# Three PREP Curricula: Post-Program Knowledge and Attitudes of Targeted High-Risk Youth in Missouri

Kendal Lowrey, MPA
The Pennsylvania State University

Claire Altman, Ph.D.
University of Missouri-Columbia

**Abstract**
The Personal Responsibility Education Program (PREP) is a nationally implemented teen pregnancy prevention program with goals of lowering the frequency of unintended teen pregnancy. In 2010, the state of Missouri was awarded funding to implement PREP and did so through three different curricular choices: BART, MPC, and TOP. The program requires youth to take pre- and post-program surveys to measure performance. Through these, we are interested in *post*-program youth knowledge and attitudes within the three utilized curricular choices. Further, we measure knowledge and attitude growth between pre- and post-program implementation and regress on ending, post-attributes to find which youth components explain end-of-program knowledge and attitudes. We utilize a lagged regression approach to account for respective youth *pre*-knowledge and attitude components. Findings on the effectiveness of the PREP program are important in determining future health and educational needs of high-risk youth in the PREP program.

## Introduction

Teen birth rates have seen a 67 percent decline since 1991(NCSL, 2017); yet, the United States has a higher teen birth rate than many developed countries including Canada and the United Kingdom (Kearney & Levine, 2012). The national decrease in teen pregnancy rates has been attributed to increases in use of contraception (Marmelstein & Plax, 2016), healthier sexual behaviors (Lindberg & Maddow-Zimmet, 2012) as well as family planning and educational opportunities for youth (Kearney & Levine, 2014a). The state of Missouri, our focus here, has higher than national average teen birth and pregnancy rates (Power to Decide, 2017) and state initiatives have focused on targeting specific youth in counties deemed highest risk[1]. These high risk counties have higher teen birth rates than the overall Missouri rate (Missouri Kids Count, 2016).

Teen pregnancy, a critical public health concern, often results in poor outcomes for young mothers and their offspring. The timing of first birth is crucial to youth. After 50 years of research on teen pregnancy and its detrimental outcomes, Campbell's statement still feels relevant: "The girl who has an illegitimate child at the age of 16 suddenly has 90 percent of her life's script written for her. Her choices are few and most of them are bad" (1968, pg. 238) Research continues to suggest that teenage mothers are subject to low educational attainment (Kane et al., 2013; Perper et al., 2010) and socioeconomic status (Driscoll, 2014) as well as health complications during and after pregnancy (Ganchimeg et al., 2014). Young teen parents shortly after giving birth have reported that they felt confused, overwhelmed, and lacked the understanding and knowledge of what it took to be a parent beforehand. These adolescents have adopted an "I wish I knew then what I know now" mentality and have faced many new challenges as teen parents (DeVito, 2010). SmithBattle and Leonard (2012) further suggest that support through transition to adulthood are vital to improving youth outcomes.

When given the necessary information on the likelihood of becoming pregnant, consequences of teen pregnancy, and use of contraceptives, youth are more likely to make informed life decisions (Kar et al., 1979). Key components of prevention programming such as peer norms (Wright et al., 2015; Messer et al., 2011), knowledge and attitude surrounding teen pregnancy, life skills, and sexual health and relationships are associated with positive contraceptive behaviors both during adolescence and later in life (Guzzo & Hayford, 2018). Positive contraceptive behaviors have decreased the rate of unintended youth pregnancy nationally (Manlove et al., 2015; Santelli et al., 2007) and in Missouri (Peipert et el., 2014). Thus, pregnancy prevention knowledge and attitudes can be important for health and the life course.

