline sample included all learners with parental consent, of these 16 learners (2,4%) were excluded from the study because they did not complete the baseline questionnaire. Consequently, the baseline sample consisted of 652 learners (291 boys, 361 girl, $M_{\text{age}} = 15.69$, age range: 12 - 25). The percentage of learners who had sex previously was 36.3% ($n = 237$). This percentage was higher among boys (46.4%, $n = 135$) than among girls (28.3%, $n = 102$).

The follow-up sample only consisted of learners that were part of the baseline sample. Several students were not able to fill in the follow-up questionnaire ($n = 251$). Consequently, the follow-up sample size was reduced to $n = 401$. This large decrease of participants can be explained primarily by the exams, which were taken during the period in which the follow-up questionnaire was conducted. The age of the learners in this sample ranged from 12 to 23 ($M = 15.08$, $SD = 1.842$). 39.4% of the learners were boys ($n = 158$) and 60.6% of the learners were girls ($n = 243$). The percentage of learners who had sex previously was 27.7%. This percentage was higher among boys (38.6%, $n = 61$) than among girls (20.6%, $n = 50$). Not all learners who filled in the follow-up questionnaire attended all sessions of the intervention. The questions which were designated to measure attendance were not answered consequently. Therefore, it was impossible to verify the effect of attendance based on these questions.

Design

A pre-test post-test control group design was used to investigate the effectiveness of the CHAMP Prevention Programme in reducing the performance or risk-taking sexual behaviour among rural black learners in rural South Africa. Learners of four schools were assigned to the intervention group ($n = 399$) and learners of two schools ($n = 253$) were assigned to the control group. Learners from schools in the control group were invited to participate in the intervention after the follow-up questionnaire was filled in.

The age in the intervention group ranged from 12 to 23 years ($M = 15.64$, $SD = 2.078$) and from 12 to 25 years ($M = 15.77$, $SD = 2.132$) in the control group. In the intervention group 45.6% of the learners were boys ($n = 182$) and 54.4% of the learners were girls ($n = 217$). In the control group 43.1% of the learners were boys ($n = 109$), 56.9% of the learners were girl ($n = 144$), the percentage of learners in the intervention group who had sex previously was 33.8%. ($n = 135$). This percentage was higher among boys (44.0%, $n = 80$) than among girls (25.3%, $n = 55$). This percentage was

40.3% ($n = 102$) among learners in the control group. This percentage was also higher among boys (50.5%, $n = 55$) than among girls (32.6%, $n = 47$).

Procedures

Start of CHAMP Prevention Programme. Prior to the start of the 2014 CHAMP Prevention Programme, ethical agreement for the study was obtained from the ethical committee. The CHAMP Prevention Programme started in February. Schools were approached to participate in the programme and memoranda of understanding were signed to ensure their cooperation until the end of the study. Subsequently, the programme was explained to the learners in grades 8, 9, and 10. These learners received parental consent forms which were filled in, signed, and returned to NCG. Learners who did not have parental consent did not fill in the baseline questionnaire and the follow-up questionnaire, but were still allowed to participate in the intervention sessions of the CHAMP Prevention Programme. Simultaneously, Life Skill Facilitators (LSF) from the CHAMP Prevention Programme were retrained by two medical students from Utrecht Medical Centre to ensure that their knowledge of topics in the programme was accurate. These LSF spoke the indigenous languages and were able to explain the questionnaires and intervention sessions to the learners.

Baseline questionnaire. Baseline data were collected using a questionnaire during the first weeks of April. The LSF facilitated the delivery of the questionnaire and, together with five social sciences master students from Utrecht University, they facilitated the completion of the questionnaires at the schools.

Intervention sessions. The intervention of the CHAMP Prevention Programme consists of six sessions of approximately 2,5 hours, which were adapted from the Stepping Stones Programme (Jewkes & Cornwall, 1998) and the Sexual and Reproductive Health for young HIV positive adolescents manual (Meyersfeld & Vujovic, 2011) by NCG.³ The first edition of Stepping Stones was developed by Alice Welbourn from work in Uganda (Jewkes, 2006). This programme was adapted for South Africa by Rachel Jewkes in 1998. Due to time constraints the number of sessions of the CHAMP Prevention Programme was reduced to four sessions. Both the Stepping Stones and CHAMP sessions were designed to spend 10 minutes on introduction; 10 minutes each on warm-up and debriefing exercises and 40-60 minutes on the content or longer exercises. Sessions were open ended to allow for discussion. The adapted programme was able to cover all topics that were in the initial programme by making the sessions slightly longer. These sessions were conducted either during school hours or directly after school hours, depending on the school. A social worker or counsellor attended all sessions because some topics were sensitive and might require additional debriefing.

The first session started with an introduction to the intervention. During the introduction, house rules were established and trust and confidentiality were discussed. Topics which were covered during the first session were 'Where are you going?', 'How we act and feel', and 'Sex and love'. The topic 'Where are you going' comprised of three sections: 'Ex-

³ The manner in which the Stepping Stones programme was adapted for the CHAMP prevention programme is, in short, represented in addendum A

pectations of life', 'My goals in life', and 'Personal barriers in achieving goals'. The topic 'How we act and feel' comprised of five sections: 'Four basic feelings - identity', 'Assertiveness', 'Emotional literacy', 'Getting comfortable with discussing sex', and 'Freedom of expression'. The topic 'Sex and love' comprised of seven topics: 'Body mapping', 'Know your body', 'Which parts are private?', 'What's on, what's not on? - acceptable behaviour', 'Sexual and reproductive health (SHR) rights & responsibilities', 'The law - what is legal?', and 'Good and bad feelings during sex'. The session was concluded with a closing circle.

The second session covered the topic 'Conception & contraception'. This topic comprised of three sections: 'Menstruation', 'Conception', and 'How to use condoms'. The session was concluded with a closing circle.

The third session covered the topic 'HIV & STIs'. This topic comprised of 5 sections: 'STIs', 'What is HIV?', 'HIV transmission game', 'HIV stigma', and 'HIV counselling and testing'. The session was concluded with a closing circle.

The fourth session covered the topic 'Gender equality'. This topic comprised of 4 sections: 'Unplanned pregnancy', 'Abuse in relationships', 'Physical abuse vs. mental abuse', and 'Understanding gender roles'. This session was concluded with a review of learners' expectations of the effect of the intervention sessions and a closing circle.

Follow-up questionnaire. Follow-up data were collected in the last weeks of June and the first week of July. The procedures for filling in the follow-up questionnaire were identical to the procedures of the baseline questionnaire.

Data collection

Both the data of baseline questionnaire and the data of the follow-up questionnaire were automatically scanned and collected into a SPSS database. This reduced the chance of random errors in data entry.

Statistical measures

To investigate the underlying structure of the topics in the CHAMP Prevention Programme's questionnaires, data collected from 402 participants (i.e. all learners who completed the baseline questionnaire and the follow-up questionnaire) were subjected to principal components analyses (PCAs).

Prior to running the PCAs data was examined and revealed some challenges. First, examination of the data indicated that there was randomly missing data. Missing values were therefore replaced with the sample mean. Secondly, examination of the data indicated that variables were not normally distributed. Given the robust nature of PCAs these deviations were not considered problematic. Finally, examination of both the baseline and follow-up data indicated that some items did not consequently load onto the same factor. Therefore, these items were removed from the PCAs.

Furthermore, the CHAMP Prevention Programme's questionnaires included questions about learners' sexual relations and girlfriends or boyfriends. To keep learners who never had sex engaged while filling in the questionnaire, the option *I never had sex* was added to these questions. To keep learners who did not have a girlfriend or a boyfriend

engaged while filling in the questionnaire engaged, the option *not applicable* was added to these questions. These superfluous values were removed for the analysis of these questions.

a. Demographic characteristics

Several items were used to collect demographic characteristics, such as gender, age, school grade and whether they had sex before. The scores for gender were 1 = *boy*, 2 = *girl*; age was calculated from the date of birth and scored in intervals of 1 year; school grade was scored 1 = *grade 8*, 2 = *grade 9*, 3 = *grade 10*.

b. Mechanism: The choice perform safe sex behaviour

Knowledge of HIV/AIDS was measured with eight items, which were rated on a 4-point Likert scale from *true* to *false*. Scores were: 1 = *true*, 2 = *probably true*, 3 = *probably false*, 4 = *false*.

Both the PCA and the scree plot indicated the presence of two factors underlying the eight questionnaire items: ‘knowledge of protection against HIV/AIDS measured with true statements’ with two items, and ‘knowledge of protection against HIV/AIDS measured with false statements’ with three items. In total, these factors explained around 40% of the variance in the questionnaire data. Knowledge of protection against HIV/AIDS measured with true statement was measured with: 1) People can protect themselves from HIV by always using a condom; 2) People can protect themselves from HIV by wearing plastic gloves or bags on your hand when they help someone who is bleeding. Cronbach’s alpha was 0.47. Knowledge of protection against HIV/AIDS measured with false statements was measured with 1) People can protect themselves from HIV by not mixing with people who look like they have HIV or do have HIV; 2) People can protect themselves from HIV by not eating food cooked by someone who look as they may have HIV or is known to have HIV; 3) People can protect themselves from HIV by not dating someone who has been sick recently. Cronbach’s alpha was 0.37. Three items did not load on these factors and were not used in the subsequent analyses.

For both factors, Cronbach’s alpha was insufficient for research purposes. Therefore, knowledge about protection against HIV/AIDS was measured with two items, each reflecting a factor. Knowledge of protection from HIV/AIDS measured with true statements was reflected in the item: People can protect themselves from HIV by wearing plastic gloves or bags on your hands when they help someone who is bleeding. Knowledge of protection from HIV/AIDS with false statements was reflected in the item: People can protect themselves from HIV by not mixing with people who look like they have HIV or do have HIV.

