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Literature Summaries & Annotated Bibliography in Support of Youth Learning through Experiences with a Patient Robotic Simulator

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Executive Summary

This literature review was prepared as part of Front-end research for MSI's NIH SEPA funded SIMLAB by NewKnowledge.org in collaboration with clinical psychologist Dr. Kin Ching Kong and her graduate students at The Chicago School of Professional Psychology. The guide offers information from the social science literature to support project topics and approaches health learning programs for teens visiting the museum or online.

The following topics were explored in this review:

- Explaining and Predicting Health Behavior
- Participation, Risk and Mitigation
- Stress, Coping and Engagement
- Developmental Neuroscience and Social Experiential Learning
- African-American Studies and Storytelling in Learning Experiences

A model that incorporates constructs from the Health Belief Model (HBM), Theory of Reasoned Action (TRA), Social Cognitive Theory (SCT) and Prototype/Willingness model is a useful way of approaching the project but requires attention to how these models might apply to ethnic minority groups. One study on college students found that the HBM was able to predict more safer sex behavior for Caucasian college students than for

African-American, Latino/a-Hispanic and Asian Americans college students. It is noted that Other researches suggest that the construct of the HBM might apply to ethnic minority groups but what those constructs consist of might be different (e.g. barriers for some ethnic minority groups might include lack of access, mistrust etc.)

As expected, no research has been found on patient stimulator and health behavior. This lack of information suggests that SIMLAB has an opportunity to add to the literature in ways that will be useful to others.

Results also suggest there is a tension between creating a challenging program vs. minimizing risks of negative psychological impact. The literature suggests that creating a more challenging program that involve target population could work in the context of SIMLAB, with increasing intensity of stimulation (e.g. voice of distress), having health conditions that affect teens of the similar age and background

Lastly, the literature review suggested that African-American were of a more present focus in terms of illness management whereas Caucasians see future focus. All noted that income is a confounding variable but in the case study in the literature this was controlled for as a factor.

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Overview

As part of the front-end research for the Museum of Science and Industry's SIMLAB: Using Patient Simulation for Student Exploration of Community Health Issue funded through the National Institutes of Health, the external evaluation team consisting of New Knowledge Organization Ltd and the collaborating clinical psychologist, Dr. Kin Ching Kong worked with graduate students from The Chicago School of Professional Psychology to produce the attached scholarly guide to literature. The guide outlines possible constructs that can be used to underpin key learning opportunities, and frameworks or instruments that may support assessment of outcomes and impacts resulting from the project. Tentatively defined and pending further refinement, the following report suggests anticipated project topics that might be pursued or ways of approaching health learning programs with teens visiting the museum or online.

The following topics were explored in this review:

1. Explaining and Predicting Health Behavior
2. Participation, Risk and Mitigation
3. Stress, Coping and Engagement
4. Developmental Neuroscience and Social Experiential Learning
5. African-American Studies and Storytelling in Learning Experiences

Each section is preceded by an overview of the literature and then followed by a topic based annotated bibliography. The annotated bibliography outlines the specific findings in the reported study with notes on how that particular project might apply to SIMLAB or have influence on the project. The report concludes with a brief summary of findings in aggregate for consideration by the team. Lastly, work cited is contained in a separate reference list for use by the team.

This document is considered a work in progress and open to addition, change or revision based on feedback from the MSI SIMLAB team at a meeting planned for February 4th, 2013 and as the project develops in the next year.

Explaining and Predicting Health Behavior

A review of literature related to explaining and predicting behavior revealed three distinct ways of focusing on the topic of positive health behaviors. There is a great deal of convergence of themes across most the articles so most articles are relevant to many topic areas even though each is only listed under one topic based on its primary contents. The first addresses possible models for approaching health education topics and the second focuses on culture and health beliefs as they overlap with health behavior. The third topic considered the specific issues that have emerged from the study of African-American and Latino/a-Hispanic adolescents in relation to health topics, and the fourth offers two papers that address issues of health behavior change and positive psychology. Each of these topics is summarized at the beginning of the topic section below.

Annotated Bibliography

Prepared by Dr. K. C. Kong

Topic 1: Possible Models to consider:

The following is a selective review of the models most frequently used in explaining and predicting health behavior. One of the most widely used is the Health Belief Model (HBM). HBM has been proven useful for explaining and predicting various health behaviors in many different populations. However, there are concerns (and some evidence) that HBM might not be as useful for ethnic-cultural minority groups. Some researchers suggest that the HBM focused solely on intrapersonal factors and thus may not apply as well to more collectivistic cultures. Recent studies and interventions often added constructs from the social cognitive theory (SCT) and the theory of reasoned action (TRA) which some believes allowed addressing sociocultural factors such as perceived social norms. Alternatively, it is possible that the broad constructs of the HBM are applicable across ethnic-cultural groups, but the specific manifestations of these constructs differ across groups (e.g. environmental barriers, affective barriers due to different experience across groups). Finally, it is also possible that the factors that influence the HBM variables differ across ethnic-cultural groups (e.g. time orientation differences impact susceptibility and barriers).

The HBM posit that health behavior is influenced by perceive susceptibility; perceive severity, perceived barriers, perceived benefits and cues to action. The TRA proposed that behavioral intention is the proximal cause of behavior and intention is influenced by personal attitudes and subjective norms. Finally, the two constructs in SCT often added to the HBM are self-efficacy and modeling/observational learning. There are some critiques of the HBM and expended forms of the HBM. For example, although it does explain and predict many health related

variables and health behavior, it does not apply equally well to all behavior, especially not to long-term changes. In addition, it does not explain a large portion of variance in health behavior (not more than 30%).

Another type of model that is more recent in its application to adolescent health behavior is described as a dual-processing model. These models propose that there are two information processing system. The first is the analytic system that involves deliberative, in-depth, reasoned, logical thinking that leads to behavioral intention (BI) which in turn predicts behavior. This process is a central component of the HBM and TRA models. The other system dubbed the experiential/heuristic system relies on heuristics, and quick, superficial processing of information. This system is heavily influences by images and affects. Some argues that, for adolescents especially, dual-processing models may do a better job predicting health behavior, especially those involving affects and risk behavior. We note that this may be particularly important when narrative structures employ a topic-associating style rather than a central theme or structure.

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication*, 25, 661-669.

18 longitudinal studies published between 1982 and 2007, with a total sample size of 2,702, were included in this meta-analysis to examining the direct effect of each of the four core constructs of the HBM on various health behavior. Moderators were also examined. Benefits and barriers were the strongest predictors of the targeted health behavior while the relationship between severity and behavior is weak but in the predicted direction. The effect size for susceptibility was near zero. Several

variables moderated the relationships between HBM variables and targeted health behavior. For example, the effect sizes for benefits and barriers were larger when the targeted behavior is preventive rather than treatment of an existing condition. Some limitations of the study include small *n*, variable quality of the measures used and the lack of reliability and validity information on the measures. Finally, only direct, additive effects of the four core constructs of the HBM were examined. Recent additions such as self-efficacy might moderate the effects of susceptibility and severity on behavior. Furthermore, complex causal relationships and interactions might exist between the HBM variables.

Wang, S. L., Charron-Prochownik, D., Sereika, S. M., Siminerio, L. & Kim, Y. (2006). Comparing three theories in predicting reproductive health behavioral intention in adolescent women with diabetes. *Pediatric Diabetes*, 7, 108-115.

This study compared the ability of three major social cognitive models (HBM, TRA, & Social Cognitive Theory) to predict intention to engage in reproductive health behavior in adolescent women with Type I diabetes. 87 women age 16-21 years participated. The majority of the participants were Caucasian. Results found that the HBM significantly and best predicted behavioral intention (explaining 24% of the variance) while Social Cognitive Theory (SCT) significantly predicted behavioral intention but explaining only 5.5% of the variance. Within the HBM, only barriers and cues to action significantly predicted intention. For the SCT, only self-efficacy was used in this study and it was significant. The TRA didn't significantly predict intention. A composite model consisting of significant predictors from the three models were found to be significant and improved the prediction of intention (explaining 26% of the variance). Some limitations of the study might explain the finding that TRA did not predict intention (which is inconsistent with findings from other studies) including the complex way subjective norms (a construct of TRA) is measured and that the majority of the participants are Caucasian. The HBM constructs and self-efficacy from SCT are intrapersonal processes while subjective norms are more interpersonally focus. Thus HBM and self-efficacy might explain Caucasian behavioral intention better than subjective norms.

Payne, N., Davis, M., Feldstein-Ewing, S., Flanigan, T. (2009). Using the health belief model to predict college students' decisions to receive HIV testing at a historically black university in the south. *Researcher: An interdisciplinary journal*, 22(4), 87-100.

African-American teens and young adults (age 13-24) are disproportionately impacted by HIV. The authors tested the ability of an expanded model of the HBM (susceptibility, severity, benefits, barriers, peer norms, impulsivity/sensation-seeking) in predicting the decision by African-American college students to receive HIV testing. 161 African-American students between the age of 18 and 25 years participated. 81 consented and underwent rapid testing. Results found that the HBM was not able to predict African-American students' consent to HIV testing. The authors suggest that models that include culturally specific variables might be more useful for predicting African-American students HIV testing decisions. However, little information was provided on the statistical analyses. The only inferential statistics reported was a multiple regression analysis which does not seem right to me given that decision to test was a dichotomous variable (thus logistic regression seems more appropriate). Also an error df of 11 also does not seem right. Don't know if this is a mistake in reporting or there is something I am missing.

Guilfoyle, S., Franco, R., & Gorin, S. S. (2007). Exploring older women's approaches to cervical cancer screening. *Health Care for Women International*, 28, 930-950.

This is a qualitative study involving 98 primarily low-income Latino/a-Hispanic and African-American women age 50 and above residing in New York and New Jersey. 11 focus groups were conducted using a semi-structure discussion with predetermined questions guided by the HBM. One interesting finding is that women perceived cancer as "indestructible and beyond control" and screening is useless. Although the women acknowledged the message that cancer can be survived and early detection is important, their personal experience contradicts this message and strongly influenced their perception of cancer and the effectiveness of screening. One woman said, "cancer is a traitor...You can be examined all the time... and nothing comes up, and then when you find out you have cancer it's too late. Another woman said, "they say that you don't die from cancer and everyone does." Another interesting finding is that spirituality and fatalism is cited in both promoting health (therapeutic power of prayer) and in not obtaining a screening. One women said, "...I'll leave everything up to the good Lord. If he wants me to live, I'll live. If he doesn't, I won't." Women in the all-Hispanic groups were more likely than women in the other groups to express fatalistic beliefs. The authors reported that this is consistent with other studies that found greater fatalistic beliefs in Hispanic and African-American women are linked to reduced screening for several types of cancers.

Other findings of this study concern barriers: affective (embarrassment, fear, pain), access and stigma.

significantly older and had the illness longer than the exerciser group.

Pichon, L. C., Corral, I., Landrine, H., Mayer, J. A. & Adams-Simms, D. (2010). Perceived skin cancer risk and sunscreen use among African-American adults. *Journal of Health Psychology*, 15(8), 1181-1189.

Steers, W. N., Elliott, E., Nemiro, J., Ditman, D., & Oskamp, S. (1996). Health beliefs as predictors of HIV-preventive behavior and ethnic differences in prediction. *The Journal of Social Psychology*, 136(1), 99-110.

