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Girls Just Want to Know Where to Have Fun: Preventing Substance Use Initiation in an Under-Resourced Community in South Africa Through HealthWise

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Abstract

This study examined how the perception of the availability of leisure opportunities may prevent substance use initiation through HealthWise, a school-based program focused on reducing risky behavior. In this study, we specifically focused on whether HealthWise increased student perceptions of leisure opportunities between 8th grade and 10th grade ($N = 5610$) in an under-resourced community in South Africa. Path analyses were used to test hypotheses. Given gender differences in substance use patterns, societal norms, and leisure opportunities in under-resourced communities, such as the townships of Cape Town, South Africa, it was especially important to examine associations within each gender. Results suggested that HealthWise directly reduced the likelihood of initiating alcohol and cigarette use and increased the amount of perceived leisure opportunities among girls but not boys. Perceived leisure opportunities mediated the effect of HealthWise on reducing the initiation of alcohol and cigarette use directly, and marijuana use indirectly, among girls but not boys. This is the first study to demonstrate how experimentally targeting leisure through an intervention can increase perceived leisure opportunities and thereby prevent early substance use initiation for a specific population. The importance of considering the context of gender, age, and location is discussed.

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Compliance with Ethical Standards

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Conflict of interest The authors declare that they have no conflict of interest.

Research Involving Human Participants and/or Animals The research was conducted in full compliance with the APA standards for ethical practice in research, under the review of the Pennsylvania State University and the University of the Western Cape Institutional Review Board. These findings have not been published in any form nor submitted for consideration elsewhere.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all nine schools included in the study. All participating students provided assent and passive/opt out parental consent to be in the study. Passive/opt out parental consents were such that legal guardians had to return a form stating they did not want their child to participate as delineated in forms mailed to the students' addresses and a second copy students took home with them from school.

Keywords

Free time; Gender differences; Leisure; Prevention; Substance use

Substance use (SU) is widely recognized as a global health problem associated with a host of deleterious outcomes (Chassin et al. 2004). These include mental health problems (Windle and Windle 2001), risky behaviors (Palen et al. 2006), and lower educational and occupational attainment (Ackerman et al. 2000; Sutherland and Shepherd 2001). Delaying SU initiation is essential as it decreases the likelihood of later abuse and dependence (e.g., each year alcohol initiation is delayed decreases alcohol dependence and abuse by 14 and 8 %, respectively; Grant and Dawson 1997). Additionally, the initiation of soft or “gateway” drugs, such as alcohol, cigarettes, and marijuana, precedes other commonly targeted risky behaviors such as first sexual encounter and illegal, harder drugs, such as inhalants, cocaine, and heroin (Hedeker et al. 1992; Palen et al. 2009; Patrick et al. 2009).

Although there are evidence-based prevention programs that reduce SU initiation among youth, they have primarily focused on targeting parental control, perceived norms, refusal skills, and social-emotional skills (e.g., LifeSkills Training, Botvin and Griffin 2004; Keepin It Real; Marsiglia and Hecht 2005; Strengthening Families Program; Kumpfer and Alvarado 2003). Few have also targeted increasing teens’ ability to engage in healthy leisure activities despite healthy leisure being associated with reduced SU rates and increased positive developmental outcomes based on empirical findings and self-determination theories. For example, theories indicate healthy leisure can replace risky activities by meeting teen’s developmental needs (Caldwell and Baldwin 2005; Deci and Ryan 1985; Schwartz et al. 2009; Weybright et al. 2014). Targeting free time may be especially key in areas limited in healthy youth leisure opportunities, such as developing countries and rural/under-resourced communities (Caldwell et al. 1999; Patterson et al. 2000). This study specifically focuses on the importance of the perception of available leisure opportunities for youth in townships of Cape Town, South Africa (SA) and the association between this perception and the initiation of using gateway substances (alcohol, cigarettes, and marijuana). The perception of leisure opportunities is especially critical in this area due to the general lack of resources in many areas in, and surrounding, Cape Town.