Knowledge of sexual and reproductive health (SRH) was measured with nine items which were rated with 1 = *true*. 2 = *false*, 3 = *I don’t know*. To establish the learners’ knowledge of sexual and reproductive health, these questions were recoded with 1 = *correct answer*, 2 = *wrong answer* to distinguish learners who had knowledge of SRH and those who did not have this knowledge. The option *I don’t know* was recoded 2 = *wrong answer*, because it expressed learners’ uncertainty about their knowledge of sexual and reproductive health.

Both the PCA and the scree plot indicated the presence of three factors underlying the nine questionnaire items. In total, these factors explained around 44% of the variance in the questionnaire data. These three factors, were identified: ‘knowledge of condom use’ with four items, ‘knowledge of the menstrual cycle’ with two items, and ‘knowledge of abortion’ with one item. Knowledge of condom use was measured with: 1) Condoms or rubbers should be used with spermicidal foam or jelly; 2) Using a condom can help prevent HIV/AIDS; 3) A condom can be used more than once; 4) If a condom is used during sexual activity, a young man should pull out before he loses his erection. Cronbach’s alpha was 0.41. Knowledge of the menstrual cycle was measured with: 1) A young woman can get pregnant before she has her first menstrual period; 2) A man who has sex with a menstruating woman will get ill. Cronbach’s alpha was 0.13. Knowledge of abortion was measured with: 1) An abortion can be done safely and easily by a doctor during the first 12 weeks of pregnancy. Two items did not load on these factors and were not used in the subsequent analyses.

For all factors, Cronbach’s alpha was insufficient for scientific purposes. Therefore, knowledge of sexual and reproductive health was measured with three items, each reflecting a factor. Knowledge of condom use was reflected in the item: a condom can be used more than once. Knowledge of the menstrual cycle was reflected in the item: A man who has sex with a menstruation woman will get ill. Knowledge of abortion was reflected in the item: An abortion can be done safely and easily by a doctor during the first 12 weeks of pregnancy.

Sexual attitudes were measured with seven items, which were rated on a five-point Likert scale from *strongly agree* to *strongly disagree*. Scores were: 1 = *strongly agree*, 2 = *agree*, 3 = *neutral*, 4 = *disagree*, 5 = *strongly disagree*.

The PCA indicated the presence of two factors with Eigenvalues exceeding 1 underlying the seven questionnaire items. Factor loadings showed two factors: ‘ideas about sex’ with three items and ‘the right to say no’ with two items. In total, these factors explained around 51% of the variance in the questionnaire data. The factor ‘ideas about sex’ were measured with: 1) If i have sex while I am a teenager, it would make me feel sort of important; 2) ‘Love’ and ‘having sex’ mean the same thing; 3) Having sex while I am a teenager would just be doing what everybody else is doing. Cronbach’s alpha was 0.66. The factor ‘the right to say no’ was measured with: 1) I think it OK to say ‘no’ when someone wants to touch me; 2) People who want to have sex should respect the right of others to say ‘no’. Cronbach’s alpha was 0.60. Two items did not load on these factors and were not used in the subsequent analyses.

Cronbach’s alpha was sufficient for research purposes for both factors. Therefore, an item-scale defined ‘ideas about sex’ was constructed containing the items: 1) If i have sex while I am a teenager, it would make me feel sort of important; 2) ‘Love’ and ‘having sex’ mean the same thing; 3) Having sex while I am a teenager would just be doing what everybody else is doing. An item-scale defined as ‘the right to say no’ was constructed containing the items: 1) I think it OK to say ‘no’ when someone wants to touch me; 2) People who want to have sex should respect the right of others to say ‘no’.

Ideas about sex, condom use, and relationships were measured with 17 items, which were rated on a 4-point Likert scale from *strongly agree* to *strongly disagree*. Scores were: 1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*.

The PCA indicated the presence of five factors with Eigenvalues exceeding 1 underlying the 17 questionnaire items. In total these factors explained around 65% of the variance in the questionnaire data. Factor loadings indicated the presence of four factors: 'peer pressure' with three items, 'ideas about condom use' with two items, 'trust' with two items, and 'ideas about condom use' with two items. The factor peer pressure was measured with: 1) I have to have sex because all my friends are doing it; 2) I am under pressure to have a makhwahpeni because all my friends have one; 3) I am under pressure from my friends to give something to my girlfriend or boyfriend. Cronbach's alpha was 0.67. Ideas about condom use was measured with: 1) I could definitely ask my girlfriend or boyfriend to use a condom; 2) People who are important to me, want me to use a condom. Cronbach's alpha was 0.52. Trust and condom use was measured with: 1) If my partner suggested we used a condom, I would think she or he was having sex with other people; 2) If I asked my partner to use a condom, she or he would think I am having sex with other people. Cronbach's alpha was 0.48. Ideas about condom use also brought forward another factor including the items: 1) Using a condom feels good; 2) Using a condom is cool. Cronbach's alpha was 0.55. Eight items did not load on these factors and were not used in the subsequent analyses.

Cronbach's alpha was only sufficient for peer pressure. Therefore, an item scale defined as 'peer pressure' was constructed containing the items: 1) I am left out if I do not have a girlfriend or a boyfriend because all my friends have one; 2) I have to have sex because all my friends are doing it; 3) I am under pressure to have a makhwahpeni because all my friends have one; 4) I am under pressure from my friends to give something to my girlfriend or boyfriend. Trust and condom use was reflected in the item: if I asked my partner to use a condom, she or he would think I am having sex with other people. Ideas about condom use was reflected in the items: 1) People who are important to me, want me to use a condom; 2) Using a condom is cool.

c. Mechanism: The choice of sexual partner

Feelings about sexual relationships were measured with nine items, which were rated on a 4-point Likert scale from *strongly agree* to *strongly disagree*. Scores were 1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*.

The PCA indicated the presence of three factors with Eigenvalues exceeding 1 underlying the nine questionnaire items. In total these factors explained around 51% of the variance in the questionnaire. The scree plot and factor loadings, however, indicated that two factors, which explained around 41% of the variance in the questionnaire, should be considered: 'feeling comfortable in one's relationship' with two items and 'feeling uncomfortable in one's relationship' with two items. Feeling comfortable in one's relationship was measured with: 1) In my sexual relationship I feel free to be who I am; 2) In my sexual relationship I feel loved and cared about. Cronbach's alpha was 0.73. Feeling uncomfortable in one's relationship was measured with: 1) In my sexual relationship I feel a lot of distance; 2) In my sex-

ual relationship I feel inadequate or incompetent. Cronbach's alpha was 0.30. Five items did not load on these factors and were not used in the subsequent analyses.

Cronbach's alpha was only sufficient for research purposes for feeling comfortable in one's relationship. Therefore an item scale defined as 'feeling comfortable in one's relationship' was constructed containing the items: 1) In my sexual relationship I feel free to be who I am; 2) In my sexual relationship I feel loved and cared about. Feeling uncomfortable in one's relationship was reflected in the item: In my sexual relationship I feel a lot of distance.

Relationship control. The degree of control in learners' relationship was measured with 12 items, which were rated on a 4-point Likert scale from *strongly agree* to *strongly disagree*. Scores were: 1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*.

The PCA indicated the presence of four factors underlying the 12-item questionnaire. In total, these factors explained around 59% of the variance of the questionnaire data. The factor loadings showed three factors: 'expectations in relationships' with three items, 'decision-making in relationships' with three items, and 'control in relationships' with two items. The factor 'expectations in relationships' was measured with: 1) I expect her or him to have sex with me because I buy her or him things; 2) When I want her or him to have sex, I expect her or him to agree. Cronbach's alpha was 0.62. 'Decision-making in relationships' was measured with: 1) I like to do what I want, even if she or he does not want me to; 2) When she or he and I disagree, I get my way most of the time. Cronbach's alpha was 0.49. 'Control in relationships' was measured with: 1) I don't mind when she or he greets women or men she knows; 2) I never tell her or him who she or he can see or spend time with. Cronbach's alpha was 0.48. Four items did not load onto these three factors and were not used in the subsequent analyses.

Cronbach's alpha was only sufficient for research purposes for expectations in relationships. Therefore, an item scale defined as 'expectations in relationships' was constructed containing the items: 1) I expect her or him to have sex with me because I buy her or him things; 2) When I want her or him to have sex, I expect her or him to agree. Decision-making in relationships was reflected in the item: When she or he and I disagree, I get my way most of the time. Control in relationships is reflected in the item: I like him or her to be at home when I come to check him or her, it bothers me if she or her is not there.

Ideas about relationships were measured with 13 items, which were rated on a 4-point Likert scale from *strongly agree* to *strongly disagree*. Scores were: 1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*.

The PCA indicated the presence of four factors underlying the 13-item questionnaire. In total, these factors explained around 48% of the variance of the questionnaire data. The scree plot, however, indicated that two factors should be considered: 'emancipated ideas about relationships' with six items and 'not emancipated ideas about relationships' with two items. In total, these factors explained around 31% of the variance of the questionnaire data. The factor 'emancipated ideas about relationships' was measured with: 1) A woman has to teach her man to respect her; 2) Men should share the work around the home such as doing the dishes or cleaning and cooking; 3) A woman can refuse to

have sex with her boyfriend if she does not want it for any reason; 4) A woman has to know how to look after herself as she cannot rely on her man to care for her; 5) If a woman drinks alcohol and wears miniskirts, she is asking for trouble; 6) A boy and a girl should not have sex without love. Cronbach's alpha was 0.57. A closer examination of the questionnaire item-total statistics indicated that alpha would increase to 0.62 if item 2 was removed. This item asked whether learners think that a man should share the work around the home such as doing dishes and cleaning or cooking. Consequently, this item was dropped from the questionnaire, and all subsequent analyses were based on the remaining items. 'Not emancipated ideas about relationships' was measured with: 1) Sometimes a man may have a good reason to hit his girlfriend; 2) If a woman does something wrong she should expect her boyfriend to punish her. Cronbach's alpha was 0.34. Five items did not load onto these two factors and were not used in the subsequent analyses.