A large (N = 1932), random, representative sample of African-American adults living in California were surveyed regarding their perceived skin cancer risk and sunscreen use. Results found that most African-Americans do not perceive themselves as at risk for skin cancer (46% perceived no risk while 76% perceived no or low risk) and the average risk score was 16.11 on a scale of 1-100. Similar to Caucasian samples, individuals with a history of cancer and individuals with sun sensitive skin types were more likely to perceive their risk as high. However, unlike Caucasian adults, perceived skin cancer risk was not related to sun screen used. The authors cited another study (Kim et al., 2009) which also found no relationship between risk perception and sun screen use among African-Americans. The authors suggest that this lack of the predicted relationship (based on health behavior theories such as HBM) between risk and behavior might be due to a lack of knowledge in African-Americans regarding the benefits of sun screen. Alternatively, it might be due to objective barriers such as lack of drug stores or grocery stores that sell sun screen in African-American neighborhoods.

A modified HBM (perceived susceptibility, perceived severity, self-efficacy, social support and perceived barriers) was used to predict safer sex behavior in college students. In addition, the predictive power of the HBM for different ethnic groups (Euro-Americans, African-Americans, Latino/a-Hispanic Americans, and Asian Americans) was also explored. Results showed that the HBM was able to predict almost all the safer sex behavior and behavior changes for Euro-Americans, but few for the other ethnic groups. The significantly smaller sample sizes for the African-Americans, Hispanic-Americans, and Asian Americans relative to the Euro-American group might "partially explain this difference." (p.108) The authors proposed an alternative explanation for this difference. They suggest that the HBM is a "person-centered" model and might not apply as well to more collectivistic cultures. The researchers stated that "...health beliefs that concern the individual self (e.g. susceptibility) may be more likely to influence the behavior of Euro-Americans than those of other groups, whereas health beliefs that concern a group may be more likely to influence other ethnic groups' behaviors..." (p. 108) There are significant methodological limitations including a cross-sectional design, small sample sizes for the ethnic minority groups, the use of only self-report measures and the use of college students.

Koch, J. (2002). The role of exercise in the African-American woman with type 2 diabetes mellitus: Application of the health belief model. *Journal of the American Academy of Nurse Practitioners*, 14(3), 126-129.

Brown, C. M. & Segal, R. (1996). Ethnic differences in temporal orientation and its implications for hypertension management. *Journal of Health and Social Behavior*, 37(December), 350-361.

This study recruited a convenience sample of 31 African-American women age 52-83 who were diagnosed with type 2 diabetes for less than 10 years, who had not experienced any serious consequences of diabetes and who were previously prescribed an exercise regimen. The women were divided into an exerciser group (those who exercise at least 3 times a week for at least 20 minutes each time) and a non-exerciser group (all others). Results showed that exercisers perceived less barriers and more benefits to exercising. The exerciser group also had better glycemic control. The researchers concluded that the results supported the HBM and suggest that diabetic educational programs focus on addressing barriers and benefits to exercises. However, there are methodological issues in this study including confounding variables such as the non-exerciser group was

This study examined cultural differences in time perception and how time perception impacts the constructs of the HBM for individuals with hypertension. 300 African-Americans and White Americans diagnosed with hypertension were surveyed. 56% of the participants were African-Americans and the mean age of the participants was 60. Results showed that African-Americans were more present-orientated in their daily management of their hypertension, controlling for age, education and poverty status. The authors stated that "apparently, African-Americans tended not to fully appreciate the anticipated benefits of treating hypertension when considering their everyday

experiences in trying to manage it." (p.356) Participants who were more present-oriented were found to perceived themselves as less susceptible to the consequences of uncontrolled hypertension (strokes, heart attacks, kidney problems), to perceived less benefit and more barriers (negative aspects) of antihypertensive medication. Present-oriented participants were also found to perceive more benefits and less barriers to home remedies.

In the discussion, the authors stated that their findings were "...consistent with the positions of a number of authors who argue that a present orientation is part of the African-American experience (Jones, 1988; Huston, 1990)." According to the authors, "Jones (1988) asserted that the routine correlation between effort and outcome has been severed for many African-Americans through years of disconfirming evidence about the present behavior-future outcome contingency. As a result, many African-Americans have created alternative ways of gaining control over this contingency, and, although potentially successful, such improvisation has a tendency to focus on the present." (p.357)

Oliver, J. S., Grindel, C. G., DeCoster, J., Ford, C. D., & Martin, M. Y. (2011). Benefits, barriers, sources of influence, and prostate cancer screening among rural men. *Public Health Nursing*, 28(6), 515-522.

A convenience sample of 94 rural men age 40 or older were surveyed regarding their perception of benefits and barriers (HBM) and sources of influence in prostate cancer screening. The sample consisted of primarily African-Americans. Relevant findings for the SIMLAB project: health care providers, family, friends, written material, and media sources were found to be reported by a majority of participants to be sources of influence. Furthermore, sources of influences (especially family) were found to correlate with perceptions of benefits and barriers. The researchers concluded that prostate cancer education programs for rural African-American men may need to include family, and possible other members of the support network.

Pai, H. C., Lee, S., & Yen, W. J. (2011). The effect of sexual self-concept on sexual health behavioural intentions: a test of moderating mechanisms in early adolescent girls. *Journal of Advanced Nursing*, 68(1), 47-55.

This study examined the relationships among sexual self-concept, normative beliefs and sexual health behavioral intention in Taiwanese adolescent girls age 12-15. 534 girls in grades 7-9 were interviewed in Chinese. The data were analyzed using structural equation modeling (SEM).

The theoretical model used is the theory of reasoned action (TRA) which proposed that behavioral intention is determined by individual attitudes and social norms, and that intention directly determines behavior. Normative beliefs are operationalized in this study by participant's perceptions of their parents' and friends' approval of their sexual activities. Results indicated that normative beliefs directly impact sexual self-concept and sexual health behavioral intention, and moderates the relationship between sexual self-concept and sexual health behavioral intention. Specifically, adolescents who believe that their friends and parents approve their sexual activities had less intention to engage in behavior to protect their own sexual health, had more positive sexual self-concept (which is related to lower behavioral intention to protect sexual health). Moreover, normative beliefs decreased the strength of relationship between sexual self-concept and behavioral intention. The authors conclude that intervention programs should address normative beliefs.

Gibbons, F. X., Houlihan, A. E., & Gerrard, M. (2009). Reason and reaction: The utility of a dual-focus, dual-processing perspective on promotion and prevention of adolescent health risk behaviour. *British Journal of Health Psychology*, 14, 231-248.

This article argues for the incorporation of elements of the dual process models into models of health behavior in adolescents. From the perspective of dual process models, there are two information processing systems. One system is analytic and involves deliberative, logical, in-depth, reasoned thinking which leads to planned behavior. The other system is called the experiential, heuristic system which relies more on heuristics and more superficial and quick processing. This system relies heavy on images and affects. Most theorists believe that the decision making of adolescents involves more the experiential/heuristics system. The authors proposed a prototype model. This model combined the pathway to behavioral intention (BI) described in the reasoned action models (e.g. HBM, TRA, TPA) with modification of some of the constructs (e.g. instead of injunctive norms + motivation to comply in TRA, it uses descriptive norms), with a behavioral willingness (BW) pathway (i.e. in many risky behavior, the adolescent might have no intention to engage in, but acknowledges willingness to engage in the behavior under certain circumstances). A new construct that directly impacts BW is prototypes. Prototypes are images of people who engage or do not engage in a behavior. The authors stated this model and other dual processing models have not be widely applied to health behavior, but did cited several studies that showed that for certain health behavior in adolescents, BW has a

stronger impact on behavior than BI, but that a combined model of both is better than either one alone.

Gerrard, M., Gibbons, F. X., Stock, M. L., Lune, L. S. V., Cleveland, M. J. (2005). Images of smokers and willingness to smoke among African-American pre-adolescents: An application of the prototype/willingness model of adolescent health risk behavior to smoking initiation. *Journal of Pediatric Psychology*, 30(4), 305-318.

This study tested the social reaction pathway of the prototype/willing model of adolescent risk behavior. The prototype/willing model proposes that there are two pathways to adolescent risk behavior: the reasoned path and the social reaction path. The social reaction path proposes that a proximal factor to risk behavior is behavioral willingness and behavioral willingness is impacted by the images the adolescent has about people who engage in the risk behavior. 742 children, age 10-12 years old, and their parents completed time 1 and time 2 measures, the majority of the parents identified themselves as African-American. Distal factors to smoking (parenting factors, neighborhood risk, academic orientation, child's risk tendency) were measured along with demographic variables such as SES, and parents smoking at time 1. Behavioral willingness was also measured in time 1. Children were asked to generate and rate the favorability of the images of smokes. At time 2 which is 2 years later, smoking by children was measured. Structural equation modeling (SEM) was used to analyze the data. Results confirmed the prototype model. Children's prototype ratings directly predicted their willingness to smoke, which directly predicted their initiation of smoking.

Topic 2: Culture & Health Beliefs/Health Behavior

This focus specifically addressed contrasting health-related schemas that pertain to various cultural groups. The first article by Landrine & Klonoff (1992) urges the incorporation of social cultural variables into health care theories and practice. Their position is supported by other studies outlined below and the last section of this review which identified that there are unique ways that some communities advance narratives that promote health-related practices. In general, they all suggest that health decisions are usually negotiated within a community or group, such as an adolescent group, and that outcomes might not necessarily be measured at an individual level, but are more likely to develop from shared experience and social reinforcement.

Landrine, H., & Klonoff, E. A. (1992). Culture and health-related schemas: A review and proposal for interdisciplinary integration. *Health Psychology*, 11(4), 267-276.

The authors reviewed research in medical anthropology and medical sociology and argue that incorporating sociocultural variables will enhance psychological theories and concepts of illness and health beliefs and thus enhance their ability to predict health behavior. The authors reported that anthropology and sociology have amassed evidence that ethnic-cultural groups in the U.S. and cultures across the world conceived illnesses differently. For example, Western cultural tradition (e.g. some White Americans) conceive of illness as discrete, episodic, micro-level, and intrapersonal while many other cultures conceive of illness as fluid, continuous, interpersonal and macro-level processes. The causal agents of illness also differ across cultures. The authors cited a study of the beliefs/schemas of the causal agents of illnesses in 189 cultures. Only 4 cultures' schemas consist of natural causations (e.g. viruses, bacteria, aging, accidents) while most cultures of the world conceive illnesses as having supernatural causes (e.g. punishment by gods for misdeeds, soul lost, witchcraft). Sociology also suggest that illness is constructed within specific sociomoral, political and economic context and that illness can be a form of social control.

Klonoff, E. A., & Landrine, H. (1996). Belief in the healing power of prayer: Prevalence and health correlates for African-Americans. *The Western Journal of Black Studies*, 20(4), 207-210.

This study surveyed 193 men and women of various ethnic groups (129 African-Americans) on the extent to which they believe in the ability of prayer to cure diseases and their health behaviors. Participants ranged in age from 15 to 72 years, with a range of education and social classes and resided in different types of neighborhoods in southern California. Results found that a majority of African-Americans (62%) held a strong belief in the curative power of prayers and this belief is stronger in African-Americans than other ethnic-cultural groups. African-American believers (those who believe in the power of prayers to cure) do not differ from non-believers in education, age, sex, or social class leading the researchers to conclude that this belief is cultural in origin. Believers are significantly less likely to engage in preventive health behavior (i.e. exercise regularly) and to express less interest in being actively involved in their own health care. Believers also tend to avoid seeking medical care except for very serious conditions. The

researcher recommended health promotion research and interventions to address the role of prayer.

Kennedy, B. M., Ard, J.D., Harrison, Jr., L., Conish, B. K., Kennedy, E., Levy, E. J., & Brantley, P.J. (2007). Cultural characteristics of African-Americans: Implications for the design of trials that target behavior and health promotion programs. *Ethnicity & Disease*, 17, 548-554.