The Importance of Targeting Leisure During Adolescence

Theories of psychosocial development (e.g., Erikson 1968) and risk taking (Haugaard 2001) propose that adolescence is a time for seeking out new, sensational experiences and developing one’s identity through activity choices. This is in line with neurological regulatory changes that occur in adolescence during which there are less regulated, rapid increases of dopaminergic activity that correspond to greater reward-seeking and risk-taking behavior (Steinberg 2008). At the same time, because of the pruning that takes place in the brain, youth can sculpt their abilities to control impulses and “ignite their passions” by developing interests and goal setting behavior (Dahl 2004). When adolescents’ leisure activities do not satisfactorily meet these needs, they may experience leisure boredom, which is linked to using alcohol, cigarettes, and marijuana and other forms of risk taking

(Caldwell and Smith 2006; Iso-Ahola and Weissinger 1990; Sharp et al. 2011; Weybright et al. 2015).

The term “leisure” as opposed to “free time” specifically emphasizes the importance of freely chosen, self-endorsed, intrinsically motivated “leisurely” activities that have potential health benefits that may not be experienced during free time activities, which may otherwise include mandatory, meaningless, or unenjoyable activities (e.g., chores; Sharp et al. 2011). Given that the majority of youth engage in unstructured free time (i.e., approximately two thirds of youth in the USA and even more in other non-Western countries; Carnegie Council on Adolescent Development 1992; Larson and Verma 1999), this study of youth in resource-limited areas did not distinguish between structured and unstructured leisure activities so as not to restrict study implications to only those who have access to structured extracurricular activities.

Having nothing to do was the most important factor linked to leisure boredom in a US sample; 41 % reported being bored due to a lack of something to do (Caldwell et al. 1999). This may logically be indicative of not knowing what there is to do in one’s community. Thus, given youth’s high rates of boredom in SA (Wegner et al. 2006), targeting boredom via leisure opportunities may be key to reducing high SU rates in SA, where by age 16, nearly half have used alcohol, 30 % cigarettes, and 13 % marijuana (Reddy et al. 2010).

A positive youth development framework (Damon 2004), flow theory and optimal arousal (Csikszentmihalyi 2014), and self-determination theory (Deci and Ryan 1985) form our study’s theoretical foundation. These theories suggest that healthy leisure activity options provide a context for teens to develop their identities, self-efficacy, and autonomy as well as improve their overall wellness through optimally challenging leisure experiences (Caldwell and Baldwin 2005; Csikszentmihalyi 2014; Mahoney et al. 2005; Wilson et al. 2010). In turn, this improved sense of self can help teens make better decisions and deal with peer pressure and thereby prevent SU (Schwartz et al. 2009).

One of the first steps in preventing SU through participation in healthy leisure is developing awareness of leisure opportunities, as such awareness is linked to less free time boredom (Barnett 2005). Therefore, this study focused on youth’s perception of leisure activity opportunities (PLO) in their communities. Consideration of PLO in the context of youth’s communities is essential as communities are the providers of opportunities (Carnegie Council on Adolescent Development 1992). PLO are at the heart of Caldwell’s leisure activity-context-experience model (2005) as they reflect what activities are available to youth in their context and whether youth experience them as accessible and healthy options.

Preventing SU Through Leisure: The HealthWise SA Program

HealthWise SA: Life Skills for Young Adults (HW) is a school-based prevention program designed to reduce SU and risky sexual behavior, by targeting youth’s leisure. HW is an extension and cultural adaptation of TimeWise: Taking Charge of Leisure Time (Caldwell 2004), a US high school prevention program (see Wegner et al. 2008 for cultural adaptation details). TimeWise was designed to help youth understand leisure benefits; avoid boredom;

recognize personal motivations; develop, identify, and engage in interesting community activities; and make healthy, meaningful decisions during leisure time. Both HW and TimeWise include refusal, relationship, and self-management skills, such as self-awareness, emotion regulation, and decision-making lessons, based on Botvin's evidence-based LifeSkills Training program (Botvin and Griffin 2004). Both also address sexual and SU norms, myths, and realities. HW consists of 12 lessons (each approximately two to three class periods long) in 8th grade and 6 lessons in 9th grade; lessons were provided in English or Afrikaans.