Cronbach's alpha was only sufficient for research purposes for emancipated ideas about relationships. Therefore an item scale defined as 'emancipated ideas about relationships' was constructed containing the items: 1) A woman has to teach her man to respect her; 2) A woman can refuse to have sex with her boyfriend if she does not want it for any reason; 3) A woman has to know how to look after herself as she cannot rely on her man to care for her; 4) If a woman drinks alcohol and wears miniskirts, she is asking for trouble; 5) A boy and a girl should not have sex without love. Not emancipated ideas about relationships was reflected in the item: Sometimes a man may have good reason to hit his girlfriend.

d. Mechanism: The choice to endure high risk situations

Physical abuse was measured with two items in the baseline questionnaire and two items in the follow-up questionnaire. Items were rated on a 4-point Likert scale from *never* to *many times*. Scores were: 1 = *never*, 2 = *once*, 3 = *few times*, 4 = *many times*.

The PCA of the items which measured being physically abused indicated the presence of one factor underlying the 3-item questionnaire. This factor explained around 77% of the variance of the questionnaire data. The factor loadings showed one factor: 'being physically abused' with two items. This factor was measured with: 1) In the past, did any girlfriend or boyfriend slap you or throw something at you which could hurt you?; 2) In the past did any girlfriend or boyfriend threaten to use or actually use a gun knife, or other weapons against you? Cronbach's alpha was 0.73. Items in the follow-up questionnaire were: 1) Since the previous questionnaire, did any girlfriend or boyfriend slap you or throw something at you which could hurt you?; 2) Since the previous questionnaire, did any girlfriend or boyfriend threaten to use or actually use a gun knife, or other weapons against you?

An item scale defined as 'being physically abused' was constructed containing the items: 1) In the past, did any girlfriend or boyfriend slap you or throw something at you which could hurt you?; 2) In the past did any girlfriend or boyfriend threaten to use or actually use a gun knife, or other weapons against you? for the baseline questionnaire and the items: 1) Since the previous questionnaire, did any girlfriend or boyfriend slap you or throw something at you which

could hurt you?; 2) Since the previous questionnaire, did any girlfriend or boyfriend threaten to use or actually use a gun knife, or other weapons against you? for the follow-up questionnaire.

Emotional abuse was measured with five items in the baseline questionnaire and five items in the follow-up questionnaire. Three items measured being emotionally abused, two items measured emotionally abusing someone. Items were rated on a 4-point Likert scale from *never* to *many times*. Scores were: 1 = *never*, 2 = *once*, 3 = *few times*, 4 = *many times*.

The PCA of the items which measured being emotionally abused indicated the presence of one factor underlying the 3-item questionnaire. This factor explained around 56% of the variance of the questionnaire data. The factor loadings showed one factor: 'being emotionally abused' with three items. This factor was measured with: 1) In the past, did any girlfriend or boyfriend insult you or make you feel bad about yourself?; 2) In the past, did any girlfriend or boyfriend threaten or hurt you?; 3) In the past, did any girlfriend or boyfriend stop you from seeing any of your friends? Cronbach's alpha was 0.64.

The PCA of the items which measured emotionally abusing someone indicated the presence of one factor underlying the 2-item questionnaire. This factor explained around 70% of the variance of the questionnaire data. The factor loading show one factor: 'emotionally abusing someone' with two items. This factor was measured with: 1) In the past, did any you insult your girlfriend or your boyfriend or made her or him feel bad about herself or himself?; 2) In the past, did you stop your girlfriend or your boyfriend from seeing any of her or his friends? Cronbach's alpha was 0.65. Items in the follow-up questionnaire asked learners whether they have been emotionally abused since the previous questionnaire and whether they have emotionally abused their girlfriend or boyfriend or any other woman or man since the previous questionnaire.

An item scale defined as 'being emotionally abused' was constructed containing the items: 1) In the past, did any girlfriend or boyfriend insult you or make you feel bad about yourself?; 2) In the past, did any girlfriend or boyfriend threaten or hurt you?; 3) In the past, did any girlfriend or boyfriend stop you from seeing any of your friends? An item scale defined as 'emotionally abusing someone' was constructed containing the items: 1) In the past, did any you insult your girlfriend or your boyfriend or made her or him feel bad about herself or himself?; 2) In the past, did you stop your girlfriend or your boyfriend from seeing any of her or his friends?

Sexual abuse was measured with eight items in the baseline questionnaire and eight items in the follow-up questionnaire. Four items measured being abused sexually and four items measured sexually abusing someone. Items were rated on a 4-point Likert scale from *never* to *many times*. Scores were 1 = *never*, 2 = *once*, 3 = *few times*, 4 = *many times*.

The PCA of the items which measured being sexually abused indicated the presence of one factor underlying the 4-item questionnaire. This factor explained around 54% of the variance of the questionnaire data. Factor loadings showed one factor: 'being sexually abused' with four items, which was measured with: 1) In the past did any girlfriend or boyfriend or any other woman or man physically force you to have sex with them when you did not want to?; 2) In

the past did any girlfriend or boyfriend or any other woman or man have sex with you when you did not want to because you were afraid of what she or he might do?; 3) In the past did any girlfriend or boyfriend or any other woman or man force you to have oral sex with her or him?; 4) In the past did any girlfriend or boyfriend or any other woman or man force you to have anal sex with her or him? Cronbach's alpha was 0.71.

The PCA of the items which measured sexually abusing someone indicated the presence of one factor underlying the 4-item questionnaire. This factor explained around 68% of the variance of the questionnaire data. The factor loadings showed one factor: 'sexually abusing someone' with two items, which was measured with: 1) In the past did you force someone to have oral sex with you?; 2) In the past did you force someone to have anal sex with you? Cronbach's alpha was 0.62. Questions in the follow-up questionnaire asked learners whether they have been sexually abused since the previous questionnaire and whether they have sexually abused someone since the previous questionnaire. Furthermore, in the follow-up questionnaire, for each kind of abuse a question which asked if this kind of abuse would be a reason to leave their partner was added.

An item scale defined as 'being sexually abused' was constructed containing the items: 1) In the past did any girlfriend or boyfriend or any other woman or man physically force you to have sex with them when you did not want to?; 2) In the past did any girlfriend or boyfriend or any other woman or man have sex with you when you did not want to because you were afraid of what she or he might do?; 3) In the past did any girlfriend or boyfriend or any other woman or man force you to have oral sex with her or him?; 4) In the past did any girlfriend or boyfriend or any other woman or man force you to have anal sex with her or him? An item scale defined as 'sexually abusing someone' was constructed containing the items: 1) In the past did you force someone to have oral sex with you?; 2) In the past did you force someone to have anal sex with you?

e. Mechanism: The capacity to discuss and negotiate safe sex

Negotiation of safe sex was measured with four questions (yes/no). Scores were: 1 = *yes*, 2 = *no*.

The PCA indicated the presence of one factor underlying the 4-item questionnaire: 'negotiation of safe sex' with three items. In total this factor explained around 42% of the variance in the questionnaire data. Negotiation of safe sex was measured with: 1) Do the two of you ever discuss using contraception or prophylaxis or condoms?; 2) Do the two of you ever discuss methods to protect each other from HIV?; 3) Do the two of you ever discuss sex together? Cronbach's alpha was 0.60. A closer examination of the questionnaire item-total statistics indicated that alpha would increase to 0.70 if item 2 was removed. This item asked whether learners discussed using contraception and whether learners discussed having children together. Consequently, this item was dropped from the questionnaire, and all subsequent analyses are based on the remaining items. The questions in the follow-up questionnaire asked learners whether they have discussed these topics with their sexual partner since the previous questionnaire.

An item scale defined as 'negotiation of safe sex' was constructed containing the items: 1) Do the two of you ever discuss using contraception or prophylaxis or condoms?; 2) Do the two of you ever discuss sex together?

f. Psychological context: Social identity

Social identity was measured using a question which was adopted from the 2001 Centenary Project (Norris et al., 2008). This question requested learners to rank identities with 1 being the most important and 6 the least important: “Imagine you have to describe yourself to someone. How important are the following aspects when you describe yourself? 1) age 2) gender 3) language 4) race 5) nationality 6) family. Scores were recoded to one variable indicating the most salient identity, scores were 1 = age, 2 = gender, 3 = language, 4 = race, 5 = being South African, 6 = being part of a family.

Typically in-group behaviour. To gain an insight into the typical behaviour of people with a certain social identity 20 questions about typical behaviour for people in their group was adopted from Slabbert, Knijn, & de Ridder, Forthcoming. Learners rated these behaviours on a five-point Likert scale from *strongly disagree* to *strongly agree*. Scores were: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither disagree nor agree*, 4 = *agree*, 5 = *strongly agree*.