In this study, 31 African-American men and women participated in focus groups to identify cultural characteristics specific and important to African-Americans. The researchers hope that the findings will inform culturally sensitive interventions. Participants were asked to select cultural characteristics that they identify with as an African-American and characteristics they believe are important to them as African-American. 9 themes emerged. The three most important characteristics are: religion is very important; family, including extended, is very important and a source of values and support; education is the key to success. Other themes include: distrust of Caucasians, especially physicians; African-Americans are not respected or valued; limit resources make healthy life style difficult; importance of preserving an explicit ethnic identity. Researchers urge the considerations of cultural characters when designing interventions or clinical trials with ethnic minority. For example the researchers suggest that weight lost interventions for African-Americans might provide family members of the participants access to exercise facilities. The research may benefit from having family members participate in the program during the development phase to consider how this impacts program concepts.

Gonzalez-Blanks, A.G., Lopez, S. G. & Garza, R. T. (2012). Collectivism in smoking prevention programs for Hispanic preadolescents: Raising the ante on cultural sensitivity. *Journal of Child & Adolescent Substance Abuse*, 21(5), 427-439.

This study evaluated the effectiveness of a smoking prevention program that incorporated collectivistic messages relative to a standard knowledge based program for Hispanic preadolescents. 94 students age 10-13 from 8 schools with mostly Hispanic students participated in the study. 4 schools were randomly assigned to the collectivist program and 4 schools to the standard control. Results found that students in the collectivist program had higher desirable behavior, higher desirable and accurate perceptions, more parental involvement and lower rate of smoking at 2 months post program than the control group. Furthermore, there was

a significant interaction. Specially, students high in collectivism who were in the collectivist program had the lowest rate of smoking while collectivist students in the standard program had the highest rate of smoking. The authors concluded that programs that match participants' orientation are most effective. The authors also argue that parents and teachers should be included in culturally sensitive programs.

Topic 3: Programs targeting African-American and Latino/a-Hispanic adolescents:

Research has suggested that programs that are more effective for participants from different cultural heritages are more likely to be theory-based; involve direct input from the target audience throughout the development of the intervention; and use real, relatable characters that are specific to the learning target population.

Painter, J. E., Sales, J. M., Pazol, K., Grimes, T., Wingood, G. M., & DiClemente, R. J. (2010). Development, theoretical framework, and lessons learned from implementation of a school-based influenza vaccination intervention. *Health Promotion Practice*, 11(suppl. 1), 42S-52S.

This is the first published study of a school-based program to promote influenza vaccination among multiethnic (predominantly African-American) adolescents in rural Georgia. This study described the theoretical framework, the developmental process, and results of process evaluation. The Health Belief Model (HBM) and social norms from the theory of reasoned action (TRA) guided the development of the intervention and assessment instruments. Prior to development of the intervention, literature review and focus groups with school administrators, school nurses, parents and adolescents were conducted. After the initial focus groups, one component of the intervention, the brochure, was developed with two focus groups of parents and a focus group of school administrators. The other component of the intervention, the school skit/presentation was developed in a series of focus groups of adolescents. The initial skit was developed by a health educator based on the theoretical model and initial focus groups. Students in the participating schools adapt the skit for their school and enacted the skit. The characters in the skit were popular teens (e.g. the Prom Queen, class president, basketball star).

Process evaluation indicated that the brochure was well received by parents. (e.g. 94% reported reading the brochure, 89% reported understanding it and found it relevant. 65% reported discussing it with friends and

families). Focus groups with students found that the skit was well received as well.

Painter, J. E., Sales, J. M., Pazol, K., Wingood, G. M., Windle, M., Orenstein, W. A., DiClemente, R. J. (2011). Adolescent attitudes toward influenza vaccination and vaccine uptake in a school-based influenza vaccination intervention: a mediation analysis. *Journal of School Health*, 81(6), 304-312.

This study continues the evaluation of a 3-year trial of a school-based influenza vaccination intervention program among multiethnic (predominantly African-American) adolescents. The overall research design is quasi-experimental with three groups (1. students in one county received the educational interventions with in school vaccination clinics, 2. students in a second county received the educational interventions without school clinics, and 3. students in a third county consist of the standard-of-care control condition). This study compared group 1 and group 3. The outcome variable is receipt of vaccination. Psychosocial mediator variables and demographic variables were gathered via pre and post intervention self-reported surveys. Psychosocial variables were constructed based on the HBM and the Integrated Behavioral Model (IBM). Results showed that the intervention decreased perceived barriers, increased intention to obtain a vaccination, and increased vaccine uptake in the intervention condition, controlling for demographic variables. Finally, change in intention was found to fully mediate the relationship between intervention and vaccine uptake.

Roye, C. F. & Hudson, M. (2003). Developing a culturally appropriate video to promote dual-method use by urban teens: rationale and methodology. *AIDS Education and Prevention*, 15(2), 148-158.

This article describes the development of a video to encourage condom use in urban, predominately African-American and Latina female adolescents who use hormonal contraceptives. Theoretical models that guided the development of the video are HBM (perceived susceptibility and perceived barriers), social cognitive learning theory (self-efficacy & modeling), and the theory of reasoned action (normative beliefs). The researchers cited previous studies that found that videos that feature actors and settings that are culturally similar to the targeted population were more effective in increasing knowledge than culturally dissimilar videos. Other studies suggest that videos that use real people with the condition are more effective in engaging adolescents. This is echoed by the teens' responses in the preliminary qualitative studies with the target population in this study.

Adolescents stated that they need to see real people like themselves who are HIV positive for them to be motivated to change their behavior. Responses of focus groups after viewing the video also expressed similar sentiments. For example, one evaluation of the video stated, "What I like best about the video was...[it was] realistic and educational. It showed real people, that almost everyone could relate to, especially minorities that feel that AIDS is not a big issue in the community." (p.155) Summarizing previous research, the authors stated that "...video-based interventions that are theory-based and embody relevant community and/or cultural issues have been successful in achieving positive outcomes in various aspects of HIV/AIDS risk reduction, including long-term behavior change and long-term reduction in STDs." (p.150)

Extensive preliminary quantitative and qualitative studies were conducted with the target population before the development of the video. Both theories and results of the preliminary studies guided the development of the video.

Topic 4: Positive Psychology and Health Behavior Change

The research surfaced two additional studies that were complementary to the prior three topics, but seemed unique enough to class in a separate category. The first addresses a synthesis of instructional design strategies and offered a summary framework for considering health prevention behavioral interventions. The second explores a positive psychology framework to support intrinsic motivational change rather than the typical fear-based, negative messaging, or prescribed learning that tends to describe formal learning settings. Both frameworks propose higher outcome potential than has been seen in traditional instructional settings.

Kinzie, M. B. (2005). Instructional design strategies for health behavior change. *Patient Education and Counseling*, 56, 3-15.

Of the numerous behavioral change theories that health educators can use to guide intervention design, Kinzie stated that the HBM, Social Cognitive Theory and Diffusion Theory were among the top ten employed in research. To help health educators make better use of health behavior change theories, Kinzie proposed a set of instructional strategies that are theory driven and unified by an Events of Instruction framework. Kinzie modified Gagne's Nine Events of Instruction to a five-stage framework, then populated each stage of instruction with constructs from the HBM, social cognitive theory and diffusion theory. Kinzie then reviewed the literature on

intervention programs targeting the prevention of smoking in adolescents.

Table 2 (p.5) of that paper lists the instructional strategies at each of the 5 stages might be of interest to the design team for the SIMLAB project.

Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55(1), 170-183.

Larson advocates for the development of an applied psychology to promote positive youth development. He contends that "A central question of youth development is how to get adolescents' fires lit, how to have them develop the complex of dispositions and skills needed to take charge of their lives" (p.170). He focused on the contexts and conditions for the development of initiatives in adolescents. He argues that initiatives develop in conditions of intrinsically motivated "concerted effort in a domain of challenge and complexity" (p.173). Furthermore, this effort needs to be sustained over a period of time. He reported findings that in most daily life, adolescents are often bored. Furthermore, in the

majority of their waking time, adolescents are engaged in activities that do not provide the necessary conditions for initiatives development. In school, they experience high concentration, effort and challenges, but low intrinsic motivation. With unstructured times (e.g. watching T.V., hanging out with friends), they experience high intrinsic motivation but low concentration and challenges. However, in certain situations, specifically structured voluntary activities (sports, hobbies, arts, organizations), the conditions for initiatives developments are all present. In these activities, adolescents "...are having experiences of directing and regulating their actions in pursuit of a goal." Reviews of outcomes research on these types of activities found supports of a wide range of positive youth outcomes.

Relevance to the SIMLAB project: this highlight the potential impact of a program that is challenging, engaging, and the importance of the teens having some control and direction of the problems to solve and the solutions. Danielle's bibliography contains some references to these ideas.

Participation, Risk and Mitigation

This review of the potential risks to adolescents participating in a medical simulation learning setting and sought to identify literature on minimizing risk. As expected, the search did not find any specific literature on the topic, suggesting that the development of MSI's SIMLAB could offer new information to the scholarly canon. The review did reveal some literature related to understanding health risk based on the study of phobic responses to some medical settings and some potential ways to minimum risks. This review focused on: 1) Blood Injury Injection Phobia, 2) Post-Traumatic Stress Disorder (PTSD), 3) preparing children for medical procedures since these areas seem the most relevant to the SIMLAB setting. We note, however, that coincident with this research, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) is nearing its completion and may propose new ways of considering evidence of phobias and the descriptions of PTSD. Irrespective of this development, the results reported here remain relevant as models for considering risk and risk mitigation for youth.

Annotated Bibliography

Prepared by Meir Hauser

Ayala, E. S., Meuret, A. E., & Ritz, T. (2009). Treatments for blood-injury-injection phobia: A critical review of current evidence. *Journal of Psychiatric Research, 43*(15), 1235-1242. doi: 10.1016/j.jpsychires.2009.04.008

Blood Injury Injection (BII) Phobia is fairly common amongst both genders ranging from 3.5% for men and 3.5-4.9% for women. This includes fear of exposure to blood, pictures of blood, needles or pictures of needles. 75% of BII phobics report fainting. The fainting is characterized as a biphasic/diphasic fainting. The first stage is an increase in heart rate and blood pressure as the fight or flight response is activated. The second phase is characterized by bradycardia, drop in heart rate, and hypotension, low blood pressure which leads to reduced blood flow and fainting. The fear of fainting causes heightened anxiety for these people. The accepted method to prevent fainting during exposures is applied tension (AT). This technique involves tensing areas that will help increase blood flow to the heart and brain and prevent fainting. If fainting is prevented then anxiety can decrease. AT showed success in terms of in session self-report measures of anxiety as well as observable behaviors and fainting during session. Results suggest that AT is a valid coping skill that promotes control over the phobia during the feared situation. AT showed equal success with relieving immediate symptoms of both fainters and non-fainter suggesting that AT can be used even when fainting is not likely, though the reasons are unclear. During a simulation of a medical procedure an adolescent can use applied tension discreetly and effectively at any time anywhere.

Davis, L., & Siegel, L. J. (2000). Posttraumatic stress disorder in children and adolescents: A review and analysis.