HW has reduced SU initiation, boredom, and other risky behaviors (Caldwell et al. 2010; Smith et al. 2008; Tibbits et al. 2011). However, some findings vary by gender. Specifically, HW reduced the likelihood of initiating alcohol, cigarette, and marijuana use for girls but not boys (Smith et al. 2008; Tibbits et al. 2011). This is consistent with gender differences in SU patterns outside of intervention effects in SA, where significantly more high school boys than girls have used alcohol (54 vs. 45 %), cigarettes (36 vs. 22 %), and marijuana (17 vs. 8 %; Reddy et al. 2010). Boys are also more likely to initiate these substances earlier than girls. Specifically, 15 % of boys initiate drinking alcohol by age 13 compared to 9 % of girls, twice as many boys as girls initiate smoking cigarettes by age 10, and 8 % of boys initiate marijuana use by age 10 compared to 3 % of girls (Reddy et al. 2010). While HW has been found to reduce these rates, these past studies have yet to identify mediators for these treatment and gender specific effects.

A Possible Explanation for Gender Differences in SU: Leisure Opportunity Experiences

A possible explanation for these gender differences in SU and treatment outcomes may be differences in the way girls and boys experience and engage in leisure activities. For example, girls in SA and rural areas of Australia experience more leisure boredom than boys do (Patterson et al. 2000; Wegner et al. 2006). For African American girls, greater boredom was linked to not finding anything to do in their free time while this was not the case for boys (Barnett and Klitzing 2006). This boredom and lack of PLO may be due to girls' restricted lives in these areas, activities they must engage in (e.g., females engage in domestic activities two and half times more than males), and a lack of options for girls in their community (Jones 1992; Møller 1991; Shaw et al. 1996). While both girls' and boys' free time activity choices are affected by adults and friends, girls report being more affected by social and home constraints than boys (Sharp et al. 2006). In a qualitative study, being a girl and in a neighborhood lacking safe leisure opportunities was one of the most commonly articulated constraints in SA (Palen et al. 2010). Thus, girls spend more time in religious activities and less time hanging out, while boys spend more time in sports and hanging out in generally unsupervised, unstructured activities (e.g., aimlessly at a mall or on street corners; Kaufman et al. 2002; Tibbits et al. 2009).

The availability of community activities (e.g., sports) can affect girls' versus boys' engagement in risky behaviors. Among youth in SA, having community activities available was related to a reduced likelihood of having sex for girls but not for boys even after

controlling for household and individual characteristics (e.g., parents' education and sports or religious activities involvement; Kaufman et al. 2002). Thus, leisure opportunities in the community was more important than whether girls actually engaged in healthy leisure activities, which was not associated with reduced risky behavior for girls. This may be due to girls viewing a greater availability of community activities as an indicator of more potential future opportunities (e.g., more educational and employment options), thus leading to more motivation to invest in school or avoid risky behaviors (Kaufman et al. 2002). This is consistent with US findings that girls benefit more from moving from low-income to better resourced/high socioeconomic status (SES) areas (Kling and Liebman 2004). Specifically, Kling and Liebman found that compared to girls who continued to live in their communities with few resources, girls who were relocated to communities with more PLO had lower SU rates. On the other hand, compared to boys who stayed, boys who were relocated had higher rates of SU.

Hypotheses

Given that leisure experiences vary from girls to boys and that previous HW findings demonstrated gender differences in SU outcomes, this study aimed to understand how PLO plays a role in HW treatment effects on SU and how these paths are different by gender (Smith et al. 2008; Tibbits et al. 2011). As HW is a prevention intervention, this study focused on the outcome of preventing the initiation of gateway drugs (i.e., alcohol, cigarettes, and marijuana) between the start of 8th grade and the start of 10th grade. The start of 10th grade was of special interest as it was after the end of both the 8th and 9th grade HW intervention and after youth had a lot of free time (i.e., the summer school break) to practice using HW skills. We focused on PLO as opposed to actual leisure activity engagement since the latter was not associated with reduced risky behavior, but community leisure opportunities were associated with reduced risky behavior for girls when the two constructs were put in one model in a study by Kaufman et al. (2002). Specifically, we hypothesized that (1) with three cohorts of data, we would replicate HW cohort one findings of preventing the initiation of alcohol, cigarette, and marijuana use for girls but not boys by the start of 10th grade; (2) HW would increase girls' PLO but not boys' PLO and more PLO would reduce the likelihood of initiating alcohol, cigarette, and marijuana use for girls but not boys; and (3) PLO would mediate the path from HW to preventing the initiation of alcohol, cigarette, and marijuana use for girls but not boys.