In the state of Missouri, the federally funded and state implemented Personal Responsibility Education Program (PREP) is delivered to youth to lower the frequency of unintended teen pregnancy. In this study, we evaluate a unique set of survey data collected by the Missouri Department of Health and Senior Services (DHSS) as a part of PREP program delivery. We analyze two of PREP's aims: pregnancy knowledge and attitude survey components, in the three

[1] The teen pregnancy rate is the total number of pregnancies and not just those that resulted in a live birth. Teen birth rate is calculated by dividing the number of births to mothers aged 15-19 by the total number of females aged 15-19. Rates are per 1,000 women.

curricula choices that Missouri's PREP program offered. Missouri's diverse population allows the PREP program to capture various groups of youth among each curricula type offered. As there is no set rule as to any which curricula must be implemented, varying curricula length, foci, and target population tend to draw in disparate youth populations dependent on curricula match to youth needs. Here we examine differences in youth knowledge and attitudes between the Becoming a Responsible Teen (BART), Making Proud Choices (MPC), and Teen Outreach Program (TOP) curricula from post-program survey information. Evaluating each program's impact on knowledge and attitudes is an important step of teen pregnancy prevention and education programming. The insights from this study will allow Missouri's PREP program to more effectively serve the youth of the state.

## Missouri PREP History

*Personal Responsibility Education*

In response to teen pregnancies nationwide, the Patient Protection and Affordable Care Act of 2010 (ACA, P.L. 111- 148) established the Personal Responsibility Education Program (PREP) to implement preventative health care programs to adolescents throughout the United States. The federal program targets high-risk youth ages 10-19 who are: homeless, in foster care, live in geographic areas with high teen birth rates or come from racial or ethnic minority groups, as well as pregnant or parenting youth (Family and Youth Services Bureau, 2016). As required by federal law, PREP programs must address abstinence and contraceptive use including information regarding the prevention of HIV/AIDS as well as three of the following adulthood preparation topics: healthy relationships, adolescent development, financial literacy, educational and career success, and healthy life skills. PREP's tier-evidence approach[2] is utilized in Missouri by replicating evidence-based TPP programs proven to be effective. While PREP provides overarching goals, state grantees are able to individualize approaches by choosing curricula to meet youth needs specific to their geographic localities.

The Missouri Department of Health and Senior Services (DHSS) was awarded State PREP funding from the Federal Youth Services Bureau (FYSB) to implement PREP beginning in 2010. Missouri is one of forty-five states to receive funding (The National Campaign to Prevent Teen and Unplanned Pregnancy, 2017). Missouri, as a state that ranks poorly in comparison to other states for overall health of women and children (United Health Foundation, 2018), has implemented PREP with goals to: 1) increase knowledge regarding pregnancy, STI, and HIV prevention; 2) decrease intentions to have sex; 3) increase intentions to remain abstinent; and 4) increase intentions to use contraception/condoms when sexually active (Institute of Public Policy, 2017). Longer-term goals focus on delaying sexual activity and increasing self-efficacy and behaviors.

Youth are targeted in areas with high need for achievement of PREP goals based on a risk assessment conducted by the Missouri DHSS. Fifty high-risk counties were chosen as targets for program implementation based on teen pregnancy rates, birth rates, incidence of STIs and HIV, and other economic and education indicators associated with teen pregnancy (Institute of Public

[2] The tier-evidence approach gives the grantee the option to: a) replicate evidence-based programs proven to influence measured outcomes or b) opt for other and more experimental programming approaches while incorporating desired elements of proven effective programs.

Policy, 2017). Areas roughly circumscribe Missouri's two largest metropolitan areas, St. Louis and Kansas City, as well as its more rural, or Southern regions. Missouri's PREP program has had an impressive reach: about 57 percent of Missouri's population resides in a county that received PREP programming and roughly 72 percent of Missouri's PREP implementation has taken place in those high-risk locations.

*Missouri's Three Curricula*

States awarded PREP funding were given the freedom to choose the curricula. A list of forty-four teen pregnancy curricula choices backed by theory and with empirical evidence of preventing teen pregnancies, sexually transmitted infections, or sexual risk behaviors in at least one evaluation (US Department of Health and Human Services et al., 2015) are given as curricular program options. Through extensive literature reviews, comprehensive and theory-driven approaches to TPP have proven to be effective (Nation et al., 2003). Strong programs utilize a multi-system perspective (Kotchick, 2001) where healthy life skills along with sexual health and behavior information are stressed.