Clinical Child and Family Psychology Review, 3(3), 135-154. doi: 10.1023/A:1009564724720

There are few studies that examined the prevalence rates of posttraumatic stress disorder (PTSD) among children and adolescents. What studies there are disagree as to the prevalence rates, however all studies agree that there is a higher prevalence among adolescents than in adults with an exceptions for veterans. However among adults, approximately 81% of those with PTSD reported childhood trauma. Risk factors are different for each individual, which can cause difficulty identifying general risk factors. One theory is PTSD occurs when the trauma is in conflict with the persons preexisting schema of the world. Other risk factors are school environment, family environment, and social support. Adolescents are more likely to develop PTSD as this is a developmentally vulnerable time of their life. Adolescents present symptoms of PTSD differently than adults. Struggles with academics and relationships with parents and peers are common among adolescents suffering from PTSD. Due to the random nature of illness as opposed to the deliberate nature of violence, PTSD is found to be highly prevalent after medical trauma. It was also found that PTSD is especially prevalent among burn victims with a prevalence rate of around 30%. A medical stimulation could potentially trigger or worsen a PTSD reaction in those adolescents with a prior medical trauma.

Exeter-Kent, H., & Page, A. C. (2006). The role of cognitions, trait anxiety and disgust sensitivity in generating faintness around blood-injury phobic stimuli. *Journal of Behavior Therapy and Experimental Psychiatry, 37*(1), 41-52. doi: 10.1016/j.jbtep.2005.09.004

Blood Injury Injection Phobia is present in 3.1% to 4.5% of the population making it the second most frequent specific phobia. Like other phobias, BII phobia involves the activation of the sympathetic nervous system or the fight or flight response. What makes BII different is the secondary activation of the autonomic nervous system, which activates the parasympathetic nervous system, involving responses such as low blood pressure and fainting. However the two responses are reported as being separate in some cases of BII where some sufferers are fearful but do not faint. Exeter-Kent and Page suggest that the fainting response is not universal for all BII phobia but rather is a symptom unique to a specific subgroup of BII Phobia. Prior research has shown that fainters report more disgust along with their fear when presented with the feared stimuli. This study examined the combined effects of disgust reactions and trait anxiety with BII responses. Results showed higher percentage of fainting behavior in participants who were highest in trait anxiety and disgust sensitivity. This suggests that fainting is not a universal symptom of BII and during a medical simulation it is important to recognize a more diverse set of symptoms.

Faust, J., & Melamed, B. G. (1984). Influence of arousal, previous experience, and age on surgery preparation of same day of surgery and in-hospital pediatric patients. *Journal of Consulting and Clinical Psychology*, 52(3), 359-365. doi: 10.1037/0022-006X.52.3.359

Prior research has shown that adolescents benefit the most from preparatory information about their upcoming procedures one-week prior. A factor that may mediate the effects of the preparation material is prior experience with surgery. The relevancy of the film to the specific place and event is also important. It was shown that children who were shown a hospital relevant film retained more information about the procedure than in a non-relevant generic film. The older the child the more information was retained. Anxiety due to the procedure was significantly less in children shown a hospital relevant film the night before the surgery compared with children shown the film the same day as the surgery. For same day surgery, a distraction film was shown to be most beneficial in lowering anxiety. The hospital relevant film had a lower effect on children who had prior experience with surgery compared to first time children. This is not due to a lack of understanding of what will happen but rather the film may have served to sensitize the child to what is coming. This suggests the powerful influence of prior medical trauma on children and adolescents and this should be taken into account when participating in a medical simulation.

Horowitz, L., Kassam-Adams, N., & Bergstein, J. (2001). Mental health aspects of emergency medical services for children: Summary of a consensus conference. *Journal of Pediatric Psychology*, 26(8), 491-502. doi: 10.1093/jpepsy/26.8.491

A person's reaction to medical emergencies is highly dependent on age and developmental level. Another important factor to the reaction to emergency is how the event takes place, illness, injury, self-inflicted harm, or violence are some examples. Due to an adolescent's increasing ability for problem solving, abstract thinking and a growing emotional awareness emergency situations effect them in ways they may not be used too. When confronted with an emergency situation they may react with apathy, minimalizing their emotions or symptoms and joking about the situation. Younger adolescents often think more about their appearances due to a surgery, such as scars or casts, as well as independence, and body image after undergoing the surgery. If the emergency is chronic the adolescent may become depressed and react with anger towards caregivers. Despite this, adolescents are able to communicate well and if they are unclear they are able to ask questions about the procedures. Patient satisfaction has been be linked to good communication of the presenting problem to parents and patients as well as clear and easy to understand discharge instructions. This suggests that a debriefing with good instructions about the simulated medical situation may be useful. It is also important to observe the participants' reactions to the simulation and take note of any that are responding with exaggerated humor or minimalizing the situation.

Horowitz, M. J., Wilner, N., & Alvarez, W. (1979). Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine*, 41(3), 209-218.

The Impact of Event Scale was developed to assess the effect of a general traumatic event. The scale does not target any one type of trauma. This scale looks at "particular qualities of conscious experience that encompass all such [traumatic] events". The scale consists of 22 items assessing for avoidance and arousal due to a traumatic event. The scale went through a series of tests to assess reliability and validity. The scale as a whole as well as the two subscales, intrusive and avoidant symptoms were found to be reliable and the items a valid representation of the construct. This scale can be used with individuals of different backgrounds including differing education, economic and cultural backgrounds. This scale seems to be a good scale for the simulation project as it is short and easy to compete.

Hunfeld, J. A. M., & Passchier, J. (2012). Participation in medical research; a systematic review of the understanding and experience of children and adolescents. *Patient Education and Counseling*, 87(3), 268-276.

Medical research on children and adolescents is important for the understanding of the effects of medicine on this population as well as treatment development for child and adolescent disorders. However, informed consent and risks must be carefully considered. This review found that the majority of children and adolescents participants had a reasonable understanding of the research study and its purpose due to the consent process but very little detailed knowledge of the procedures. The older the participant is the better his or her understanding of the procedures being used. In terms of burden or risk it was found that self-reported worries, in the form of nonspecific anxiety, often occurred after the study rather than before or during. This suggests that a full understanding of the study and what it means may occur only after the study is conducted.. These findings suggests that if the participants are given a more detailed understanding using various educational techniques then it is less likely for the participants to experience negative side effects due to the procedure. For the medical simulations, this study suggest that adolescents might not fully understand or appreciate the event until after the event and they might then have questions and feelings after leaving the Museum.

Jaaniste, T., Hayes, B., & von Baeyer, C. L. (2007). Providing children with information about forthcoming medical procedures: A review and synthesis. *Clinical Psychology: Science and Practice*, 14(2), 124-143. doi: 10.1111/j.1468-2850.2007.00072.x

It has been shown to be important to provide information to children and adolescents who are about to undergo a medical procedure in order to distinguish between what will really happen during a procedure and what they imagine will happen. It has been shown in research that greater understanding of the procedure prior to the procedure leads to more positive outcomes during and after the procedure. There is evidence that the more specific the knowledge of the participants is the better the outcome and specific knowledge minimizes future anxiety about any future procedure. However, this is not a universal finding. If there is prior trauma due to a medical procedure anxiety may increase when the procedure is explained. The key to maximize the positive effects and minimize the negative effects is in the method of delivery. Jaaniste, Hayes, and Von-Baeyer suggest the information

provision model to maximize the positive outcomes. This model requires information to be provided to the participants that are aimed at activating the appropriate schemas for each situation and then help them develop appropriate coping skills for those schemas. These findings suggest that a good understanding going into the medical simulation increases the likelihood that the participants will have a better outcome from the simulation. In order to maximize positive outcomes this study suggests providing appropriate information about the situation and guiding the participants to finding good coping skills for that situation. Any trusted individual can present the information, preferably in person without use of multimedia.

Jipson, J. L., & Melamed, B. G. (2007). New approaches on the horizon: Comments on Jaaniste, Hayes and Von Baeyer's 'providing children with information about forthcoming medical procedures: A review and synthesis.'. *Clinical Psychology: Science and Practice*, 14(2), 149-156. doi: 10.1111/j.1468-2850.2007.00074.x

This article looks at the meta-analysis conducted by Jaaniste, Hayes and Von-Baeyer. This study looks into more detail the concept of providing "timely and appropriate" explanations to children and adolescents. Jaaniste et al looked at three concepts in providing information, specifically content, format and timing. In terms of content it is suggested that the more specific the better. The older the participants the more detail the explanation can and should be. In terms of format, there are many different ways to explain the procedures, in person, through a book, a video, interactive play, and interactive multimedia. Jipson and Melamed as well as Jaaniste et al. found only limited efficacy with multimedia approaches such as videos and interactive multimedia while in person seems to have the most effectiveness. Video presentations are most effective for first time patients who have never experienced any medical procedures. The more experience a participant has the less effective the video presentation will be. The information should be given from a trusted source such as a parent or doctor, however for older children and adolescents this is expanded to teachers. Looking at the information provision model there are several limitations. These include neurological basis of fear and varying abilities to develop coping skills. For the simulation this article suggests that the more specific the preparations the better the outcome after the simulation.

Kleinknecht, R. A. (1994). Acquisition of blood, injury, and needle fears and phobias. *Behaviour Research and Therapy*, 32(8), 817-823. doi: 10.1016/0005-7967(94)90161-9

Of the three modes of fear acquisition, conditioning, vicarious observation and verbal information, none has been found to be the primary pathway to anxiety. Possible causes suggested by this study on why the primary pathway has not been identified are a lack of similarity in methodology and problems with subject's memory of the originating event. This study was designed to examine subject's memories of blood, injury and injection fears and when they originated and also looking at differences between subject's who can remember the originating event and those who cannot. Subjects were given a battery of self report measures such as the mutilation questionnaire, the medical fears survey, the dental fear survey and the medical avoidance survey as well as a structured interview. Subjects were separated into phobic, high fear, particularly fearful, and common fear groups. The subjects were then divided into four subgroups by what type of originating event they reported. The study results showed a primary mode of fear acquisition to be conditioning like experiences. Ability to accurately remember the originating event was not correlated with severity of fear. About one quarter of the subjects were unable to remember the originating event however this did not impact the severity of fear. Possible reasons for the lack of memory include, non-specific origins of this fear, conditioning may overcome the ability to recall specific events, or methodological problems with the research during the interview.

Öst, L. (1992). Blood and injection phobia: Background and cognitive, physiological, and behavioral variables. *Journal of Abnormal Psychology*, 101(1), 68-74. doi: 10.1037/0021-843X.101.1.68

This paper distinguishes between the two different types of phobia included in blood injury injection phobia, specifically blood phobia and injection phobia. Blood phobia is characterized by a fear of exposure to blood or injury. Injection phobia is characterized by fear and avoidance of any procedure involving a needle. This study looks at the differences in background, physiological responses, and behavioral responses to feared stimuli for the two types of phobias. These factors were assessed using self-report questionnaires such as the Thoughts During the Test scale, independent observation, interviews, behavioral tests, and heart rate and blood pressure measurements. The main question was, are there more similarities between the two phobias than differences and what are the differences. Results showed

four major differences between the two phobias. Blood phobia has a higher family prevalence, blood phobia is more afraid of fainting, possibly because they have a higher incidence of fainting, injection phobics rated higher in muscle tension and having a "lump in the throat" experience. These findings imply that while certain interventions may work for blood phobia, the same interventions, such as Applied Tension, may not work for injection phobia due to different symptomology. However previous research (Ayala & Meuret) showed that AT was successful even when fainting symptoms were not present.