Method

Study Design

From 2004 to 2008, HW was trialed in Mitchell's Plain, a low-income, densely populated urban township that developed during the Apartheid era near Cape Town, SA. Of the 25 high schools in the area, 6 were excluded based on the school district's recommendations and concerns that the schools would have difficulty fully implementing the intervention as they had significant disorder and problems (e.g., excessive gang violence, regular school gun shootings, high teacher turn over, and principals/teachers that would not arrive for work). Of the remaining eligible 19 schools, 4 were randomly selected to receive HW. Based on South

African colleagues' knowledge of schools, five were selected to match treatment schools based on their size, location, safety, fees, access, and students' SES. Treatment schools taught the HW curriculum in life orientation classes in 8th and 9th grade, while the five control schools continued "business as usual," in terms of fulfilling the required life orientation content.

To be in the study, all students provided assent and passive/opt out parental consent such that legal guardians had to return a form stating they did not want their child to participate as delineated in forms mailed to the students' addresses and a second copy students took home with them from school. Data for this study were collected through youth self-report surveys prior to the start of the intervention in the first 2 months of the beginning of 8th grade (pre-intervention), which is when high school starts in SA, and at the start of 10th grade (follow-up, the start of the school year following intervention's end). Three different cohorts of students were followed longitudinally from 8th grade through 10th grade with one cohort starting 8th grade in 2004, another cohort of 8th graders starting in 2005, and a third cohort starting 8th grade in 2006.

Participants

From 2004 to 2008, 6253 students were enrolled in the HW study with 38 % from the first cohort, 34 % from the second, and 28 % from the third. Of those, 5610 had baseline data (63 % in control and 37 % in treatment) and were used in this study as it focused on prevention and included youth based on three baseline characteristics. Specifically, analyses were based on the following three overlapping subsamples of youth who had not initiated the respective substance by the start of 8th grade (baseline): 4264 baseline non-drinkers of alcohol, 3716 baseline non-smokers of cigarettes, and 4809 baseline non-users of marijuana. As seen in Table 1, groups largely overlapped in SU as 49 % of boys and 61 % of girls had not used any of the three substances at baseline. There were no significant differences in SU initiation between the control and experimental group, but there were significant gender differences at baseline across each substance, with more boys than girls initiating use of each substance (27 vs. 20 %, $\chi^2 = 38.94$ for baseline non-drinkers of alcohol; 36 vs. 31 %, $\chi^2 = 15.19$ for baseline non-smokers of cigarettes; and 20 vs. 9 %, $\chi^2 = 127.11$ for baseline non-users of marijuana, $p < .01$ for all).

As described in Table 2, participants were on average approximately 14 years old and the majority (84.40–93.90 %) identified as mixed race (mix of Asian, European, and African ancestry), with the rest identifying as Black (3.90–10.80 %), White (1.90–2.30 %), and Indian/other (less than 0.60 % for any subgroup, not shown). About two thirds identified as Christian (59.70–69.60 %), 22.90 to 37.10 % as Muslim, and 3.20 to 7.40 % as other. Regarding SES, 55.21 to 61.35 % of respondents indicated that their family owned a car, which was surveyed as opposed to household income since in these areas, 26 % of able adults were unemployed (Statistics South Africa 2007) and among the employed, youth often did not know their caregivers' incomes, which generally fluctuated with employment opportunities. Fewer HW students indicated their family owned a car as compared to control students. HW students also significantly differed from control on religion and race as they

were less likely to identify as Muslim or mixed race and more likely to identify with other religions and being black.

Measures

PLO scale—The degree to which participants felt at that time they could find or create opportunities to do activities in their community during free time was assessed at two time points (i.e., start of 8th and 10th grade, pre and post-intervention, respectively) using the average of the following three items: “My community has things for people my age to do in our free time,” “I am confident I can find free time activities to do in my community,” and “If nothing exists, I can organize leisure activities to do in my community.” When an item from the subscale was not answered, an average score was created using the non-missing items. Items were rated on a five-point Likert scale (0 = strongly disagree to 4 = strongly agree) and had adequate internal consistency (start of 8th grade: $\alpha = .72$; start of 10th grade: $\alpha = .78$) for a three-item scale. Items were based on the leisure awareness scale from Caldwell et al. (2004).