The Missouri DHSS chose to implement three different curricula: Teen Outreach Program (TOP), Making Proud Choices (MPC), and Becoming a Responsible Teen (BART). Together in Missouri, these programs constitute the PREP initiative. Missouri's three curricula were authored with several of the following theoretical approaches in mind: Social Cognitive Theory, Theory of Reasoned Action, Theory of Planned Behavior, Response to Intervention, Social Learning Theory, and the Self Efficacy Theory (ETR Associates, 2017). To dive deeper, the Theory of Reasoned Action and its expanded Theory of Planned Behavior approach explain that self-efficacy, attitudes, and norms predict behavioral intentions, which in turn influence behavior (Fishbein and Jaccard, 1973; Azjen, 1991; de Vries et al., 1988). The Social Cognitive Theory focuses on the impacts of knowledge, outcome expectancies, and personal, behavioral, environmental, and social influences on determining human functioning (Bandura, 1986). Social Learning (Bandura, 1977) and Self-Efficacy (Bandura, 1997) models broadly focus on observing and learning from others, perceived ability to do so, and the decision making process that youth take to get to that learning. Response to Intervention is a more recent tactic undertaken to improve learning and prevent academic difficulties.

These theories suggest that youth knowledge, attitudes, and self-efficacy are closely tied to behaviors. TOP, MPC and BART curricula are utilized nationally and have been rigorously evaluated in various settings. TOP has been found to reduce rates of pregnancy, school suspension, and class failure (Allen JP et al., 1990; Allen JP et al., 1997; Allen JP & Philliber S., 2001; Daley et al., 2015). MPC has been found to assist in the delay of initiation and frequency of sex, reduce the occurrence of unprotected sex, and increase condom use (Jemmott et el., 1998). Specific to Missouri, Cronin et al. (2014) created a fidelity scoring system to test the effectiveness of MPC's curriculum finding that youth across different settings and populations significantly gain knowledge and increase intent to use condoms. BART has been found to reduce frequency of sex in young men, reduce the number of sexual partners, and increase condom use (St. Lawrence et al., 1995; St. Lawrence et al., 1993; Malow et al., 2009; Butts et al., 2002). MPC and TOP curricula offer the most amount of flexibility in curricula and implementation and are the most utilized curricula within Missouri PREP.

The three curricula primarily focus on comprehensive learning while stressing that abstinence is the safest way to prevent teen pregnancy. Regardless of curricula, PREP youth and the evaluation of their experience in the program were assessed using standardized pre- and post-surveys. Knowledge and attitude questions, which are described more thoroughly within the methodology section, were a primary program focus given their relation to youth health outcomes.

We hypothesize, that due to variations in curricula offered youth, these measured knowledge and attitude components may show variation dependent on other measured survey factors. Table 1 highlights some of the differences between Missouri BART, MPC, and TOP, their target populations, and their implementation. These differences may not be reflective of all BART, MPC, and TOP implementation sites nationally, but are so for Missouri. Overall, TOP curricula is typically delivered over the course of the entire school year either during or after school while MPC and BART are designed to be implemented over a shorter time-frame, sometimes on weekends or after school. For Missouri, this results in the MPC curricula being most commonly utilized for foster and juvenile youth. Nationally, BART has an additional focus on African-American youth although is more commonly implemented in some of Missouri's more rural localities, and TOP was implemented more in urban areas. MPC commonly tends to focus on younger youth while TOP and BART have a wider target age range. All three programs are taught by external, voluntary organizations, who choose the curricula that will best fit their respective communities' needs. The program curricula is taught in various settings yet are most often implemented within a school, typically during or after school hours.

***-Insert Table 1 about here-***

## Data and Methods

Missouri PREP youth pre- and post-survey data were obtained from the Institute of Public Policy (IPP) at the University of Missouri who oversee PREP for the Missouri DHSS, the primary grantee in charge of the program. Survey questions were designed by the overarching PREP initiatives and slightly modified for Missouri youth to reflect the three curricula being utilized. Upon entrance into the program, parental consent forms were sent home with students to obtain permission to participate in the class as well as consent to use the student's survey data. Due to a significant portion of non-consent for the survey portion of PREP (not the actual class portion), roughly 40 percent of students were not able to be included in our analysis leaving us with a sample of 2,301 youth. We further restrict our sample by excluding cases with significant pieces of missing data as well as through omitting year one (2011-2012) data[3]. There was also the possibility that a student could be involved in more than one year of PREP or more than one class within any given year. These cases along with youth who reported already having had or fathered a child were excluded yielding a final sample size of 1,318 students. IRB exemption was obtained for this study as no identifying or sensitive data were utilized.