Page, A. C., Bennett, K. S., Carter, O., Smith, J., & Woodmore, K. (1997). The blood-injection symptom scale (BISS): Assessing a structure of phobic symptoms elicited by blood and injections. *Behaviour Research and Therapy*, 35(5), 457-464. doi: 10.1016/S0005-7967(96)00120-9

There are three types of questionnaires for phobia. The first is a general questionnaire aimed at all fear such as the Fear Questionnaire. The second is a questionnaire aimed specifically at asking about feared situations typically avoided by those who fear blood and injections such as the Mutilation Questionnaire or the Medical Fears Survey. The third type is aimed at the avoidant responses to the situations involving blood, injury and injections such as the Medical Avoidance Survey. The problem with these three types of questionnaire is none of them assess for the symptoms that occur during the feared situation if avoidance was impossible. This study aims to create an instrument that can assess symptoms during the fear situation. A new questionnaire was developed named the Blood Injection Symptom Scale (BISS). Two studies were conducted to develop and validate the Blood Injection Symptom Scale (BISS) Results showed that the BISS is a valid measure of symptoms during the feared situation and that the BISS separated the symptoms into three subtypes: faintness, anxiety, and tension. Some items from this scale might have some use as a way to alert adolescents with BII fears to consider whether they want to participate in the experience.

Shiple, R. H., Butt, J. H., Horwitz, B., & Farby, J. E. (1978). Preparation for a stressful medical procedure: Effect of amount of stimulus preexposure and coping style. *Journal of Consulting and Clinical Psychology*, 46(3), 499-507. doi: 10.1037/0022-006X.46.3.499

Stress responses to medical procedures are thought to be caused by a conflict between the current reality and the expectations of the event created prior to the procedure. A possible additional variable is the effect of

prior exposure to similar situations that may have conditioned a fear response to the present procedure. Preparation material may be able to reduce the conditioned effect through multiple viewings of the preparation material. Results found that multiple viewings of the preparation material reduced anxiety prior to the procedure. Results are thought to be due to habituation to the feared stimuli. These results suggest that detailed preparation to reduce conflict between reality and expectations might reduce stress in a medical stimulation.

Trickey, D., Siddaway, A. P., Meiser-Stedman, R., Serpell, L., & Field, A. P. (2012). A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review*, 32(2), 122-138. doi: 10.1016/j.cpr.2011.12.001

Prior trauma has been shown to be a strong risk factor for a person to develop posttraumatic stress disorder (PTSD) in response to a traumatic event. The more traumatic the prior event the more likely it is for PTSD to develop. Another serious risk factor suggested in research is any comorbid psychological disorders. The meta-analysis found little evidence of gender, SES, intelligence, specific life events, self esteem or parental psychological problems as significant risk factors for PTSD. There is more evidence for low social support, peri-trauma fear, perceived life threat, social withdrawal, comorbid psychological problems, and poor family functioning among others as risk factors for PTSD. Among adolescents, there was evidence that females are at greater risk of PTSD possibly due to greater tendency for rumination.

Zastowny, T. R., Kirschenbaum, D. S., & Meng, A. L. (1986). Coping skills training for children: Effects on distress before, during, and after hospitalization for surgery. *Health Psychology*, 5(3), 231-247. doi: 10.1037/0278-6133.5.3.231

This study looks at the effectiveness of three different preparatory techniques for hospitalization, specifically information, anxiety reduction and coping skills. The coping skills group was expected to have the best outcomes during and post surgery and the anxiety reduction group being more effective than the information group. Zastowny and Kirschenbaum found that the coping skills preparatory technique was most effective closely followed by the anxiety reduction technique. Coping skills was the most effective for both during and after surgery with self-reports of lower fearfulness and parent distress. These findings suggest that in addition to providing the participants with

information about the simulated event providing skills to help cope with possible stress towards the event might be helpful.

<http://www.nctsn.org/trauma-types/medical-trauma> is a web resource run by the National Child Trauma and Stress Network. This page discusses medical trauma and what it entails. It provides resources such as research articles and presentations discussing trauma and its symptoms and presentations.

Scales for BII and Trauma

- 1: *Impact of Events Scale*
- 2: *Blood Injection Symptom Scale*
- 3: *Medical Fears Survey*

Stress, Coping and Engagement

As noted in the previous section on risk and mitigation, this literature review addressed the study of adolescent stress, coping strategies, and a separate focus on literature addressing attributes of adolescent engagement. The results suggest that youth can learn a great deal from experiences that are salient to their life experience that introduce reasonable levels of stress. It is noted that issues such as Post-traumatic growth often result from particular life-experience. At the core of this literature is a focus on attentive monitoring of groups involved in specific intervention, with a note that one-size does not fit all, that cultural heritage and individual experience all influence how engagement is fostered and when stress can produce positive outcomes rather than avoidance.

Annotated Bibliography

Prepared by Danielle Zohrob

Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The ANNALS of the American Academy of Political and Social Science*, 591, 98-124.

The Positive Youth Development Evaluation Project describes how youth development has been addressed in the literature and then summarizes the outcomes of strong evaluations of these positive youth development programs. In this article, positive youth development programs are defined as any program that seeks to promote bonding; foster resilience; promote social, emotional, cognitive, behavioral, or moral competence; foster self-determination; foster spirituality; foster self-efficacy; foster clear and positive identity; foster belief in the future; provide recognition for positive behavior; provide opportunities for pro-social involvement; and foster pro-social norms. Results showed that all effective programs reviewed in this article addressed a minimum of 5 of these positive youth constructs. Self-efficacy, competence, and pro-social norms were addressed in all 25 programs. In addition, two-thirds of these successful programs "combined resources of the family, the community and the school."

The results of this study suggest that the SIMLAB project may be most effective by addressing a number of the constructs mentioned above. In addition, providing the opportunity for a joint effort among family, community and school lends to the success of many programs and should be considered in the MSI follow-up (such as with resource list).

Center for Disease Control and Prevention (2012). *Coping with stress*. Retrieved on November 5, 2012 from www.cdc.gov/violenceprevention/pub/coping_with_stress_tips

This informational packet found on the CDC website provides information on common reactions to stress found in teenagers, tips for coping with stress, as well as advice for parents and school personnel on dealing with adolescents experiencing stress. It suggests that talking to friends and family, keeping busy with activities like sports or other extracurricular activities, and taking care of one's physical health are all active ways for adolescents to manage stress. In addition, it adds that school personnel can assist adolescents experiencing stress by creating environments for them to feel comfortable discussing their feelings and by being conscious of behavioral changes that may be due to stress. These behavioral changes may include irritability, anger, sadness, and crying.

Frydenberg, E. (2004). Coping competencies: What to teach and when. *Theory Into Practice*, 43 (1), 14-22.

This is an evaluation of an adolescent coping skills program implemented in Australia and Italy called the Best of Coping. Results showed a significant increase in positive coping skills and a decrease in the use of nonproductive coping skills in adolescents after completing the program. Effective coping strategies, such as seeking social support and seeking relaxing diversions, are those that allow adolescents to turn their stressful situation into a problem that can be solved; nonproductive coping strategies, such as ignoring the problem and keeping to oneself, promote avoidance and ultimately lead to more negative outcomes. As the results of three studies indicated, the Best of Coping program increased adolescents' ability to positively deal with stressful situations. This program specifically targets reframing the ways in which adolescents view stressful situations. Adolescents are encouraged to "think of strategies that are not helpful and find alternative [coping] strategies." Additionally, optimistic thinking, effective communication skills and decision-making are other skills that the program focuses on.

Frydenberg, E., & Lewis, R. (2009). Relations among wellbeing, avoidant coping and active coping in a large sample of Australian adolescents. *Psychological Reports*, 104, 745-758.

Past research has indicated that adolescent coping relates to both current and future wellbeing in young people. This study used a sample of 870 adolescents to examine use and efficacy of active and avoidant coping styles as well as their relationship to wellbeing and distress. Adolescents completed the short version of the Adolescent Coping Scale to determine the coping styles used as well as the Reynolds' Scale of Wellbeing to determine current perceived contentment. Negative avoidant coping was strategies like "withdrawal" or "avoidance" while active coping indicated strategies such as "relaxing" or "working hard." Wellbeing, in this study, was "defined in terms of positive affect." Results indicated that greater use of negative coping strategies correlated with less wellbeing and greater distress. Coping efficacy altered these results and caused relations with active coping to be non-significant. This lead researchers to believe that not only are active coping strategies necessary to promote wellbeing, but effective use of these strategies is also necessary. Youth development programs that promote active coping strategies must also improve the perceived effectiveness of these strategies. While the main goal of the SIMLAB is not to teach adolescents proper coping mechanisms, any distress they may encounter due to this activity may require the use of these skills. The SIMLAB can promote positive coping strategies by increasing the use of active strategies like "problem solving" and "working hard" throughout the entire iStan health scenario, allowing adolescents to practice these skills and improve their efficacy for the possibility of more stressful situations.

Gaylord-Harden, N., Gipson, P., Mance, G., & Grant, K. (2008). Coping patterns of African-American adolescents: A confirmatory factor analysis and cluster analysis of the children's coping strategies checklist. *Psychological Assessment*, 20 (1), 10-22.

This empirical study examined the coping styles of 497 low-income African-American adolescents, finding that these young people differ in their coping strategies from previous studies with White middle-class samples. The previous model of adolescent coping included a physical release of emotions as a distraction strategy; however, African-American adolescents in this study did not use this physical release of emotions. Authors suggest that this may be due to cultural and/or contextual factors

such as wanting to be home more due to cultural values, or lack of safe locations in low-income neighborhoods as for physical activities. In addition, avoidant coping strategies used by African-American adolescents are not always linked to negative outcomes in situations where the stressors are uncontrollable and severe. This is evidence of culturally specific coping strategies and may be important to consider for the SIMLAB project. While African-American adolescents may use avoidant coping strategies in more severely stressful and uncontrollable situations, the SIMLAB does not evoke such uncontrollable stress. Therefore, it is relevant to promote active coping styles in less stressful situations like the SIMLAB as active coping styles has been found to be link to better outcomes.

Kissil, K., Niño, A., Jacobs, S., Davey, M., & Tubbs, C.Y. (2010). "It Has Been a Good Growing Experience for Me": Growth Experiences Among African-American Youth Coping With Parental Cancer. *Families, Systems & Health*, 28 (3), 274-289.

This qualitative study describes the positive changes that can occur as an outcome of being faced with challenging life crisis, known as posttraumatic growth (PTG). In this study, 12 African-American adolescents who were currently coping with parental breast cancer participated in three focus groups that assessed their experiences. These participants were selected by meeting the following criteria: a parent diagnosed with Stage I, II, or III breast cancer within the past 2 years; cognizant of parent's diagnosis; and living with the ill parent. Throughout these groups, all twelve adolescents reported accounts of PTG. These accounts included greater appreciation for life, enhanced interpersonal relationships, increased sense of personal strengths, changed priorities, and a change in health behaviors and attitudes. Reports of PTG were spontaneous, making the results more reliable than previous studies where reports of PTG were prompted with direct questioning. This study presents the possibility that positive outcomes can result from stressful situations, like the sickness of a parent.

McBride, P., Moore, D., Baker, A. J. (2011). Quality Matters Toolkit: Voice and Engagement. *University of Minnesota Extension*.

This booklet, based on empirical evidence, provides staff working with youth a set of guidelines on how to engage youth as well as ways to create a forum of discussion in an organization to improve youth engagement. It defines the principles of youth voice as respect, communication,

investment and meaningful involvement. Additionally, it suggests that the four keys to youth engagement and giving youth a voice are support, opportunities, space and resources. The toolkit provides a framework for supporting youth voice by giving youth the opportunity to make decisions and facilitate discussions; by mentoring and coaching them while remaining as a safety net for when they need it; assisting in the creation of clear goals to promote leadership; providing a structure that allows for definitive roles and tasks; providing enthusiastic support of youth learning; and preparing young people to take on a leadership role in their tasks. A number of strategies for promoting voice development are also listed, including the use of groups, offering opportunities to many children, providing a choice to youth in decision-making, and establishing a "mistakes allowed" environment. These techniques and strategies to promote youth voice provides the MSI with a framework for assisting adolescents in getting the most out of this experience. By establishing an environment where students feel they are a real, integral part of this SIMLAB, their participation and engagement will benefit.