Initiation of SU—Lifetime rates of alcohol, cigarettes, and marijuana use at two time points (i.e., start of 8th and 10th grade) were used to assess initiation of SU from baseline to the start of 10th grade. The sample was delimited into three sets based on those indicating no lifetime alcohol use at baseline, those indicating no lifetime cigarette use at baseline, and those indicating no lifetime marijuana use at baseline. Rates were assessed with the questions “How many drinks of alcohol (including beer and wine) have you had in your entire life?” (0 = none part/all of 1 drink, 1 = more than 1 drink), “How many cigarettes have you smoked in your entire life?” (0 = none or a few puffs of 1 cigarette, 1 = more than 1 cigarette), and “How many times have you used dagga (the term for marijuana in SA) in your entire life?” (0 = none, 1 = once or more). At the start of 10th grade, those reporting never using the respective substances before were coded 0 to indicate not having initiated the substance (i.e., analyses were conducted separately for each substance), while those who had used the respective substance were coded 1.

Missing Data

Within each individual survey assessment, participants were missing very little data (about 1 % of responses), but between the start and end of each grade, an average of 10 % of the target population was lost due to attrition ($N_{8\text{th grade start}} = 5626$ and $N_{10\text{th grade start}} = 3450$; for a total of up to 39 % missing on measures by the start of 10th grade). Those who did not have data at the start of 10th grade were older, were more likely to be male, had slightly lower perceptions of activity opportunities at baseline, were more likely to have initiated SU, and less likely to be mixed race. This missingness was likely not unique to the HW study as 60 % of students drop out between 1st grade and the end of high school in SA, and drop out characteristics are consistent with those associated with this study’s attrition (Townsend et al. 2008). While this missingness is not at random (MNAR), simulation studies (Collins et al. 2001) and analyses with this data set (Graham et al. 2008) have shown that any bias in the estimates resulting from attrition rates as high as 50 % does not necessarily compromise the validity of findings as long as appropriate missing data procedures are used (Collins et al. 2001; Graham 2009; Graham et al. 2008). Thus, to account for missing data, all analyses

used FIML with maximum likelihood estimation in Mplus using baseline characteristics (i.e., religion as well as age and SES, which predicted missingness).

Analytic Strategy

Path analyses were used to test hypotheses and systematically build final assessments of whether PLO mediated the association between HW and SU initiation by 10th grade and whether this varied by gender. For each outcome, separate models were estimated with the data limited to those who had not initiated the substance of interest by the start of 8th grade. Moderation by gender was used to first test whether gender interacted with HW to have direct effects on SU. Based on moderation results and past research, separate models for each gender were used for the rest of the analyses. Per Muthén and Muthén's (2010) recommendations for testing mediation with dichotomous outcomes (i.e., initiating alcohol use, initiating cigarette use, and initiating marijuana use), robust weighted least squares were used to estimate paths in Mplus. Given the low interclass correlation within schools for PLO and the initiation of each substance at each time point ($ICC = 0-.01$), nesting students within schools was deemed unnecessary. Age and household possession of a car were controlled for in all analyses. As girls engage in religious activities more than boys do in SA, which may affect their ability to do other activities, we also controlled for religion (Muslim vs. Christian; Kaufman et al. 2002; Palen et al. 2010). Lastly, baseline PLO were controlled for in all analyses involving 10th grade PLO.

Results

Hypothesis 1: The Direct Effect of HW on SU Initiation

As this study used all three cohorts of data, the first set of path analyses tested whether we would reproduce Smith et al. (2008) findings that HW's effect on the initiation of SU was moderated by gender with cohort one of HW. As expected, among baseline non-drinkers, HW's effect on preventing alcohol use by the start of 10th grade was moderated by gender (*log odds ratio* (OR) = .58, $p < .01$). Specifically, treatment reduced the likelihood of initiating alcohol use among girl baseline non-drinkers ($OR = .76$, $p = .02$) but did not for boys ($OR = 1.23$, $p = .13$). Similarly, among baseline non-smokers, HW's effect on preventing cigarette use by the start of 10th grade was moderated by gender ($OR = .64$, $p = .02$) with treatment reducing girls' likelihood of initiating cigarette use ($OR = .73$, $p = .01$) but not boys' ($OR = 1.14$, $p = .35$). Among baseline non-users of marijuana, no significant HW effects were found for moderation by gender ($OR = .97$, $p = .86$) and when separate analyses were done by gender (girls: $OR = .93$, $p = .52$; boys: $OR = .96$, $p = .73$). Thus, HW girls had lower rates of initiating alcohol and cigarette use compared to control girls while boys were about the same across conditions. Although a direct effects pattern was not found for marijuana, possible indirect effects via PLO were still explored. Given that HW's effects were moderated by gender and findings that the degree to which community leisure activities affects risky behavior varies by gender (Kaufman et al. 2002), all the following analyses were separated by gender.