[3] For reasons unknown to the IPP, year one's results were far different than other years. The nature of pilot years in studies lead us to think that there could be outlying reasons as to why this year was different and thus was left out.

In the first PREP class, students were prompted to fill out a pre-program survey asking basic demographic information along with questions about current knowledge, attitudes, intentions, norms, self-efficacy, and behaviors associated with pregnancy and parenting, STDs, HIV, life skills and related factors. Upon completion of the program's final class, a similar, post-program survey was completed. Student survey data were compiled from all six completed program years beginning with 2011-2012 as the pilot year and ending with the most recent completed program year 2016-2017. The surveys were utilized as a tool to assess knowledge and attitudes between the beginning and end of class implementation for each participating student.

In addition to the survey data, we also integrated publicly available county-level contextual data obtained from Missouri Kids Count which is collected by University of Missouri Office of Social and Economic Data Analysis (OSEDA) and University of Missouri Extension in collaboration with Family and Community Trust (FACT) and Children's Trust Fund[4]. The data include a variety of factors of which we include percent of children in poverty, births to teens aged 15-19, and adult unemployment at the county level. These data were included to provide additional contextual information about where the PREP was being implemented.

**Measures**

Students were asked a variety of demographic questions including age, grade, sex, and race. They were then asked a variety of questions regarding their sexual history, self-efficacy, knowledge, attitudes, and classroom behavioral components in relation to their thoughts, feelings, and ideas toward and relating to overall general sexual health as well as their own health and behaviors. The pre-post design is utilized to measure and conceptualize youth growth as relating to the measured program outcomes as a result of PREP implementation. However, due to variation in the specific wording of some of the questions asked of youth in the pre-test relative to haw they were asked in the post-test, the two were not necessarily designed to be compared side-by-side. Our main outcomes of focus, however, were measured in identical fashion in pre- and post-surveys which allow us to study inter-curricular knowledge and attitudes of youth over time.

*Dependent Variables*

The two components of PREP that were consistently measured from pre- to post-survey and the variables of interest for this study are youth knowledge and attitudes. We utilize these responses to observe Missouri youth involved in the national PREP program through one of three core curricula implementation styles. For each outcome component, several survey questions were asked of youth in order to capture their knowledge as well as attitudes of which were summed to create a score for number of correct or positive responses. Knowledge questions captured information relating to pregnancy and HIV/STDs. Youth were prompted to answer based on true/false/don't know retention. Some examples include, "Most people who have HIV know they have it", and "A women cannot get pregnant the first time she has sex". There were ten questions in total with "don't know" responses recoded as missing values. We believe that "don't know" respondents may be different than standard "true" or "false" respondents. The summed score ranges from 0 to 10, with higher values indicating greater knowledge. For attitudes, youth were

[4] Publicly available Missouri Kid's Count data can be found here: http://www.missourikidscountdata.org

given a list of seven different kinds of ideas that young people tend to have and were prompted to respond via a five-point Likert scale on whether they agreed or disagreed with a given statement. These questions related to sexual intercourse and condom usage on a personal level and included statements such as, "I could say no to the person going out with me if I don't want to have sex". Higher values within each variable correspond to higher levels of knowledge and/or attitudes. The summed score ranges from 0 to 35, with a higher value indicating more positive attitudes.

*Independent and Control Variables*

Our primary independent variables include pre-survey youth intentions, classroom behaviors, and self-efficacy survey questions. We also take into account youth demographic characteristics and a contextual county-level variable measuring the economic wellbeing of the locality a respondent resided in. We further control for the respondent's pre-program knowledge and pre-program attitudes relative to their post-program answers to isolate the impact of the program relative to where they entered the program.