Pittman, K., Irby, M., Tolman, J., Yohalem, N., & Ferber, T. (2003). Preventing problems, promoting development, encouraging engagement: Competing priorities or inseparable goals?. Based upon Pittman, K. & Irby, M. (1996). Preventing problems or promoting development? Washington, DC: The Forum for Youth Investment, Impact Strategies, Inc. Retrieved from www.forumfyi.org.

This paper summarizes the shifts that have occurred in school programs directed at promoting the way youth effectively live, learn, work and play. It presents the progress that has been made in the approach to determine what young people need, do and can offer. It reviews what is known about development of programs and what makes programs work. The authors conclude what makes programs work is the full engagement of youth, done by providing them with "choice and voice". It provides a review of how families, schools and communities are all intertwined in the ways that young people are shaped to contribute to and invest in the world around them. It targets those who advocate for youth and challenges them to shift programs from emphasizing what youth should not do to equally emphasizing what they should do. This is relevant to the SIMLAB project as it provides further support for the importance of youth engagement, but also in the way the project is framed for adolescents. With health discussions regarding iStan, adolescents would benefit from not only knowing what not to do, but also what they are encouraged to do to

avoid the health issue iStan presents with. The paper challenges youth advocates and program makers to implement programs to engage youth in a way that promotes youth preparation to be active members of society and development along with the prevention of problems.

Roth, J. L., & Brooks-Gunn, J. (2003). Youth development programs: Risk, prevention and policy. *Journal of Adolescent Health, 32*, 170-182.

This article looks at 48 successful youth development programs to examine what comprises successful programs, and then it goes on to investigate the relationship of these components and program outcomes. In defining program goals, the article uses "the 5 C's: competence, confidence, connections, character, and caring." Among the 48 programs, the most common goals were to enhance social and cognitive skills in adolescent participants; the second most common goal was improving adolescents' character. Another evaluated aspect of programs was atmosphere, defined as that which "encourage the development of supportive relationships with adults and among peers, empower youth, communicate expectations for positive behavior, provide opportunities for recognition, and provide services that are stable and relatively long-lasting" (p. 175). Just over half of the programs were long lasting and evaluations show that most struggle to engage youth after a few months. Lastly, the article evaluated all 48 programs on the activities of which the programs use to "attract and engage" participants. These activities include those that provide an opportunity for adolescents to build skills, engage in real and challenging activities, and broaden their horizons. The majority of these successful programs taught skill-building exercises through lessons on problem-solving, decision-making, or social skills.

Staempfli, M. B. (2007). Adolescent playfulness, stress perception, coping and well being. *Journal of Leisure Research, 39* (3), 393-412.

This empirical study focuses on the relationship between adolescent playfulness, the perception of daily stressors and the coping strategies engaged by adolescents within the context of school and leisure. Data was collected using semi-structured interviews, scales, and a questionnaire. The sample consisted of 290 adolescents, ages 12-19. Results suggest that playful teens are less prone to experience stress of a personal nature or in relation to their peers. Authors suggest that this may be due to confidence in "dealing with these issues directly."

However, a more common cause of stress were issues concerning their future or their parents' future. Authors suggest this may be due to less experience dealing with such issues and adolescents are still "sorting out" the best way to approach such stressors. Playfulness as a personality disposition had significant predictive value pertaining to adolescent leisure experience, the perception of daily stressors and overall wellbeing; however playfulness had low predictability regarding coping styles. No significant differences across gender or coping mechanisms were observed, although females were more likely to use active coping styles when dealing with normative stressors (consistent with previous research).

This article emphasizes that adolescents' ability to handle stress more effectively when they are confident in their ability to directly approach these issues, suggesting that having control over stressors increases their aptitude to deal with stress. This is relevant to the SIMLAB as it supports the idea that the more control adolescents have in a situation (choice), the more comfortable they are in dealing with stressful situations.

Stice, E., Shaw, H., Bohon, C., Marti, C.N., & Rohde, P. (2009). A meta-analytic review of depression prevention programs for children and adolescents: Factors that predict magnitude of intervention effects. *Journal of Consulting and Clinical Psychology, 77* (3), 486-503.

In this meta-analytic review, the effects of depression prevention programs for youth in studies published from 1980-2008 were summarized. In addition, it investigated participant, intervention, provider, and research design features associated with larger effects. Inclusion and exclusion criteria were rigorous, including only trials in which participants were randomly assigned to a depression prevention program or to an attention control condition, an assessment-only control condition, or a waitlist control condition. Researchers produced 60 intervention effect sizes by identifying 47 trials that evaluated 32 prevention programs. It was discovered that 41% of the prevention programs produced significant reductions in depressive symptoms and 13% produced significant reductions in risk for future depressive disorder onset relative to control groups. Larger effects were the result of programs that targeted high-risk individuals, samples with more females, samples with older adolescents, programs with a shorter duration and with homework assignments, and programs that were delivered by professional interventionists. The study found that intervention content and design features were unrelated to effect sizes, but results suggest that

depression prevention efforts produce greater effects if they incorporate factors associated with larger intervention results (such as selective programs with a shorter duration that include homework).

Extrapolating from this meta-analysis on adolescent mental health programs, the MSI may benefit from the knowledge that greater effects are not necessarily associated with longer program length. While the SIMLAB is a relatively short program that students are able to participate in, adolescents can still be positively affected by its emphasis on the promotion of physical health. In addition, the idea of "homework" may be a beneficial addition to the SIMLAB.

Sullivan, T. K. (2011). Youth engagement: More than a method. A way of life for health youth and community development. *The University of Minnesota Extension.*

This paper outlines four types of engagement as participation in activities that allow adolescents to connect to positive people and places; being engrossed in a pursuit to an extent the adolescent is intrinsically motivated to learn and grow; enlisting young people's help in creating effective youth programs and policies; and taking on issues of concern. This study supports these definitions of engagement through a literature review; interviews, focus groups and program observations with youth and adults at four case study sites; ten half-day regional forums and two facilitated one-hour discussions with adult practitioners; and a videotaped discussion and interviews with experienced practitioners who mentor in successfully practicing youth engagement in programs. It goes further to discuss the components of youth engagement found in the literature: participation, passion, voice and collective action. The following findings may be relevant to the SIMLAB project: all types of engagement can allow for young people to learn and practice leadership skills; speaking to adolescents informally helps to build authentic relationships with adults; passion leads to continuous growth that also contributes to commitment; giving youth a voice contributes to both passion and commitment, leading to better outcomes and higher participation. Programs that have a formal infrastructure to support youth voice are more consistently more successful. The MSI may consider incorporating these components into the SIMLAB project as a means to successfully engage youth. Giving youth a voice, a say in their contribution and a way to express their ideas, will not only increase participation but also increase passion about what they are learning and experiencing.

Terzian, M., Moore, K. A., & Nguyen, N. (2010). Assessing stress in children and youth: A guide for out-of-school time program practitioners. *Child Trends*. Retrieved from www.childtrends.org.

Child Trends is a nonprofit, nonpartisan organization that conducts research on many areas of child development, such as education and health. This article was designed as a guide for out-of-school practitioners to assess stress in adolescents. It defines stress as a result of tension between an individual's reaction to difficulties and his or her ability to handle and resolve the situation. Signs of stress include physical, emotional and behavioral changes. Adolescents may experience physical changes like muscle tension, headaches and stomachaches. Emotional signs of stress may include anxiety, anger or hostility, and withdrawal. Furthermore, changes in weight or eating habits may be behavioral signs of stress. The article also points out that a lack of economic resources, lack of social support from peers or parents, and other isolating characteristics may make adolescents more vulnerable to stress. It states that providing social support for adolescents experiencing stress as well as teaching breathing exercises that slower heart rate and relax muscles can contribute to stress relief.

Walker, J. (2002). *Adolescent stress and depression*. University of Minnesota The Center for 4-H Youth Development. Retrieved from www.extension.umn.edu/distribution/youthdevelopment/da3083.html.

This article referred to the results of a 1986 study and survey conducted in Minnesota to provide information about the prevalence of adolescent stress and depression. It collected information on adolescent stress, depression and suicide from about 4300 high school students in 52 rural counties (Garfinkel, et al., 1986). While 69 percent of students were not depressed and seem to handle their problems in positive ways, 39 percent suffer from mild to severe depression.

The article characterizes stress by feelings of tension, frustration, worry, sadness and withdrawal that commonly last from a few hours to a few days. It reports common causes of stress in adolescents as well as several responses to stress. While most teenagers respond to stress by doing something relaxing, trying positive and self-reliant problem solving, or seeking support from others, this article suggests that youth struggling with depression respond differently to stress. Young people struggling with depression exhibit more anger and ventilation; avoidance and passivity; and aggressive, antisocial behavior. It may be relevant to the MSI staff to be aware of the possibility that there may be adolescents struggling with depression or dealing with high stress situations outside of the SIMLAB, and that these issues can affect their reactions.

Smith, C., Hohmann, C. (2005). *Full findings from the Youth Program Quality Assessment validation study*. High/Scope Educational Research Foundation.

The Youth PQA is measure to assess the quality of programs where adolescents "have fun, work, and learn with adults." It asserts that a safe environment, a supportive environment, interaction, engagement, youth-centered policies and practices, high expectations, and access are all critical for positive youth development. The validation study lasted 4 years and successfully developed and validated a measure to assess the quality of youth programs. It consisted of interviews with program administrators, observations in youth work settings, surveys of program youth, expert opinions, and verified reports of staff training.

With regards to the MSI project, programs with successful youth engagement allow for opportunities for youth to set goals and make plans, make choices based on their own interests, and are afforded the opportunity to reflect on their experiences within the program. The SIMLAB would benefit from these youth engagement techniques.

Developmental Neuroscience and Social Experiential Learning

This literature review explored two distinct themes in the literature, developmental neuroscience and the conditions that recommend social experiential learning as particularly appropriate to teens. The literature describes the unique development of the limbic system as abrupt and faster growth that influences both emotion & social cognitive function in adolescents when compared to the development of the pre-frontal cortex that regulates planning (anticipating outcomes from possible actions) and executive functions (how we choose to act based on prior information in relation to the anticipated outcomes). Together, this research suggests that socially-based experiential learning in programs targeting adolescents will be most effective. We note that social programs are not simply learning alongside one another, but involve social interaction among youth as they develop shared reasoning and knowledge through co-participating in activities.

Annotated Bibliography

Prepared by Michael Carrizales

Botvin, G. J., Baker, E., Dusenbury, L., Tortu, S., & Botvin, E. M. (1990). Preventing adolescent drug abuse through a multimodal cognitive-behavioral approach: Results of a 3-year study. *Journal of consulting and clinical psychology, 58*(4), 437-446.

This article presented the results of a three-year study evaluating the effectiveness of a cognitive-behavioral approach to substance abuse prevention amongst middle school-age students. The participants were divided into three groups: (1) the prevention program with a live instructor, which utilized teaching methods such as demonstration and rehearsal; (2) the program with a video-taped instructor; and (3) no treatment. The results demonstrated that students who received at least sixty percent of the intervention, groups one and two, had been significantly and positively affected by the program. Significant effects were found for normative expectations and knowledge relating to substance use, interpersonal skills, and communication skills.