The initial results of the PCA indicated five factors with Eigenvalues exceeding 1, which explained around 56% of the variance in the data. The results of the scree plot indicated the presence of four factors: ‘risk-taking behaviour’ with four items, ‘talking about sex and condom use’ with three items, ‘talking about HIV/AIDS’ with three items, and ‘risk aversive behaviour’ with four questions. In total, these factors explained around 51% of the variance in the data. Risk-taking behaviour was measured with: 1) It is typical for my people to use drugs; 2) It is typical for my people to drink alcohol; 3) It is typical for my people to smoke cigarettes; 4) It is typical for my people to have unprotected sex. Cronbach’s alpha 0.73. Talking about HIV/AIDS was measured with 1) It is typical for my people to talk about HIV/AIDS with your girlfriend or boyfriend; 2) It is typical for my people to talk about HIV/AIDS with your friends; 3) It is typical for my people to talk about HIV/AIDS with your parents. Cronbach’s alpha 0.75. Talking about sex and condom use was measured with 1) It is typical for my people to talk about sex with your girlfriend or boyfriend; 2) It is typical for my people to talk about sex with your friends; 3) It is typical for my people to talk about condoms with you girlfriend or boyfriend. Cronbach’s alpha was 0.67. Risk aversive behaviour was measured with 1) It is typical for my people to brush your teeth; 2) It is typical for my people to exercise; 3) It is typical for my people to use a condom; 4) It is typical for my people to be faithful to one partner. Cronbach alpha was 0.52.

An item scale defined as ‘risk-taking behaviour’ was constructed containing the items: 1) It is typical for my people to use drugs; 2) It is typical for my people to drink alcohol; 3) It is typical for my people to smoke cigarettes; 4) It is typical for my people to have unprotected sex. An item scale defined as ‘talking about HIV/AIDS’ was constructed containing the items: 1) It is typical for my people to talk about HIV/AIDS with your girlfriend or boyfriend; 2) It is typical for my people to talk about HIV/AIDS with your friends; 3) It is typical for my people to talk about HIV/AIDS with your parents. An item scale defined as ‘talking about sex and condom use’ was constructed containing the items: 1) It is typical for my people to talk about sex with your girlfriend or boyfriend; 2) It is typical for my people to talk about

sex with your friends; 3) It is typical for my people to talk about condoms with you girlfriend or boyfriend. Risk-averse behaviour was reflected in the item: It is typical for my people to be faithful to one partner.

g. Dependent variable: Risk-taking sexual behaviour

Risk-taking sexual behaviour was measured using the 23 item Safe Sex Behaviour Questionnaire (SSBQ) which has been developed by Dilorio et al. (1992). This questionnaire is considered to be a reliable and valid measure for assessing sexual behaviour in young adolescents (Dilorio et al., 1992). Learners rated items on a 4-point Likert scale from *never* to *always*. Scores were: 1 = *never*, 2 = *sometimes*, 3 = *most of the time*, 4 = *always*.

The PCA indicated the presence of eight factors with Eigenvalues exceeding 1. The scree plot, however, pointed towards two factors as underlying the 23 SSBQ items: 'safe sex behaviour' with seven items and 'risk-taking sex behaviour' with four items. Safe sex behaviour was measured with: 1) I insist to use a condom when I have sex; 2) I ask new sexual partners about their sexual histories; 3) I do not have sex when I have sores or irritation in my genital area; 4) I carry a condom with me when I think I might have sex later 5) If I disagree with information that my partner presents on safer sex practices, I will give him or her my opinion; 6) If I know I might have sex, I make a plan to get and use a condom; 7) I avoid direct contact with my sexual partner's blood. Cronbach's alpha was 0.80. Risk-taking sex behaviour was measured with: 1) I use drugs before or during sex; 2) When I am very sexually aroused, I have sex without using a condom; 3) I have anal sex without using a condom; 4) I drink alcohol before or during sex. Cronbach's alpha was 0.66.

Cronbach's alpha for both factors were sufficient for research purposes. Consequently item scales for these factors were constructed. An item scale defined as 'safe sex sexual behaviour' was constructed containing the items : 1) I insist to use a condom when I have sex; 2) I ask new sexual partners about their sexual histories; 3) I do not have sex when I have sores or irritation in my genital area; 4) I carry a condom with me when I think I might have sex later 5) If I disagree with information that my partner presents on safer sex practices, I will give him or her my opinion; 6) If I know I might have sex, I make a plan to get and use a condom; 7) I avoid direct contact with my sexual partner's blood. An item scale defined as 'risk-taking sexual behaviour' was constructed containing the items: 1) I use drugs before or during sex; 2) When I am very sexually aroused, I have sex without using a condom; 3) I have anal sex without using a condom; 4) I drink alcohol before or during sex.

Ethical agreement

Ethical approval for the project was obtained from the Research Ethics Committee, Faculty of Health Sciences of the University of Pretoria, on 28 January 2014 (Protocol number 25/2014). All school principals consented to the research being conducted at their schools. Learners were informed that participation was voluntary. Both the parents of the learners and the learners themselves signed informed consent forms.

Results

Hypothesis 1: The CHAMP Prevention Programme reduces risk-taking sexual behaviour

A repeated measures multivariate analysis of variance (MANOVA) with safe sex behaviour (SSB) and risk-taking sexual behaviour (RSB) as within-subject variables and group as between subject factor was used to test the effect of the intervention. As social identity was expected to affect the outcome, this variable was included in the analysis as a fixed factor.

Prior to interpreting the repeated measures MANOVA, its assumptions were tested. Sphericity was not an issue, because the analysis only involved two dependent variables. Correlations between the independent variables were not excessive, indicating that multicollinearity was no concern (intervention group/control group and social identity, tolerance = 1.00, VIF = 1.00). Finally, Levene's test was statistically non-significant for SSB before the intervention, $F(11, 309) = 0.91, p = .531$, SSB after the intervention $F(11, 309) = 1.24, p = .262$, RSB before the intervention $F(11, 309) = 0.82, p = .624$, and RSB after the intervention $F(11, 309) = 1.09, p = .372$. Therefore, homogeneity of variances was assumed

Results indicated that there was a significant difference in SSB between t_1 and t_2 between intervention and control group, $F(1, 309) = 7.22, p = .008, \eta_p^2 = .02$ (see Figure 4). The results showed that SSB increased among learners in the intervention group. However, the results also showed that the difference in SSB between t_1 and t_2 between learners in these groups with different social identities was not significant, $F(5, 309) = 1.38, p = .234, \eta_p^2 = .02$. These findings suggest that the CHAMP Prevention Programme was effective in changing SSB among learners that participated in the programme, but that this change in SSB did not significantly differ among learners with different social identities. Furthermore, there was no significant difference in RSB between intervention and control group between t_1 and t_2 , $F(1, 309) = 1.06, p = .304, \eta_p^2 = .00$, or between learners in these groups with different social identities, $F(5, 309) = 0.52, p = .762, \eta_p^2 = .01$. These findings suggest that the CHAMP Prevention Programme was not effective in changing RSB among learners who participated in the programme.

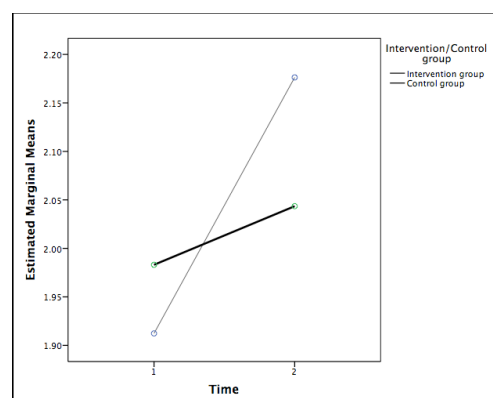


Figure 4. Change in safe sex behaviour over time between intervention and control group.

Hypothesis 2: The extent to which the CHAMP Prevention Programme reduces risk-taking sexual behaviour is explained by the extent to which blocking mechanisms target mechanisms.

Descriptive statistics show that gender identity most frequently constituted learners' psychological context (gender, $n = 81$; age, $n = 69$; being part of a family, $n = 69$; being South African, $n = 50$; language, $n = 38$; race, $n = 14$; total, $n = 321$). It should be noted that the total was not equal to sample size, because several learners needed to leave before they had completed the questionnaire, because they depended on public transport to get home. Questions about social identity were at the end of the questionnaire. For purposes of brevity, plots in the subsequent section are only displayed for the most salient social identity; gender identity.

Repeated measures multivariate analyses of covariance (MANCOVA) with SSB and RSB as within-subject measures and group and social identity as between-subject factor were used to approximate the conceptual model of this study. To account for the effect of mechanisms, the change in each item scale or item was calculated ($t_2 - t_1$) and included as covariate. To preserve as much degrees of freedom as possible, and consequently as much power as possible, multiple repeated measures MANCOVAs were used, each accounting for item scales and items belonging to one topic. For example, the repeated measures MANCOVA with SSB and RSB as within-subject measures and group and social identity as between-subject factor for the topic feelings in sexual relationships included the item scale feeling comfortable in one's relationship and the item feeling uncomfortable in one's relationship as covariates.

Before conducting the repeated measures MANCOVAs its assumptions were tested. First, sphericity was not an issue, due to the fact that the analysis only involved two dependent variables. Secondly, Shapiro-Wilk statistics indicated that the assumption of normality was supported in most cases, demonstrating homogeneity of variances. Finally, Levene's test was non-significant in most cases, which also indicated a homogeneity of variances. When Levene's test was significant, this was usually a small departure from the homogeneity of variances assumption, which is often considered acceptable, because the F ration is quite robust with respect to the homogeneity of variances assumption (Lindman, 1974).

Mechanism: the choice to perform safe sex behaviour

The results of the repeated measures MANCOVAs indicated two significant changes in SSB between t_1 and t_2 (see Table 3). First, the results indicated a significant change in SSB after accounting for knowledge of protection against HIV/AIDS measured on false statements. Descriptive statistics showed that the score on this item's score increased from $M = 2.61$, $SD = 1.23$ at t_1 to $M = 2.84$, $SD = 1.13$ at t_2 . Plots of change in SSB between intervention and control groups for different social identities showed that SSB increased in both groups. Furthermore, the intervention group generally scores higher on SSB than the control group. However, this was not the case for learners with gender as most salient social identity (see Figure 5).