Individual intentions were measured by asking youth whether they intended to abstain from sexual. The four-point Likert scale ranged from "yes, definitely" to "no, definitely not". Behavioral questions were coded dichotomously as yes or no answers and included sexual history as well as classroom norms such as failing a grade or class and cutting class. These three measures were summed to create a classroom behavior score for the number of reported occurrences. The score ranged from 0 to 3 and higher values indicate higher levels of deviant behavior. Eight pre-survey self-efficacy questions were asked regarding how often the respondent said that they felt a certain way about a particular topic within the last three months. The four response options ranged from "all" to "none of the time" with higher values corresponding to higher self-efficacy. Efficacy topics included being able to manage stress, caring about doing well in school, and managing friendships and conflict, for example. This measure was also summed and ranged from 0 to 32. Higher values indicate more positive feelings toward topics.

In addition to main independent variables and demographic information, we added contextual county-level measures for each county in which a PREP program was held. While youth may not actually reside within the county in which they receive TPP education, Missouri PREP targets youth who are at greatest risk for teen pregnancy who then participate at their respective implementation site. Long-term health and wellness can be influenced by neighborhood context and social determinants of health (Viner et al., 2012) with youth who are less well-off socially and economically more likely to give birth than peers who are in less disadvantaged situations (Kearney& Levine, 2014b). Further, income inequality and poverty are linked to increases in teen birth rates (Gold et al., 2002).

In our analysis, contextual measures include the percent of children in poverty, births to teens aged 15-19, per 1,000, and the percent adult unemployment. The three measures were transformed into comprehensible and comparable variables due to their measurement differences through attention to values in their spread, mean, and standard deviation. For example, a new variable was created for percent of children in poverty by allocating values that were two or

more standard deviations below the mean variable value to equal one. The new variable would equal 2 if percent poverty was one standard deviation below the mean up to the mean value, 3 if a value was equal to the variable mean up to a standard deviation above the mean, and 4 if two or more standard deviations above the mean. The three measures were then summed to create an index score ranging from 3 to 12 with higher scores relating to worse overall county wellbeing.

*Analytic Strategy*

Two main analytic strategies are used to address our interest in Missouri youth who participate in PREP through three unique curricular programs. We are interested in what youth components and survey outcomes contribute to their post-knowledge and attitudes in regard to which respective curricula they are enrolled in. First, we descriptively evaluate difference of means in our outcomes: knowledge and attitudes, from pre- to post-program implementation using t-tests. The second part of our analyses utilizes lagged ordinary least squares (OLS) regression models to predict variations in youth knowledge and attitudes as a result of program implementation, our main research foci. A nested approach is used to observe change in outcomes when additional survey measures are accounted for. Variables are introduced in groups through model iterations by their hypothesized simultaneous relationship to each outcome of interest. We estimate models separately by program. Using a lagged approach helps us to look at post-survey knowledge and attitudes by taking into consideration youth pre-program responses while our nested approach allows us to systematically introduce control variables into our models.

**Results**

*Descriptive Statistics*

Table 2 presents descriptive statistics of youth basic demographic information and observed survey characteristics. We see that across different curricula, youth tend to be in higher grades in BART and at the lower end of the grade distribution in TOP, with MPC youth in the middle. There are slightly more females than males in PREP which is comparable to the general nature of participation in teen pregnancy prevention programs. Looking further at gender distributions within curricula, male and female participation is more evenly balances within BART and MPC curricula. The higher female PREP distribution shines through within the TOP group. The two largest racial groups in Missouri PREP are white and black students, mirroring state demographics. Black youth are more highly represented through the BART curricula which is in-line with that particular curricula foci. In the other two curricula programs, white students make up the majority relative to black students.

Turing to the bottom panel of Table 1, TOP youth report higher self-efficacy, on average than youth in BART or MPC. The mean of intentions to abstain from sex hover closely around the "Yes, probably" response for all three curricular groups. Average county wellbeing status is higher (meaning worse off) for counties in which TOP curricula is implemented relative to MPC or BART. With a low (best score) of 3 and a high (worst score) of 11, all three curriculum show signs of county economic hardship. Lastly, all groups show evidence of low average negative classroom behaviors meaning that the majority of students are not reporting failing a class, grade, or skipping class without permission.