The authors stated that the most commonly employed drug abuse prevention programs usually rely on presenting factual information regarding drug use, promoting personal growth through experiential activities in the classroom, and/or involvement in organized youth activities. This statement is supported by the findings in several other articles discussed in this review, which posit that experiential methods for informing adolescents about potential health-compromising behaviors are the most effective manner in which to engage them.

Bruvold, W. H. (1993). A meta-analysis of adolescent smoking prevention programs. *American Journal of Public Health, 83*(6), 872-880.

This article presented a meta-analysis of prior studies that evaluated school-based programs created to discourage adolescents from smoking tobacco products. The results gathered for the domain of adolescent attitudes regarding smoking tobacco support the use of newer orientations for modifying attitudes. The new orientations were described as utilizing an experiential approach to modify belief structures and include social development and social reinforcement in their approaches, while the traditional methods included didactic classroom sessions regarding the negative consequences of smoking. Although the traditional methods for intervention generally produced greater knowledge changes in the adolescents, the newer orientations proved to be more effective in modifying their attitudes and behaviors.

The author suggested that the newer orientations of prevention-based interventions have been largely effective due to the inclusion of individually-based instruction and experiential learning designed to modify belief structures. The inclusion of experiential-based learning has been shown to be a critical factor for the success of the interventions examined in this meta-analysis and lend further support for the use of experiential-based tools for modifying adolescent attitudes and behaviors relating to health.

Casey, B. J., Tottenham, N., Liston, C., & Durston, S. (2005). Imaging the developing brain: What have we learned about cognitive development? *Trends in cognitive sciences, 9*(3), 104-110.

This article reviewed the literature on how the human brain changes in both its structural architecture and functional organization across the life span. Due to

advances in neuroimaging techniques over the past decade, scientists have been able to monitor these changes safely in living humans. The authors reviewed the imaging literature on the neurobiology of cognitive development, and placed a focus on cognitive task-dependent changes observed in and across childhood and adolescence. Their findings suggest that neurological functioning becomes fine-tuned after adolescent development. Regions of the brain that are associated with more basic functions such as sensory and motor processes mature first in children. This development is then followed by an expansion in the areas involving top-down control of behavior. Lastly, areas of the pre-frontal cortex, which are involved in planning, decision-making, and risk assessment begin to slowly develop during adolescence and do not typically taper off until after the age of sixteen. The authors also make note of the abrupt and assertive development of the social-emotional network, located in the limbic system, which occurs during adolescent development and is typically dominant over the much slower developing cognitive-control network of the pre-frontal cortex. These findings might explain why adolescents more frequently engage in risk-taking behavior, which is often the result of social and emotional stimuli.

Cohn, L. D., Macfarlane, S., Yanez, C., & Imai, W. K. (1995). Risk-perception: Differences between adolescents and adults. *Health Psychology*, 14(3), 217-222.

This study compared the risk-perceptions of adolescents and adults. Adolescents and their parents were asked to evaluate the risks associated with experimental, occasional, and regular involvement in 14 health-related activities. These activities included getting drunk, using recreational drugs, and having unprotected sex. Participants also evaluated their relative chances of encountering the leading causes of illness and mortality for each of the activities. The results indicated that the adolescents minimized the perceived risks of experimental and occasional involvement in the potentially health-compromising activities as compared to their parents. It is also important to note that the adolescents were less optimistic about evading injury and illness than were their parents, and the adolescents at the greatest risk for such misfortunes were the least optimistic about avoiding them. These findings do not support conventional explanations of adolescent risk-taking, which often state that adolescents engage in risky behavior due to a sense of invulnerability, such that they feel as though the negative consequences associated

with the behaviors are not applicable to them. Instead, these findings suggest that adolescents simply do not regard their behavior as being exceptionally risky or hazardous.

The findings of this study support a theory of adolescent behavior that states that adolescents engage in potentially health-compromising behaviors not because they feel invulnerable, but because they internally minimize the risk for harm associated with the activities.

Cook, E. C. (2008). Residential wilderness programs: The role of social support in influencing self-evaluations of male adolescents. *Adolescence*, 43(172), 751-774.

This study employed a qualitative analysis to examine the aspects of a residential Wilderness Program that impacted self-evaluations in male adolescents. Qualitative interviews were conducted to examine changes in the adolescents' perceptions of their own self-esteem, feelings of social support, as well as the aspects of the program linked to the changes. It was found that the participants expressed that positive changes in self-esteem and social support resulted from the activities built into the Wilderness Program. Increased levels of social support, which were provided through cooperative experiences, helped participants develop a more positive sense of self. Specifically, the participants expressed a positive change in social skills and peer relationships four months after the end of the program. In addition, the adolescents described having an increased self-esteem four months after the program.

These results offer support to the notion that self-evaluations change in a positive direction as a result of aspects of the Wilderness Program. These findings contribute to the literature which supports the belief that experiential-based interventions, such as the Wilderness Program, are an effective tool for engaging adolescents. Interventions which utilize an experience-based model have been shown to be valuable in helping adolescents to make more informed decisions, gain an increased sense of self, and learn social and personal responsibility.

Didion, J., & Gatzke, H. (2004). The Baby Think It Over™ Experience to Prevent Teen Pregnancy: A Post-Intervention Evaluation. *Public Health Nursing*, 21(4), 331-337.

The authors conducted an evaluation of the "In Your Care" pregnancy prevention intervention program which utilized the Baby Think it Over infant simulator. This simulator is used as an experientially-based learning tool

with the goal of reducing the frequency of teenage pregnancy. The Baby Think it Over simulator provides a simulation of the parenting experience by using a computerized infant which responds to stimuli and requires realistic care. The intended outcome is for teens to make better decisions about sexual behavior based on a realistic understanding of the life-changing consequences of unprotected sex and pregnancy.

The authors collected data regarding the attitudes, actual and intended sexual practices, feelings, and opinions of participants a few years after the intervention. It was noted that participants vividly recalled and described the simulated experience and made statements that reflected insight and feelings about parental responsibility and the consequences of teen pregnancy. This insight demonstrates a change in the attitudes, feelings and opinions of the participants with regards to sexual activity and pregnancy. The participants also reported feeling scared about teen pregnancy as a result of the experience and remarked that they intend to be more cautious with regards to their sexual activity. In addition, short-term evaluations demonstrated that the participants had an increased knowledge about parenting and a greater intent to delay the onset of sexual intercourse.

The findings suggest that simulated experiences can be a powerful tool for effective learning about complex decisions regarding the risks of sexual activity and the realities of parenting. The use of the infant simulator has shown to be effective in helping the teens gain insight into the responsibilities and consequences of teen pregnancy. This study also lends support to the notion that experiential-based tools and interventions can be effective in helping adolescents understand and realize the responsibilities and consequences which can be a result of risky behaviors, such as unprotected sexual intercourse.

Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Protective factors in adolescent health behavior. *Journal of Personality And Social Psychology*, 75(3), 788-800.

This article examined the role of psychosocial factors in adolescent health-enhancing behaviors, such as healthy diet, adequate sleep, good dental hygiene, regular exercise, and seatbelt use. The sample for this study included Hispanic, White, and Black high school students in a large, urban school district. Following the analysis of a questionnaire given to the students, the authors found that both proximal (health-related) and distal (social

system related) protective factors have significant positive relations with the development of health-enhancing behaviors. The authors identified key proximal protective factors as placing a value on health, evaluating perceived effects of health-compromising behaviors, and parents who model positive health behaviors. Key distal protective factors include a positive orientation toward school, friends who model conventional behaviors, involvement in prosocial activities, and involvement in religious institutions. The findings suggest that encouraging and strengthening both proximal and distal protective factors may aid in the promotion of salubrious behaviors amongst adolescents.

The findings suggest that a holistic approach be considered when promoting healthful behaviors and activities in adolescents. The factors outlined in this article, such as valuing one's health, becoming involved in prosocial activities, and parental modeling, demonstrate that healthy behaviors can be encouraged through participation in positive and community-based activities as well as through positive modeling.

King, K. A., Vidourek, R. A., Love, J., Wegley, S., & Alles-White, M. (2008). Teaching adolescents safe driving and passenger behaviors: Effectiveness of the You Hold the Key Teen Driving Countermeasure. *Journal of Safety Research*, 39(1), 19-24.

This article examined the effectiveness of the You Hold the Key teen driving safety intervention on reducing risks for fatal and non-fatal auto accidents. The You Hold the Key intervention is a comprehensive school-based program which lasts ten weeks. The intervention utilizes various methods of engagement including but not limited to cooperative learning, interactive lessons, and student-led role plays. The article also cites an earlier study which found that "the solutions to youth driving risks lie in the application of a wide range of strategies which allow younger drivers to gain adequate experience and develop skills before being exposed to the full challenges of driving alone" (Twisk & Stacey, 2007).

It was found that the You Hold the Key intervention yielded significant increases in the students' likelihood to wear seatbelts, avoid drinking and driving, and reduce distractions while driving. This intervention differed from traditional driver education programs in that it focused on promoting safe driving by increasing the knowledge, skills, and attitudes of the students. The focus on the students' skills and attitudes in conjunction with the use of interactive lessons and student-led activities make this

intervention especially effective in encouraging safe driving practices. The findings of the study also lend support to the overall effectiveness of interactive and experience-based interventions on fostering healthy and informed behaviors in adolescents.

Out, J. W., & Lafreniere, K. D. (2001). Baby think it Over®: Using role-play to prevent teen pregnancy. *Adolescence*, 36 (143), 571-582.

This article assessed the effectiveness of the Baby Think it Over infant simulator program in changing adolescent's viewpoints and behaviors relating to pregnancy. It was expected that involvement in the program, which is a form of role play, would encourage adolescents to recognize their own personal beliefs regarding unplanned pregnancy. As a result of the program, it is expected that the manner in which adolescents assess their own personal risks would change and further develop. In addition, it was expected that the program would provide them with insight into the experience, responsibilities, and consequences which are involved in adolescent pregnancy. The results demonstrated that the adolescents in the intervention group were more likely to accurately evaluate their personal risk for unplanned pregnancy as compared to the teens in the group which did not receive the intervention. Further, the teens in the intervention group were also significantly more likely to construct concrete examples of behaviors and consequences related to child-rearing as compared to the teens in the group which did not receive the intervention.

This study offers additional support to the idea that an intervention, such as the Baby Think it Over simulator, which is based on experiential learning can be effective in helping adolescents develop the insight needed to make more informed and thought-out decisions regarding engaging in risky and health-compromising behaviors.

Pajares, F. (2005). Self-efficacy during childhood and adolescence: Implications for teachers and parents. In F. Pajares & T. Urdan (Eds.), *Self-efficacy and adolescence* (pp. 339–367). Greenwich, CT: Information Age.

This chapter discussed self-efficacy and how it relates to the capacity to succeed amongst children and adolescents. The chapter is based on the author's assumption that the beliefs that adolescents hold about their ability to succeed in their undertakings are critical factors in the subsequent successes or failures they attain in these activities. Under this formulation, these self-efficacy attitudes are the foundation for motivation,

wellbeing, and personal accomplishment in all areas of life. This is because unless adolescents deem that their actions can yield the desired results, they will have little incentive to act or to persist in the face of the challenges that will inevitably arise. The chapter suggests that children and adolescents will be more likely to engage and be successful in, tasks in which they are intrinsically motivated to participate in, where the motivation is viewed as a result of their self-efficacy beliefs.

This chapter places an importance on self-efficacy. Since self-efficacy reflects confidence in one's abilities, it seems only natural that it can directly affect one's motivation and overall wellbeing. When discussing adolescent health beliefs, it is important to include self-efficacy in the conversation because of its effect on the individual's wellbeing, which can include a value placed on one's own health. It makes sense that a child or adolescent who has a positive sense of self-efficacy would place a high value on their own health, and would therefore avoid activities and behaviors which could be potentially harmful to them.