Table 3.

Table of Within-Subject Scores for Mechanism: The Choice to Perform Safe Sex Behaviour.

	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Knowledge of HIV				
Groups x Social Identity x True statements about HIV				
Safe sex behaviour	12, 280	1.52	.117	.06
Risk-taking sexual behaviour	12, 280	0.97	.481	.04
Groups x Social Identity x False statements about HIV				
Safe sex behaviour	12, 280	1.83	.044 *	.07
Risk-taking sexual behaviour	12, 280	1.48	.132	.06
Knowledge of sexual and reproductive health				
Groups x Social Identity x Knowledge of condom use				
Safe sex behaviour	12, 270	1.28	.230	.05
Risk-taking sexual behaviour	12, 270	1.24	.254	.05
Groups x Social Identity x Knowledge of the menstrual cycle				
Safe sex behaviour	12, 270	1.06	.393	.05
Risk-taking sexual behaviour	12, 270	3.93	.000 *	.15
Groups x Social Identity x Knowledge of abortion				
Safe sex behaviour	11, 270	0.50	.905	.02
Risk-taking sexual behaviour	11, 270	0.82	.625	.03
Sexual attitudes				
Groups x Social Identity x Ideas about sex				
Safe sex behaviour	12, 296	1.00	.447	.03
Risk-taking sexual behaviour	12, 296	1.08	.377	.04
Groups x Social Identity x The right to say no				
Safe sex behaviour	12, 296	1.14	.328	.04
Risk-taking sexual behaviour	12, 296	1.25	.247	.05
Ideas about sex, condom use, and relationships				
Groups x Social Identity x Peer pressure				
Safe sex behaviour	11, 232	0.74	.696	.03
Risk-taking sexual behaviour	11, 232	1.10	.363	.05
Groups x Social Identity x Trust and condom use				
Safe sex behaviour	11, 232	1.63	.089	.07
Risk-taking sexual behaviour	11, 232	1.99	.030 *	.09
Groups x Social Identity x Ideas about condom use				
Safe sex behaviour	11, 232	2.15	.018 *	.09
Risk-taking sexual behaviour	11, 232	1.48	.140	.07
Groups x Social Identity x Ideas about condom use				
Safe sex behaviour	12, 232	1.54	.111	.07
Risk-taking sexual behaviour	12, 232	1.63	.084	.08

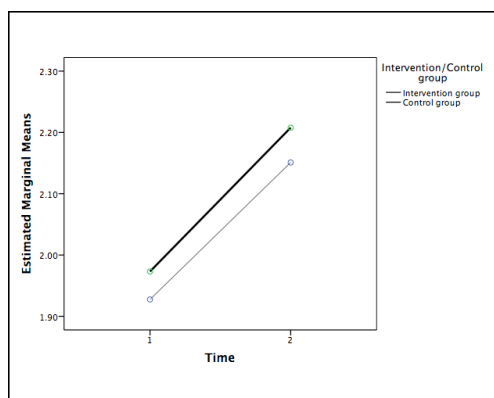


Figure 5. Plot of safe sex behaviour over time after accounting for knowledge of HIV on false statements.

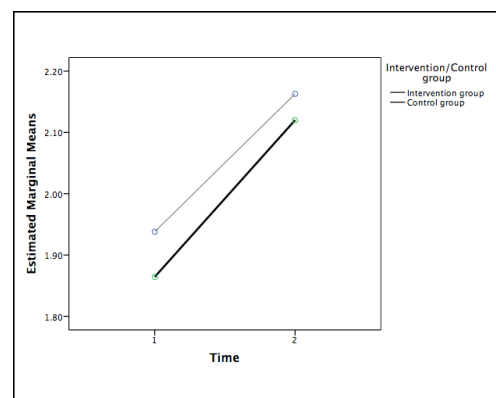


Figure 6. Plot of safe sex behaviour over time after accounting for ideas about condom use.

Note: Figures display the results for learners with gender identity as most salient social identity

Secondly, the results indicated a significant change in SSB after accounting for ideas about condom use. Descriptive statistics showed that this item’s score decreased from $M = 1.99, SD = 0.92$ at t_1 to $M = 1.85, SD = 0.93$ at t_2 . Plots of the change in SSB after accounting for ideas about condom use showed that SSB increased in both groups for all identities. Furthermore, the intervention group generally scored higher on SSB after the intervention than the control group. This was also true for learners with gender identity as most salient social identity (see Figure 6). These findings suggest that the CHAMP Prevention Programme contributed to a better knowledge of condom use and that better knowledge of condom use contributed to SSB.

The results of the repeated measures MANCOVAs also indicated two significant changes in RSB (see Table 3). First, the results indicated a significant change in RSB after accounting for knowledge of the menstrual cycle. Descriptive statistics showed that this item’s score decreased from $M = 1.91, SD = 0.29$ at t_1 to $M = 1.80, SD = 0.41$ at t_2 . Plots of change in RSB after accounting for knowledge of the menstrual cycle showed a decrease of RSB among most learners in the intervention group (see the change in RSB for learners with gender identity as most salient social identity in Figure 7). Only learners in the intervention group with being part of a family as most salient social identity showed a small increase in RSB. The changes in RSB in the control group varied across social identities.

Secondly, the results indicated a significant change in RSB after accounting for ideas about trust and condom use in relationships. Descriptive statistics showed that this item’s score increased from $M = 2.54, SD = 0.97$ at t_1 to $M = 2.70, SD = 1.00$ at t_2 . Plots of change in RSB after accounting for ideas about trust in a relationship showed a decrease of RSB among most learners in the intervention group. Only learners with being part of a family as most salient social identity showed an increase in RSB. The changes in RSB in the control group varied across social identities; for learners with being South African as most salient social identity RSB did not change much, while RSB increased among learners with age, gender (see Figure 8), or being part of a family as most salient social identity increased.

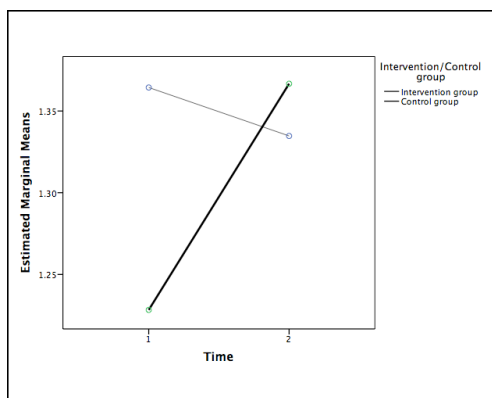


Figure 7. Plot of risk-taking sexual behaviour over time after accounting for knowledge of the menstrual cycle.

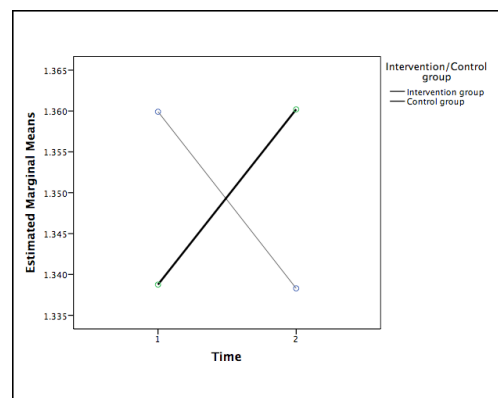


Figure 8. Plot of risk-taking sexual behaviour over time after accounting for ideas about trust in relationships.

Note: Figures display the results for learners with gender identity as most salient social identity

Mechanism: the choice of sexual partner

The repeated measures MANCOVAs indicated no significant changes in SSB between t_1 and t_2 after accounting for the item scales and items of this mechanism. The results indicated, however, two significant changes in RSB between t_1 and t_2 (see Table 4). First, there was a significant change in RSB after accounting for feeling comfortable in one's relationship. Descriptive statistics showed that this item's score decreased from $M = 2.10$, $SD = 0.55$ at t_1 to $M = 2.01$, $SD = 0.50$ at t_2 .

Table 4.

Table of Within-Subject Scores for Mechanism: The Choice of Sexual Partner

	<i>df</i>	<i>F</i>	<i>p</i>	<i>η</i>
Feelings about sexual relationship				
Groups x Social Identity x Feeling comfortable in one's relationship				
Safe sex behaviour	10, 84	0.80	.629	.09
Risk-taking sexual behaviour	10, 84	2.96	.003 *	.26
Groups x Social Identity x Feeling uncomfortable in one's relationship				
Safe sex behaviour	10, 84	1.08	.384	.11
Risk-taking sexual behaviour	10, 84	2.76	.005 *	.25
Relationship Control				
Groups x Social Identity x Expectations in relationships				
Safe sex behaviour	10, 39	1.80	.094	.32
Risk-taking sexual behaviour	10, 39	0.65	.766	.14
Groups x Social Identity x Decision-making in relationships				
Safe sex behaviour	10, 39	0.13	.130	.30
Risk-taking sexual behaviour	10, 39	0.31	.305	.24
Groups x Social Identity x Control in relationships				
Safe sex behaviour	8, 39	0.87	.873	.09
Risk-taking sexual behaviour	8, 39	0.86	.862	.09
Ideas about relationships				
Groups x Social Identity x Emancipated ideas about relationships				
Safe sex behaviour	12, 293	1.39	.168	.05
Risk-taking sexual behaviour	12, 293	0.51	.908	.02
Groups x Social Identity x No emancipated ideas about relationships				
Safe sex behaviour	11, 293	0.51	.899	.02
Risk-taking sexual behaviour	11, 293	1.30	.223	.05

Secondly, there was a significant change in RSB after accounting for feeling uncomfortable in one's relationship. Descriptive statistics showed that this's score item did not change with $M = 2.54$, $SD = 0.97$ at t_1 and $M = 2.57$, $SD = 0.96$ at t_2 . Plots indicated that RSB decreased in the intervention group across all social identities. The changes in RSB in the control group, varied across social identities; RSB increased among learners with age or gender (see Figure 9) as most salient social identity and decreased among learners with being South African or being part of a family as most salient social identity.