Hypothesis 2: The Role of PLO for Girls and Boys

The next set of path analyses tested the hypotheses that HW increased PLO, and this in turn reduced the likelihood of initiating SU. Among girls, HW increased PLO by the start of 10th grade for baseline non-drinkers, baseline non-smokers of cigarette, and baseline non-users of marijuana ($\beta = .08$ to $.09$, $p < .01$ for all). However, this pattern was not found among boys ($\beta = .02$ to $-.02$, $p = .49$ to $.92$). In turn, among girls, more PLO at the start of 10th grade was associated with being less likely to initiate drinking alcohol, smoking cigarettes, and using marijuana by 10th grade but not among boys (see Fig. 1).

Hypotheses 3: The Indirect Effect of HW on SU Initiation via PLO for Girls and Boys

The last set of path analyses tested whether PLO mediates the association between HW and SU initiation by 10th grade using the joint significance test (MacKinnon et al. 2002). Mplus uses the delta method to test for mediation, which is akin to the Sobel method (Muthén and Muthén 2010). The test includes confidence intervals; if zero is not in the interval, it indicates that the indirect effect is different from zero.

Among girls not drinking at baseline, the effect of PLO mediating the association between HW and being less likely to initiate drinking by 10th grade was estimated to be -0.03 with a 95 % confidence interval of -0.07 to -0.02 . Similarly, an effect of -0.03 with a 95 % confidence interval of -0.07 to -0.01 was estimated for initiating smoking cigarettes by 10th grade among baseline non-smoking girls and an effect of -0.04 with a 95 % confidence interval of -0.07 to -0.02 for initiating marijuana use by 10th grade among baseline non-using girls. These mediated effects did not exist among boys who had not initiated SU at baseline. Thus, PLO significantly mediated HW's effect of reducing the likelihood of initiating alcohol, cigarette, and marijuana use for girls but not boys.

Discussion

Using all three cohorts of data, this study adds to the evidence that HW is an efficacious intervention for preventing girls from initiating SU and provides insight into the mechanism by which the intervention is successful. Similar to past studies, HW had different effects for girls versus boys. Specifically, this study reproduced past findings that HW reduces the likelihood of initiating SU (i.e., alcohol and cigarette use, as well as marijuana indirectly) among girls but not boys using all cohorts of data, including the first cohort used in past studies' findings (e.g., Smith et al. 2008; Tibbits et al. 2011). However, none of these past studies have established possible mechanisms of change contributing to this reduction in SU patterns. Past studies have indicated that a possible mediator is perception of leisure activities, as leisure and the reduction of boredom were linked to lower rates of SU (e.g., Caldwell and Smith 2006; Sharp et al. 2011; Weybright et al. 2014). This study produced results similar to these studies as higher PLO were linked to lower rates of alcohol, cigarette, and marijuana use initiation among girls but not boys.

This study goes beyond past research by being the first to demonstrate how experimentally targeting leisure through an intervention improves PLO and thereby reduces SU initiation for a specific population. Specifically, PLO mediated a reduction in the likelihood of using

alcohol, cigarettes, and marijuana by 10th grade among girls not using the respective substance at the start of 8th grade. However, these effects did not hold for boys. These findings provide support for Caldwell's leisure activity-context-experience model (2005), one of the key concepts behind HW, as they demonstrate the importance of leisure and the specific experience of perceiving opportunities for leisure activities in one's community.