Romi, S., & Kohan, E. (2004). Wilderness Programs: Principles, Possibilities and Opportunities for Intervention with Dropout Adolescents. *Child & Youth Care Forum*, 33(2), 115-136.

This article evaluated the effectiveness of Wilderness Programs in improving the self-esteem and locus of control of adolescents. Wilderness Programs aim to assist individuals in ridding themselves of anti-social behaviors, substance abuse, and issues with self-perception by teaching them social values such as diligence, goal-directed work, and mutual reliance. The programs consist of a series of challenges which become increasingly difficult as time progresses. Previous research has shown that as a result of the program, the adolescents who participate often leave with an increased sense of self-esteem and self-worth, as well as the social skills needed to become a successful member of society.

The results of this study revealed that significant progress was achieved with regards to an increased self-esteem in those who participated in the program. This finding supports the notion that active, experience-based interventions have positive and effective outcomes. The results also indicated that the locus of control of the adolescents became more internal. Thus, they were learning to take responsibility for their own actions and behaviors.

Although Wilderness Programs aim to help adolescents with pre-existing behavioral troubles, and are not used as preventative measures, this study illustrates and supports the effectiveness of experiential-based programs in changing the attitudes and behaviors of adolescents. The findings of this study mimic those of other studies reviewed, which point to experiential-based interventions for an effective method for teaching responsibility and building self-esteem, as well as increasing adolescents' decision-making abilities.

Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current Directions In Psychological Science*, 16(2), 55-59.

This article focuses on understanding why adolescents and young adults engage in more risky behaviors as compared to younger or older individuals. Upon reviewing the literature, the author identified that the likelihood of adolescents to engage in risk taking behaviors is impacted by both logical reasoning as well as psychosocial factors. Steinberg suggests that adolescents' tendency to engage in risky behavior does not appear to be due to delusions of invulnerability or ignorance. This statement is contrary to the long-standing belief that feelings of invulnerability play a major role in risk-taking behavior amongst adolescents. The article presents a perspective on adolescent risk taking grounded in developmental neuroscience. According to this view, the earlier maturation of areas of the limbic system, which drives adolescents toward thrill seeking and emotionally arousing behaviors, and the slow maturation of the cognitive-control system, which regulates these impulses, make adolescence a time of heightened susceptibility for risky behavior.

A review of the literature revealed that attempts at changing adolescents' minds about risky behavior have been vastly unsuccessfully at changing the behaviors themselves. While providing factual information did slightly improve the way in which adolescents viewed risky behaviors, it did not change the prevalence of the engagement in those behaviors. Lastly, the author suggests an alternative method for reaching out to and engaging adolescents about risky and health-compromising behaviors. The author proposes that changing the context in which the risky behaviors occur may be more effective than attempting to change the manner in which adolescents think about risky behaviors. Changing the context of risky behaviors is done by adults and can include changes in policy as well as incorporating an experientially-driven model for engaging the

adolescents. The author's view of adolescent risk taking provides an explanation of why educational interventions designed to change adolescents' knowledge, beliefs, or attitudes have been largely ineffective in changing the beliefs themselves. It also offers a new viewpoint on how to engage adolescents and help them to improve their decision making regarding potentially health-compromising activities on their own.

Wagner, E. F., Tubman, J. G., & Gil, A. G. (2004). Implementing school-based substance abuse interventions: methodological dilemmas and recommended solutions. *Addiction*, 99(s2), 106-119.

The authors conducted a literature review to organize the current beliefs regarding the most effective school-based interventions for reducing adolescent substance use. As a result of the review, ten best-practices were identified among successful substance use interventions. It was found that programs which contain effective change-producing practices, such as specific skills training and increasing informed decision-making, are effective in reducing substance use in adolescents. Further, programs which encourage the development of skills and competencies through interactive-based methods are deemed to be more effective in reducing substance use than traditional approaches which strictly employ an education-based intervention.

As a result of the review conducted by the authors, best-practices for effective substance use interventions were isolated. The inclusion of interactive-based programs, such as experiential-based methods of engagement, have been shown to be effective in educating adolescents about the risks involved as well as increasing their capacity to make informed decisions regarding their own health.

African-American Studies and Storytelling in Learning Experiences

A short review of African-American studies associated with health and wellness practices surfaced five studies that may be useful resources for planning culturally responsive programming for SimLab participants. It suggested that education tactics might be tailored differently to suit the needs of students from different cultural heritages. The review revealed that Black and Latino children from low-income urban areas are disproportionately more likely to be asthma sufferers, and more likely to be delegated self-management of their condition by their parents (Laster et al, 2009). However, this factor may be mitigated by teaching strategies from within the community where African-American teachers are more likely to use culturally responsive moral storytelling focused on cultural propriety, stamina and survival irrespective of power to encourage self-help (Carter-Black, 2009). Nickerson and Potter's (2008) work helps expand the understanding of narrative structure by demonstrating that African-American youth are more likely to learn through a topic-associating style that shifts in temporal orientation and location that does not follow the single dominant narrative single-focused arc found in the Caucasian community and typical of epic structures. Two other papers addressed issues of disparity and the priority to focus on understanding how cultural models for eating and health are implicated in the studies, but do not contradict the suggestion that the attention to culturally responsive narrative structure used in storytelling will have greater likelihood of success. In one of those papers, it is suggested that cultural stigma and social narratives related to self-oppression are associated with lower likelihood of pursuing healthful practices, (Baroso et al, 2010) but this speculation seems to be the direct issue that African-American teachers seek to confront through the use of their instructional style and the adoption of topic-associating styles mentioned above.

Annotated Bibliography

Prepared by Logan Brown

Laster, N., Holsey, C. N., Shendell, D. G., McCarty, F. a, & Celano, M. (2009). Barriers to asthma management among urban families: caregiver and child perspectives. *The Journal of asthma : official journal of the Association for the Care of Asthma*, 46(7), 731–9. doi:10.1080/02770900903082571

Black and Latino children are disproportionately affected by asthma. The Parents of younger children and teenagers allowed inappropriate delegation of asthma self-management to children too young, too poorly trained, or too unmotivated to assume the role of managing their condition. families in urban low-income settings require asthma management interventions tailored to their specific needs given their unique characteristics, which may render a standard asthma management intervention ineffective or only marginally effective.

Carter-Black, J. (2007). Teaching Cultural Competence: an Innovative Strategy Grounded in the Universality of Storytelling As Depicted in African and African-American Storytelling Traditions. *Journal of Social Work Education*, 43(1), 31–50. doi:10.5175/JSWE.2007.200400471

Storytelling is intended to impart moral lessons to an attentive audience. African-American teachers also use stories to encourage students to strive for academic

success. Familial stories are told in informal settings and directed at a mixture of adult and adolescent audiences. Common themes are: love of family and community, stamina and survival against overwhelming odds, and commitment to god. No power differentiation in stories, often told from a “we” perspective

Nickerson, M., & Potter, P. (2008). Teaching Breast Self-Examination Through Pantomime: *Clinical Journal of Oncology Nursing*, 13(3), 301–305.

Storytelling has been successfully tailored into a storytelling format that resulted in improved diabetes self-care practices in AA women. Witness Project: AA women volunteers in St. Louis tell stories of their breast cancer survival to groups of AA women. Then use pantomime to show how a breast exam is done.

Michaels, S. (2001). Listening and Responding: Hearing the Logic in Children's Classroom Narratives. *Theory Into Practice*, 13(3), 218-224.

This article studied the style and use of storytelling as demonstrated by White and African-American Children. White children used a “topic centered” narrative style, including tightly structured discourse and explicit temporal and spatial relationships. Black children use “topic associating” style. There is no explicit statement of

a theme or overall point. Temporal, orientation, location, and focus often shift across segments. Such “topic associating” style is difficult for non-African-American adults to follow.

Winham, D. M., & Jones, K. M. (2011). Knowledge of young African-American adults about heart disease: a cross-sectional survey. *BMC public health*, *11*, 248.

doi:10.1186/1471-2458-11-248

African-Americans are at higher risk for developing cardiovascular disease and premature death due to cardiovascular disease. These differences are accounted for by differential access to healthcare, diet, neighborhood characteristics, SES, discrimination, and sociocultural attitudes towards disease. Education in CVD risk factors is required for stopping behaviors that increase disease risk, such as smoking, not exercising, or consuming high fat foods. In order for a person to change, they must: perceive a disease or condition as serious, consider themselves vulnerable, have not obstacles to changing behavior, and perceive outcomes associated with the desired behavior change. Women were more knowledgeable than men about their gender specific heart disease symptoms. Differences in knowledge by education level was the most pronounced factor. The authors suggest assessing and raising knowledge of heart disease in African-American young adults.

Barroso, C. S., Peters, R. J., Johnson, R. J., Kelder, S. H., & Jefferson, T. (2010). Beliefs and perceived norms concerning body image among African-American and Latino teenagers. *Journal of health psychology*, *15*(6), 858–70. doi:10.1177/1359105309358197

It is widely acknowledged that culturally appropriate health messages are better accepted by proposed target groups than a “one size fits all.” Participants attributed “cultural eating” as the most causative reason for the widespread occurrence and acceptance of overweight. Traditional Mexican and African-American foods are high in fats and cholesterol. Recently, Mexican and African-American dietary habits have recently begun to incorporate foods that were normally only eaten on special occasions. The pandemic of HIV caused parents to associate overweight children with sexual health and an absence of the drastic weight loss associated with HIV. The authors speculated that shame and self-loathing for not possessing the self-control required to lose weight may prevent African-American and Latino Americans from seeking assistance. African-American females listed fast food as the major barrier to healthy living while Latinas listed “excessive work.”

Conclusion

This literature review suggests that social experiences structured around an emotional arc that is culturally, socially, and age appropriate can engage youth in reasoning about their health practices and promote more healthy behaviors in the future. The literature suggests that you will find the learning salient, relevant and that it can produce the type of emotional engagement that can produce more likelihood that a group of youth will pursue more healthful behaviors following the intervention if it's targeted correctly.

There is a great deal of convergence of themes across most the articles surfaced, most of which recognize that youth's minds are still developing, that they have unique needs as learners for experience that is shared with others in their social network. We also note that cultural studies suggest that how learning stories are structured for different groups can have significant impacts on the results.

We suggest that the SIMLAB team consider a variety of models to select an appropriate structure for assessing impacts that recognize cultural diversity. The results suggest that the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), Social Cognitive Theory and the Prototype/Willingness model as possible models, but also consider with the evaluators how to account for socio-cultural variables based on youth development and how quick, superficial processing of information might impact outcomes.

Consistent in the literature appears to be the role of age and developmental advances typical in each age group as possible variables and the ability to explore positive stress as a unique and controlled learning opportunity that can produce higher positive outcomes for youth than have been recorded in traditional interventions in schools or hospital settings. We suggest that the lack of literature on medical simulation learning and risk may offer a unique opportunity for the MSI team in collaboration with the evaluators, to add to the literature

Lastly, African-American studies associated with health and wellness practices surfaced five studies that may be useful resources for planning culturally responsive programming for SimLab participants. It suggested that education tactics might be tailored to use narrative structures that are more typical to African-American teachers use a topic-associating style that shifts in temporal orientation and location and does not follow the single dominant narrative single-focused arc found in the Caucasian community and typical of epic structures.

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- <http://www.nctsn.org/trauma-types/medical-trauma> is a web resource run by the National Child Trauma and Stress Network. This page discusses medical trauma and what it entails. It provides resources such as research articles and presentations discussing trauma and its symptoms and presentations.

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