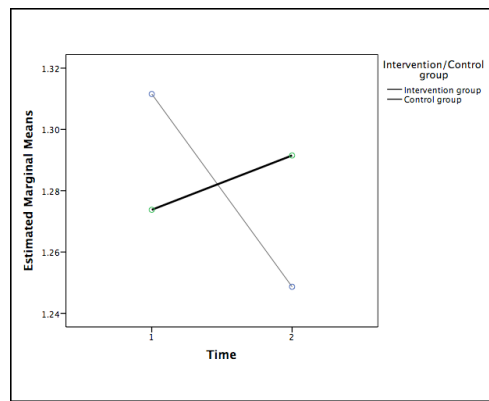


Figure 9. Plot of safe sex behaviour over time after accounting for feelings about sexual relationship. Social identity = gender identity.

Note: Figure displays the results for learners with gender identity as most salient social identity

Mechanism: the choice to endure high risk situations

The repeated measures MANCOVAs indicated four significant changes in SSB between t_1 and t_2 (see Table 5). First, there was a significant change in SSB after accounting for being physically abused. Plots of change in SSB after accounting for being physically abused indicated an increase in SSB among learners in the intervention group and the control group across all social identities. Furthermore, learners in the intervention group generally scored higher on SSB at t_2 than learners in the control group. This was also true for learners with gender as most salient social identity (see Figure 10).

Table 5.

Table of Within-Subject Scores for Mechanism: The Choice to Endure High Risk Situations

	<i>df</i>	<i>F</i>	<i>p</i>	η
Being physically abused				
Groups x Social Identity x Being physically abused				
Safe sex behaviour	12, 308	3.78	.000 *	.13
Risk-taking sexual behaviour	12, 308	2.58	.003 *	.09
Emotionally abusing someone				
Groups x Social Identity x Emotional abusing someone				
Safe sex behaviour	12, 308	2.73	.002 *	.10
Risk-taking sexual behaviour	12, 308	2.46	.004 *	.09
Being Emotionally abused				
Groups x Social Identity x Being emotionally abused				
Safe sex behaviour	12, 308	1.73	.059	.06
Risk-taking sexual behaviour	12, 308	2.78	.001 *	.10
Sexually abusing someone				
Groups x Social Identity x Sexually abusing someone				
Safe sex behaviour	11, 309	3.70	.000 *	.12
Risk-taking sexual behaviour	11, 309	8.06	.000 *	.22
Being sexually abused				
Groups x Social Identity x Being sexually abused				
Safe sex behaviour	9, 311	4.53	.000 *	.12
Risk-taking sexual behaviour	9, 311	18.82	.000 *	.35

Secondly, there was a significant change in SSB after accounting for being sexually abused. Plots of change in SSB after accounting for being sexually abused indicated an increase in SSB among learners in the intervention group and the control group across all social identities. Furthermore, learners in the intervention group generally scored higher on SSB at t_2 than learners in the control group. This was also true for learners with gender as most salient social identity (see Figure 11).

Thirdly, there was a significant change in SSB after accounting for emotionally abusing someone. Plots of change in SSB after accounting for emotionally abusing someone, indicated an increase in SSB among learners in the intervention group and the control group across various all social identities. Generally this change was similar across various social identities and the increase larger in the intervention group than the control group. Figure 12 illustrates this for learners with gender as most salient social identity (see Figure 12).

Finally, there was a significant change in SSB after accounting for being sexually abusing someone Plots of change in SSB after accounting for sexually abusing someone, indicated an increase in SSB in both the intervention group and the control group. Furthermore, learners in the intervention group generally scored higher on SSB than learners in the control group. This is illustrated for learners with gender as most salient social identity in Figure 13. Descriptive statistics showed that these item scales' scores did not change.

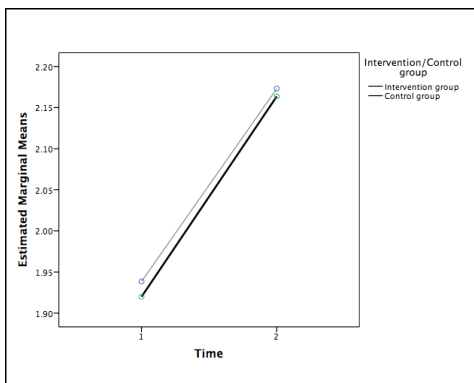


Figure 10. Plot of risk-taking sexual behaviour over time after accounting for being physically abused.

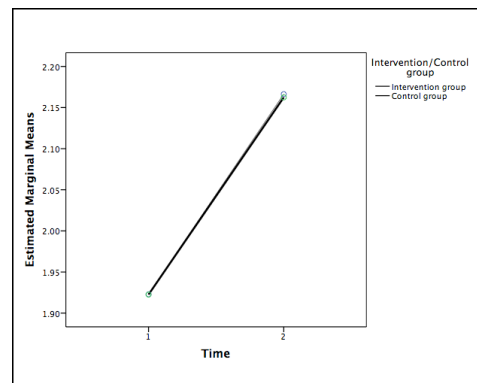


Figure 11. Plot of risk-taking sexual behaviour over time after accounting for being sexually abused

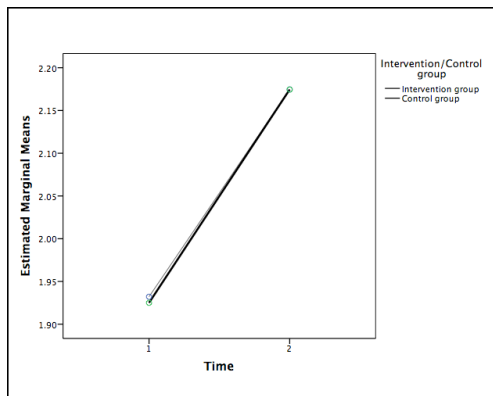


Figure 12. Plot of risk-taking sexual behaviour over time after accounting for emotionally abusing someone.

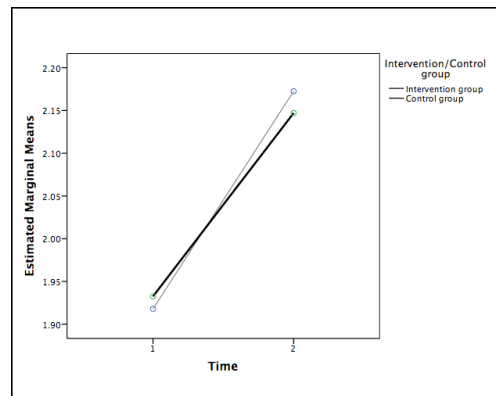


Figure 13. Plot of risk-taking sexual behaviour over time after accounting for sexually abusing someone

Note: Figures display the results for learners with gender identity as most salient social identity

The repeated measures MANCOVAs also indicated five significant changes in RSB between t_1 and t_2 (see Table 5). First, there was a significant change in RSB after accounting for being physically abused. Plots of change in RSB after accounting for physically abusing someone indicated that RSB decreased for most learners in both the intervention group and the control group and across various social identities. RSB increased, however, for learners in the intervention and the control group who had being South African as most salient social identity. Furthermore, learners in the control group with gender as most salient social identity had also a small increase in RSB (see Figure 14). These findings suggest an unexpected effect on RSB, because there was only a small change in RSB in the intervention group, while there was a large change in RSB in the control group. Furthermore, these findings suggest that the change in RSB was connected to learners' social identity.

Secondly, there was a significant change in RSB after accounting for being emotionally abused. Plots of change in RSB after accounting for being emotionally abused indicated that RSB decreased for the intervention group across the various social identities. This is illustrated for learners with gender as most salient social identity in figure 15. In the control group RSB increased for learners with age or language as most salient social identity and decreased for other social identities.

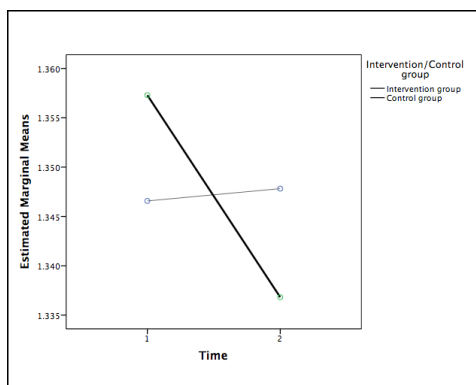


Figure 14. Plot of risk-taking sexual behaviour over time after accounting for being physically abused

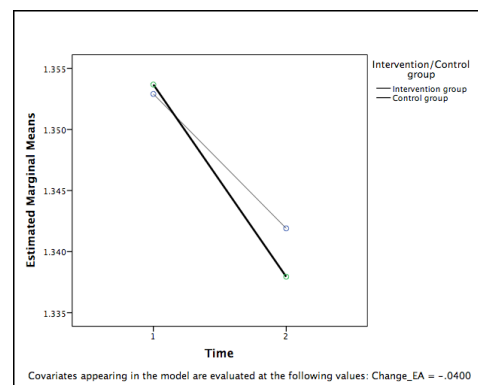


Figure 15. Plot of risk-taking sexual behaviour over time after accounting for emotionally abusing someone.

Thirdly, there was a significant change in RSB after accounting for being sexually abused. Plots of change in RSB after accounting for being sexually abused indicated that RSB decreased in both the intervention group and the control group across all identities. This is illustrated for learners with gender as most salient social identity in Figure 16.