Understanding Leisure's Facets within the Context of Gender Opportunities and Norms

HW may have differentially influenced PLO through the context of different constraints girls and boys have on their free time. Compared to boys, girls in SA experience more interpersonal constraints, such as judgment by peers and greater parental pressure to spend time on chores or religious activities (Gleeson 2008). They are also constrained by gender-specific norms (e.g., sports are for boys and girls lack the skills for sports or video games). HW specifically helps youth overcome these constraints by teaching them how to manage and negotiate their free time with peers and parents and by explicitly discussing stereotypes, especially gender norms, preventing youth from engaging in specific leisure activities. HW also targets developing self-esteem and self-talk to participate in activities, which may be particularly relevant to girls who may have lower self-esteem (Raymore et al. 1994). Being able to negotiate free time and use positive self-talk are both strategies identified by youth in SA as helping overcome constraints on leisure opportunities (Palen et al. 2010). Additionally, HW helps youth identify locations and phone numbers for places offering activities, which may be especially important for girls as schools may limit some sports opportunities to boys (Gleeson 2008). Thus, HW may have increased girls' PLO by addressing their leisure constraints.

Context may also explain why PLO were related to girls' SU initiation but not boys'. Additional leisure options in a low resource area like a Cape Town township may be a promising break from the typical limited activities that may bore girls in SA (e.g., domestic or religious activities) as compared to boys, who engage in more fun activities like sports or hanging out with friends (Kaufman et al. 2002; Patterson et al. 2000). Specifically, PLO may increase girls' prospects for choosing what activities they do in domains such as education or work (Kaufman et al. 2002; Kling and Liebman 2004). Greater PLO may also broaden girls' identities beyond typical roles (e.g., domestic ones) since leisure may influence adolescence identity development (Caldwell and Baldwin 2005; Wilson et al. 2010). Thus, by increasing new PLO, HW may reduce girls' boredom during free time and increase their motivation to avoid risky, sensation-seeking activities (e.g., initiating SU) that could jeopardize their newfound opportunities.

Similarly, context may explain why PLO were not found to significantly be related to boys' SU initiation and explain how boys experience leisure differently from girls. Foremost, it is important to consider the context of age since boys initiate SU earlier than girls and thus, 10th grade may be too late of a time for PLO to have a significant effect (Reddy et al. 2010). Secondly, some leisure in SA may have some detrimental effects for boys, such as community sports which have been linked to greater risky behavior among boys but less risky behavior among girls (Kaufman et al. 2002). This may be due to male stereotypes for risky behavior (e.g., "real men drink") being exacerbated by perceived peer norms and social

pressures of what is acceptable and expected in group leisure activities (Gefou-Madianou 1992; Patrick et al. 2010). Thus, more PLO may not change boys' experience of continued social pressure for SU given the context of "kwaai" (*macho*) expectations (Patrick et al. 2010). Rather, for boys, it may be key to have less-pressured and healthier leisure choices at an earlier age that are associated with reduced SU (Weybright et al. 2014) or change boys' experiences such that they are more intrinsically motivated rather than extrinsically since in SA, boys are more often motivated by social status and awards (Gleeson 2008). Thus, while PLO can significantly prevent early SU among girls, it is important to understand how this may vary among various social norms and contexts, such as those for boys who PLO did not affect.

Limitations and Future Directions

Future studies should examine the effects of a leisure-focused intervention on other populations, including other ages and cultures. Our study's findings are limited by our sample of mostly mixed race high school youth from townships near Cape Town. Findings may not be representative of youth in SA who are primarily Black African or other populations (Reddy et al. 2010). Findings may also be different for different age groups. As significantly more boys had initiated using alcohol and marijuana in this study than girls by the start of 8th grade, as well as in other studies, the potential effect of PLO may have been mitigated on SU initiation by 8th grade for boys (e.g., Reddy et al. 2010; Patrick et al. 2009). This study uses a relatively new measure of PLO that is based on three self-report items that focus on how youth generally perceive the opportunity for engaging in free time or leisure activities in the community. Future research may want to specifically differentiate between whether youth know of more unstructured versus structured opportunities. Also, future studies should consider examining other leisure measures' effects and study SU initiation at an earlier age or use amount of SU by 10th grade as an outcome as opposed to initiation for boys, which HW has been found to reduce (Smith et al. 2008).

Additionally, study findings should be interpreted with caution as the intervention and control condition were not equivalent at baseline despite schools being randomly assigned to each. However, this study addressed these issues through the inclusion of appropriate covariates. Also, as students in HW were older and less likely to be Muslim and these characteristics were associated with greater SU (see Fig. 1 note), it is unlikely that baseline differences significantly contributed to the positive HW findings. Lastly, findings should be interpreted as an overall broad effect on gateway drugs, rather than as a unique effect per substance as there was significant overlap among the three subsamples of baseline non-substance users.