***-Insert Table 2 about here-***

*Pre-Post Learning*

To explore youth survey components and their relationship to post-program knowledge and attitudes within different curriculum offered, we descriptively tested for evidence of change from pre- to post-survey. Table 3 highlights results from t-test analyses showing significant increases in youth knowledge and attitudes for all curricular groups. On average, all youth score around 5.7 on the pre-knowledge portion and then about 7.4 out of 10 on post-knowledge yielding a gained increase of about 1.7 additional questions answered correctly. The largest recorded increase in knowledge is among youth in the TOP curricula although they are still recording lower overall knowledge than both BART and MPC groups. MPC youth score highest on post-program knowledge with an average score of 8 out of 10 correct answers.

Differences in attitudes from pre- to post- are much smaller than those observed for knowledge. Combined attitude scores range from 0 to 35 with a mean of around 28 points, an indication of already high levels of positive attitudes among youth on their level of agreeance with ideas toward sexual intercourse and condom usage. Across all groups, results show an average increase in attitudes by about 0.54 points. This translates to mean that on their five-point Likert scale of agreeance with certain key themes, attitudes increase, on average, about half of a point toward more positive attitudes over the duration of the program. Youth attitude changes within curricular groups, however, vary. MPC and TOP groups experience a change whereas the increase in attitudes for BART youth is relatively small and insignificant. Similar to knowledge results, TOP youth have lower average attitudes at both pre- and post-measures but show the largest signs of improvement within knowledge and attitude growth.

***-Insert Table 3 about here-***

*Lagged Regression Analyses by Curricular Group*

BART

Table 4 parts A and B results report OLS regression results for BART youth post-knowledge and post-attitude survey responses while accounting for respective pre-knowledge and attitude responses. Model 1 in Table 4A shows that post knowledge is not explained by youth demographic characteristics. As expected, pre-survey knowledge does however significantly relate to post-program knowledge. In Model 2, county wellbeing does have a significant and negative effect on knowledge. Each unit increase in the county well-being index (meaning less favorably) was associated with a .15 decrease in knowledge. Classroom behaviors and youth efficacy were not associated with knowledge. This holds true in Table 4A, Model 3 where we add in factors measuring youths' intentions to abstain from sex and youth attitudes. These additions are associated with significant improvements in the R2 and suggest that those intending to abstain from having sex learn less than other BART youth and those with more positive attitudes learn more. Table 4B Models 4-6 suggest that post-program youth attitudes are associated with a county's wellbeing. These effects, however diminish in the final model. We

then see that the main drivers of attitude increases are explained by pre-knowledge and gender where females score higher compared to males.

***-Insert Table 4 about here-***

MPC

Results in Table 5A, Model 1 hint that female youth in the MPC curricula are significantly more likely to have a higher knowledge score than their male counterparts. Across all knowledge models, youth pre-program knowledge is significantly associated with post-knowledge. In Model 2, efficacy is positively associated and a significant predictor of post knowledge. Similarly, adding intentions and attitudes into the regression does not significantly add to results although self-efficacy and females are still significant factors that relate to higher post-knowledge scores. For MPC attitudes, Table 5B, Model 4 show a story fairly similar to MPC knowledge models. Across all three models, females have significantly higher attitudes than males (Table 5B, Models 4-6). Females on average show a 0.93 point higher attitude score than males. In model 5, self-efficacy has a slight impact on youth attitudes. Efficacy effects disappear in Model 6 with the addition of intentions which are a significant predictor of post-knowledge. Observed is that females and higher pre-knowledge while accounting for pre-attitudes lead to increased post-attitudes.

***-Insert Table 5 about here-***

TOP

In Model 1 of Table 6A, account pre-knowledge, grade level, and gender are significant predictors of post-program knowledge and remain so across the models. Gender is a significant predictor of post-knowledge for TOP participants, net of pre-knowledge. Holding constant pre-knowledge, females have significantly lower post-knowledge. For attitudes, grade level is a significant predictor of post-attitudes, but becomes nonsignificant when pre-program knowledge is accounted for in Model 6.