Fourthly, there was a significant change in RSB after accounting for emotionally abusing someone. Plots of change in RSB after accounting for emotionally abusing someone indicated that RSB decreased in the intervention group across all social identities. This is also true for learners with gender as most salient social identity (see Figure 17). In the control group, RSB decreased across social identities except for learners with age and language as most salient social identity.

Finally, there was a significant change in RSB after accounting for sexually abusing someone. Plots of change in RSB after accounting for sexually abusing someone indicated that RSB increased for learners in the intervention group and the control group across social identities, with exception of learners with gender identity as the most salient

social identity. For learners with gender identity as most salient social identity there was a small decrease in RSB for learners in the intervention group and a large decrease in RSB for learners in the control group. This is illustrated for learners with gender as most salient social identity (see Figure 18). Descriptive statistics showed that the scores on the item scales which measured sexually abusing someone did not change.

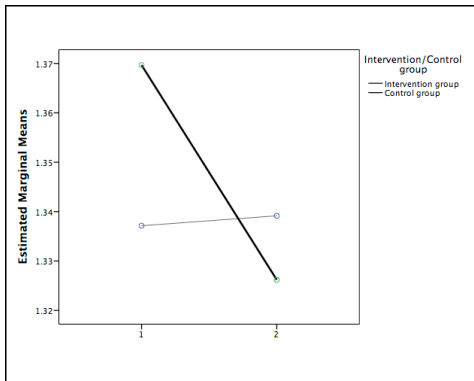


Figure 16. Plot of risk-taking sexual behaviour over time after accounting for being emotionally abused.

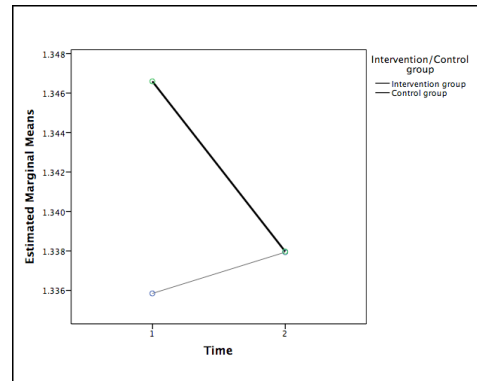


Figure 17. Plot of risk-taking sexual behaviour over time after accounting for sexually abusing someone

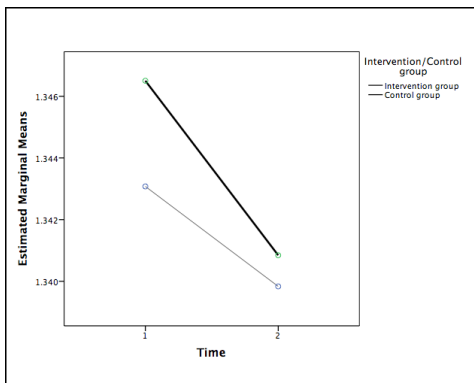


Figure 18. Plot of risk-taking sexual behaviour over time after accounting for being sexually abused.

Note: Figures display the results for learners with gender identity as most salient social identity

Mechanism: the capacity to negotiate safe sex

The repeated measures MANCOVA indicated that neither SSB, nor RSB changed significantly over time, after accounting for negotiation of safe sex (see Table 6).

Table 6.

Table of Within-Subject Scores for Mechanism: The Capacity to Negotiate Safe Sex

	<i>df</i>	<i>F</i>	<i>p</i>	<i>η</i>
Negotiation of safe sex				
Groups x Social Identity x Negotiation of safe sex				
Safe sex behaviour	12, 308	1.46	.137	.05
Risk-taking sexual behaviour	12, 308	0.86	.587	.03

Hypothesis 3: The psychological context in which risk-taking sexual behaviour is generated is constituted by gender identity.

A multivariate analysis of variance (MANOVA) with social identity as independent variable and identity-typical behaviour (risk-taking behaviour, talking about HIV/AIDS, talking about sex and condom use, and risk-averse behaviour) as dependent variables was conducted to examine differences in risk-taking behaviour among different social identities. Furthermore, a multivariate analysis of variance (MANOVA) with social identity as independent variable and SSB and RSB at t_1 as dependent variables was conducted to examine differences in SSB and RSB among learners with different social identities

Before conducting the MANOVAs the data were examined to ensure all of its underlying assumptions were met. Univariate normality was measured with Shapiro-Wilk tests and boxplots. These indicated that the assumption of normality was not supported. However, for large samples, a degree of departure from normality is usually not a concern and even expected, demonstrating a departure from homogeneity of variances. Sphericity was not an issue, because the analysis only involved two dependent variables. Correlations between the dependent variables were not excessive, indicating that multicollinearity was no concern. Furthermore, the relationships between the dependent variables were roughly linear.

As all the underlying assumptions were supported by the data, the MANOVAs were conducted. The results of the MANOVA with social identity as independent variable and identity typical behaviour as dependent variable indicated that there was no significant effect of the social identity variable (having a certain social identity) on the combined dependent variables, $F(20, 1260) = 1.02, p = .436, \eta_p^2 = .02$. Analysis of the dependent variables individually showed no effects for social identity on risk-taking behaviour, $F(5, 315) = 0.77, p = .568, \eta_p^2 = .01$, social identity on risk-averse behaviour, $F(5, 315) = 0.44, p = .824, \eta_p^2 = .01$, social identity on talking about HIV, $F(5, 315) = 1.32, p = .255, \eta_p^2 = .02$, and social identity on talking about sex and condom use, $F(5, 315) = 0.95, p = .447, \eta_p^2 = .02$. Furthermore, the results of the MANOVA with social identity as independent variable and SSB and RSB as dependent variables indicated that there was no significant effect of the social identity variable on the combined dependent variables, $F(10, 630) = 0.53, p = .868, \eta_p^2 = .01$. Analysis of the dependent variables individually showed no significant effect for social identity on SSB, $F(5, 315) = 0.63, p = .660, \eta_p^2 = .01$, or social identity on RSB, $F(5, 315) = 0.38, p = .864, \eta_p^2 = .01$.

Summary and Discussion

The purpose of the present study was to evaluate whether the CHAMP Prevention Programme was effective in reducing risk-taking sexual behaviour (RSB) by answering two research questions: Is the CHAMP Prevention Programme effective in reducing risk-taking sexual behaviour?; Which causal pathways explain the extent to which the CHAMP Prevention Programme is effective in reducing risk-taking sexual behaviour? A pre-test post-test control group design was used to assess whether the CHAMP Prevention Programme was effective. To assess why the CHAMP Prevention Programme was effective the causal pathways which generate risk-taking behaviour and the manner in which the CHAMP Prevention Programme aims to prevent this outcome from occurring were examined. Pawson and Tilley's (1997) realistic evaluation methodology was adopted to accommodate this focus. This evaluation methodology maintains that outcomes can be explained as generated by specific mechanisms in specific contexts. Four mechanisms, choices and capacities, which together with specific contexts generate RSB were identified (i.e. the choice to perform safe sex, the choice of sexual partner, the choice to endure high risk-situations, and the capacity to negotiate safe sex). Following identity-based motivation, the psychological context in which RSB is generated was conceptualised as learner's social identity (Oyserman & Destin, 2010).

To answer the research questions three hypotheses were formulated. The first research question was answered by testing the first hypothesis (i.e. the CHAMP Prevention Programme reduced risk-taking sexual behaviour). The results showed that learners in the intervention group scored significantly better on safe sex behaviour (SSB) after the intervention, indicating that the CHAMP Prevention Programme is effective in positively changing the sexual behaviour of learners in the programme. However, the results showed no significant reduction of RSB, indicating that the CHAMP Prevention Programme is ineffective in reducing risk-taking. A distinction between increasing SSB and decreasing RSB must thus be made. If learners perform safe sex practices, such as using a condom, but simultaneously perform risk-taking sexual practices, such as taking drugs or drinking alcohol before or during sex or having anal sex without a condom, it means that these learners are still at risk for HIV and other STIs. Therefore, it cannot be concluded that the CHAMP Prevention Programme is effective in reducing RSB. The hypothesis was thus rejected.

The second research question was answered by testing the second and the third hypothesis. The second hypothesis was that the extent to which the CHAMP Prevention Programme reduces risk-taking sexual behaviour is explained by the extent to which its blocking mechanisms effectively target a) the mechanisms 'the choice to perform safe sex behaviour', b) the mechanism 'the choice of sexual partner' c) the mechanism 'the choice to endure high risk situations', and d) the mechanism 'the capacity to negotiate safe sex'.

The analysis of the change in SSB and RSB after accounting for the mechanism the choice to perform safe sex behaviour revealed significant changes, indicating that the CHAMP Prevention Programmes was effective in changing the outcome by effectively putting blocking mechanisms in place. The results showed that there were significant differences in SSB among learners with different social identities in the intervention group and the control group after ac-

counting for their score on knowledge of HIV measured with false statements about HIV. The results also showed that the score on this item increased, which indicated that more learners thought that the statement was false after the intervention than before the intervention. Consequently, it can be concluded that the blocking mechanism of the CHAMP Prevention Programme was thus effective in increasing SSB, by providing knowledge about HIV. Additionally, the results showed that there were significant differences in SSB among learners with different social identities in the intervention group and the control group after accounting for their score on ideas about condom use. Results also show that the score on this item decreased, which indicated that more learners thought that people who are important to them think that they should use a condom after the intervention than before the intervention. This illustrated that this idea contributes to safe sex behaviour and that the CHAMP Prevention Programme effectively put a blocking mechanism in place to increase SSB. Furthermore, the results showed that there were significant differences in RSB among learners with different social identities in the intervention group and the control group after accounting for their score on knowledge of the menstrual cycle. The results also showed that this item's score decreased, which indicated that learners had a better knowledge of the menstrual cycle after the intervention than before the intervention. This illustrates that a better knowledge of the menstrual cycle contributes to a decrease in RSB. Consequently, it must be concluded that the CHAMP Prevention Programme effectively put a blocking mechanism in place to reduce RSB by providing knowledge about sexual and reproductive health. Finally, the results showed that there were significant differences in RSB among learners with different social identities in the intervention group and the control group after accounting for their score on ideas about trust in a relationship. The results also showed that this item's score increased. This indicated that less learners thought that if they would ask their partners to use a condom, their partners would think that they were having sex with other people, after the intervention than before the intervention. This illustrates that this thought contributed to a decrease in RSB. This outcome was expected, because the CHAMP Prevention Programme promotes condom use in relationships and aims to make the topic negotiable between partners. Consequently, it should be concluded that the extent to which the CHAMP Prevention Programme is effective is in most cases explained by the extent to which its blocking mechanisms targeted the mechanism the choice to perform safe sex behaviour.