Implications and Conclusions

This study contributes to the research on SU prevention programs by demonstrating the efficacy of targeting leisure. As findings were unique to girls, this study emphasizes the need to consider how different treatment factors may work differently for boys versus girls within their unique contexts. Overall, this study contributes to the field of prevention by

demonstrating how experimentally targeting leisure through an intervention can increase PLO and thereby prevent early SU initiation for girls.

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Fig. 1.

Models of the indirect effect of HW on initiating early substance use among respective baseline non-users via 10th grade perceived leisure opportunities. Note: *OR* odds ratio; * $p < .05$, ** $p < .01$. For alcohol use initiation, religion significantly predicted 4 and 9 % of the variance for girls and boys, respectively, while age also accounted for 0.6 % of the variance for girls. Age significantly accounted for 0.8 % of the variance for girls' initiation of smoking cigarettes while no covariates significantly accounted for the variance in initiating using marijuana

Table 1

Number and percentage of students who had initiated each combination of substance at the start of 8th grade

	Boys		Girls	
	Never used marijuana	Had used marijuana	Never used marijuana	Had used marijuana
Never used alcohol				
Never used cigarettes	1334 (48.74 %)	95 (3.47 %)	1703 (61.06 %)	30 (1.08 %)
Had used cigarettes	393 (14.36 %)	168 (6.14 %)	412 (14.77 %)	81 (2.90 %)
Has used alcohol				
Never used cigarettes	257 (9.39 %)	68 (2.48 %)	165 (5.92 %)	21 (0.75 %)
Had used cigarettes	210 (7.67 %)	212 (7.75 %)	251 (9.00 %)	126 (4.52 %)

Table 2

Descriptive statistics by substance not initiated and condition

Condition	No alcohol use (N = 4264; 76.30 %)				No cigarettes use (N = 3716; 66.40 %)				No marijuana use (N = 4809; 85.40 %)			
	Control %/M (SD)	HealthWise %/M (SD)	t/ χ^2		Control %/M (SD)	HealthWise %/M (SD)	t/ χ^2		Control %/M (SD)	HealthWise %/M (SD)	t/ χ^2	
Age (12–19 years)	13.86 (0.75)	14.02 (0.87)	-5.83**		13.84 (0.74)	13.97 (0.83)	-4.90**		13.85 (.073)	13.96 (0.83)	-4.73**	
Male	47.45 %	46.75 %	0.20		48.35 %	46.56 %	1.10		46.91 %	45.48 %	0.92	
Religion			76.61**				54.06**				70.80**	
Christian	59.70 %	68.10 %			64.40 %	69.60 %			63.70 %	69.60 %		
Muslim	37.10 %	25.40 %			32.00 %	22.90 %			33.10 %	23.60 %		
Other	3.20 %	6.50 %			3.50 %	7.40 %			3.20 %	6.80 %		
Race ^a			63.17**				67.44**				67.13**	
Black	3.90 %	10.80 %			4.80 %	13.10 %			4.00 %	10.70 %		
White	1.90 %	2.00 %			2.30 %	2.00 %			2.10 %	2.10 %		
Mixed race	93.90 %	86.60 %			92.60 %	84.40 %			93.40 %	86.60 %		
% Family has a car	61.17 %	56.32 %	9.69**		61.11 %	54.91 %	13.83**		61.35 %	55.21 %	17.42**	
8th grade start PLO	2.54 (0.93)	2.52 (0.95)	0.55		2.55 (0.92)	2.55 (0.94)	-0.12		2.56 (0.92)	2.54 (0.95)	0.57	
10th grade start PLO	2.37 (0.93)	2.44 (0.96)	-1.89***		2.34 (0.94)	2.46 (0.95)	-2.84**		2.36 (0.93)	2.44 (0.95)	-2.39*	

PLO refers to perceived leisure opportunities (range: 0 [low]–4 [high])

*
 $p < .05$;**
 $p < .01$;***
 $p < .1$ with Student's t test for continuous variables and χ^2 for categorical variables^a
<0.60 % indicated other