The analysis of the change in SSB and RSB after accounting for the mechanism the choice of sexual partner revealed significant changes, indicating that the CHAMP Prevention Programmes was effective in changing the outcome by effectively putting blocking mechanisms in place. The results showed that there were significant differences in RSB among learners with different social identities in the intervention group and the control group after accounting for their score on feeling uncomfortable in one's relationship. The results also showed that the score on this item remained roughly the same, which indicated that on average learners are as uncomfortable in their relationship after the intervention than before the intervention. This makes sense, because feelings about relationships tend to not change fast over time and negotiation of a change of behaviour in partners takes time. The reduction of RSB could therefore be explained as a change to refrain from RSB in relationships in which one feels uncomfortable. Consequently, it must be concluded that there is no evidence that the CHAMP Prevention Programme effectively targeted the choice of a

sexual partner by providing information about gender roles and acceptable behaviour, but that there is evidence to conclude that the CHAMP Prevention Programme effectively puts a blocking mechanism in place to reduce RSB by providing information about safe sex behaviour for individuals who are uncomfortable in their relationship. Additionally, the results showed that there were significant differences in RSB among learners with different social identities in the intervention group and the control group after accounting for their score on feeling comfortable in a relationship. The results also showed that the score on this item decreased, which indicated that more learners felt comfortable in their relationship after the intervention than before the intervention. This illustrates that feeling comfortable in one's relationship contributes to a decrease in risk-taking sexual behaviour. Consequently, it should be concluded that the extent to which the CHAMP Prevention Programme's is effective is in most cases explained by the extent to which its blocking mechanisms target the mechanism the choice to perform safe sex behaviour.

The analysis of the change in SSB and RSB after accounting for the mechanism the choice to endure high risk situations revealed significant changes, indicating that the CHAMP Prevention Programmes was effective in changing the outcome by effectively putting blocking mechanisms in place. The results showed that there were significant differences in RSB and SSB among learners with different social identities in the intervention group and the control group after accounting for their scores on being physically abused, being emotionally abused, emotionally abusing someone, being sexually abused, and sexually abusing someone. The results, however, also indicated that the score on these item scales did not change and were close to 0. This indicates that on average the extent of abuse was relatively low. The scores for learners who were abused could therefore not be interpreted. Consequently, it was not possible to draw a conclusion based upon the results of this mechanism.

The analysis of the change in SSB and RSB after accounting for the mechanism the capacity to negotiate safe sex behaviour showed no significant changes, indicating that the CHAMP Prevention Programmes was not effective in changing the outcome by effectively putting blocking mechanisms in place. Consequently, it should be concluded that the extent to which the CHAMP Prevention Programme is effective was explained by the extent to which the blocking mechanisms are effective in targeting this mechanism. After all, the change in SSB and RSB was non-significant after accounting for this mechanism.

The third hypothesis was that the psychological context in which risk-taking sexual behaviour is generated is constituted by gender identity. The results showed that gender identity was the most salient social identity among learners in our sample. Additionally, the results showed no significant difference in SSB and RSB before the intervention among learners with different social identities. These findings suggest that sexual behaviour before the intervention was not significantly connected to learners' social identity. This is in contrast with the findings of the analysis of change in SSB and RSB before and after the intervention, which showed that sexual behaviour is significantly connected to learners' social identity. This difference shows that while learners with different social identities do not generally differ in SSB and RSB, they differ significantly in their capacity to change these aspects. Furthermore, the results revealed no significant differences in identity-typical behaviour among different social identities. This indicated that learners with

different social identities did not differ in the risks they take and their behaviour as talking with peers about HIV/AIDS, sex, and condom use. Consequently, it is clear that learners with gender identity as most salient social identities do not differ significantly from learners with other social identities. Therefore, the hypothesis was rejected.

This result is in contrast with a study on the sexual behaviour of black rural youth in South Africa by Slabbert et al. (Forthcoming) who found a significant difference in risk-taking behaviour for learners for whom gender identity was the most salient social identity. It is difficult to explain this difference, because both studies used comparable samples and similar instruments to measure social identity and identity-typical behaviour. Considering that the results of the second hypothesis of this study showed differences in change in RSB and SSB among different social identities after the intervention, it is clear that certain identities accept and adopt safe sex practices more easily. This is congruent with identity-based motivation theory (Oyserman & Destin, 2010), which suggests that individuals' interpretation of the social and physical world, which cues their behaviour, is dependent on their identity (Elmore & Oyserman, 2012). Therefore, if the given information is incongruent with their social identity, i.e. their interpretation of the world, this information is likely to be ineffective to result in behavioural change. Therefore, an identity-based motivation approach is important for future HIV prevention programmes.

However, this study also has several limitations. First, due to time constraints, the number of sessions of the intervention was reduced from six to four sessions. The duration of these sessions was therefore a bit longer. It is likely that both the increased time per session and the reduced amount of repetition influenced the outcome of this study. Therefore, it is impossible to draw conclusions beyond the scope of the current intervention of the CHAMP Prevention Programme. Secondly, the data from both the baseline questionnaire data and the follow-up questionnaire data included a relatively high percentage of randomly missing data. This could indicate that learners lost attention while filling in the questionnaires, which suggests that the questionnaires were too long. Alternatively, it might indicate that learners did not understand the questions, which suggests that the questionnaires were too difficult. Due to the missing data the chance on a type I error, rejecting the null hypothesis while true, increased. Thirdly, the questions which were designated to measure the attendance were not answered consequently. Therefore, it is impossible to verify the effect of attendance on the change in SSB and RSB. Fourthly, results indicated a high level of change in the control group. This might indicate that there has been interaction between learners from schools in the intervention group and learners from schools in the control group. Alternatively, it might indicate that filling in the questionnaire primed the learners to think and talk about these topics, which was reflected in a different score on the follow-up questionnaire. Finally, for the analysis of the mechanisms of the CHAMP Prevention Programme a repeated measures MANCOVA was conducted. This analysis can detect change in mechanisms and demonstrate whether this change has a significant effect on the dependent variable. It is, however, impossible to distinguish between the absence of change in choices and capacities which generate safe sex behaviour and the absence of change in choices and capacities which generate risk-taking sexual behaviour. Therefore, the repeated measures MANCOVA analysis obscures an important part of the data.

There are several important directions for future research. First, more realistic evaluation studies are necessary to identify the causal pathways that generate risk-taking sexual behaviour to be able to effectively design context dependent interventions (Harrison et al., 2010). Results indicated that there were significant differences after the intervention among learners with different social identities, which suggests that the effectiveness of the programme differs per social identity, per context. Secondly, to assess the causal pathways that generate risk-taking sexual behaviour in more detail, a mediation analysis with time dependent variables is needed. By using a mediation analysis it is possible to explain the relationship between an independent variable and a dependent variable by a third variable, the mediator (Field, 2013). Furthermore, future studies should be conducted with a second follow-up questionnaire to establish whether the intervention effects are temporary or lasting.

There are also several directions for policy change. First, to be able to investigate whether CHAMP Prevention Programme is effective, the questionnaires should change. Because they either are too difficult or too long, it is necessary to shorten and simplify them. Furthermore, it might be advantageous to translate them into the learners' indigenous languages. This can be achieved without affecting its validity (Abubakar et al., 2013; Marquis et al., 2005). Secondly, future CHAMP Prevention Programme interventions should be given enough time to allow all intervention sessions to be given. This provides learners with shorter, partially overlapping sessions, which might increase the effect of the programme. Thirdly, future CHAMP Prevention Programmes should be planned earlier in the school term to prevent that the follow-up questionnaire is conducted when learners are taking their exams. Finally, to increase the effect of the CHAMP Prevention Programme, it is important to increase exposure to topics which did not significantly change the outcome, such as the negotiation of safe sex behaviour.

Despite its limitations, this study provides an provisional insight into the elements of the CHAMP Prevention Programme which are effective in increasing SSB and reducing RSB and for whom using realistic evaluation methodology. It showed significant changes among different social identities between the intervention and the control group, which indicates that this approach could contribute to the understanding of the generation and prevention of safe sex behaviour and risk-taking sexual behaviour among young adolescents.

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Addenda**Addendum A - List of abbreviations**

AIDS	Acquired Immunodeficiency Syndrome
CHAMP Programme	Community Health Awareness Motivation and Prevention Programme
HIV	Human Immunodeficiency Virus
IBM	Identity-based motivation
LSF	Life Skills Facilitator
NCG	Ndlovu Care Group
NGO	Non Governmental Organization
RE	Realistic Evaluation
RSB	Risk-taking Sexual Behaviour
SA	South Africa
SRH	Sexual Reproductive Health
SSB	Safe Sex Behaviour
SSBQ	Safe Sex Behaviour Questionnaire
STI	Sexual Transmitted Infection