***-Insert Table 6 about here-***

## Concluding Discussion

Gains in knowledge are found descriptively among youth participating in Missouri PREP programs, regardless of the curricula taught. Similarly, although pre-post knowledge scores may vary across groups, all three are increasing their knowledge base at relatively similar rates when other program and individual factors are controlled for. Disparities that we do see, are small differences within curricula on which youth survey or contextual factors contribute to those learned knowledge differences. For BART, we conclude that better county wellbeing and youth attitudes positively contribute while intentions to abstain negatively contribute to post-knowledge. For MPC, however, females and self-efficacy are the factors contributing to post-knowledge. Conversely, in TOP curricula males and those in higher grade cohorts are more likely than others to have higher post-knowledge scores. Youth knowledge improves but in different ways via different curriculum.

Another key takeaway from our findings is that youth attitudes remain relatively static throughout the PREP program regardless of curricula. For all models, pre-knowledge is predictive of ending attitudes and for BART and MPC youth, females report higher attitude scores than their male peers. For TOP youth especially, model variation is small suggesting that youth attitudes are either fixed before the program or as seen through descriptive analysis, are already relatively positive at the outset. Given that the latter were the case, even a null attitude change should not negatively impact intended youth health and wellness gains post-program implementation. Findings suggest that knowledge may be a pre-cursor for youth attitudes and descriptive rates of change indicate a higher knowledge gain relative to attitudes. With already high attitudes there is less room for growth. It seems that even if youth attitudes were fixed, they remain highly positive and youth would still be gaining from the PREP program overall.

While it is likely that observed variation in youth outcomes are linked to their different curriculum, Missouri PREP operates with the same end goals in mind: improving youth sexual health and wellbeing while also emphasizing overall youth growth and development. Regardless of *how* youth improve their knowledge, they *are* improving and at similar rates across curricula. Inter-program curricular differences do not seem to influence attitudes any differently than when results are interpreted holistically. The observed findings may speak to strengths of individual curricula or highlight future areas of focus given the nature of the intended population. Such linkages are important for targeting populations and implementing programs so that health and wellness outcomes that are desired of PREP youth are fulfilled to their fullest potential given the needs of any particular group.

References


Allen JP, Philliber S. (2001). Who Benefits Most from a Broadly Targeted Prevention Program? Differential Efficacy Across Populations in the Teen Outreach Program. Journal of Community Psychology; 29:637-655.

Allen JP, Philliber S, Hoggson N. (1990). School-Based Prevention of Teen-age Pregnancy and School Dropout: Process Evaluation of the National Replication of the Teen Outreach Program. American Journal of Community Psychology; 18:505-523.

Allen JP, Philliber S, Herrling S et al. (1997). Preventing Teen Pregnancy and Academic Failure: Experimental Evaluation of a Developmentally-Based Approach. Child Development; 64:729-742.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179- 211.

Amato, Paul R. (2005). The Impact of Family Formation Change on the Cognitive, Social, and Emotional Well-Being of the Next Generation. *The Future of Children, 15:2.* 75-96.

Barber, J. S., Yarger, J. E., & Gatny, H. H. (2015). Black-White Differences in Attitudes Related to Pregnancy Among Young Women. Demography, 52(3), 751–786. https://doi.org/10.1007/s13524-015-0391-4

Bandura, Albert (1977). Social Learning Theory. Oxford, England: Prentice-Hall.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). Self-efficacy: The Exercise of Control W.H. Freeman and Company, New York.

Butts JB, Hartman S. Project BART: Effectiveness of a Behavioral Intervention to Reduce HIV Risk in Adolescents. MCN Am J Matern Child Nurs. 2002;27:163–9.

Campbell, A. (1968). The Role of Family Planning in the Reduction of Poverty. Journal of Marriage and Family, 30(2), 236-245. doi:10.2307/349249

Cronin, J., Heflin, C., & Price, A. (2014). Teaching teens about sex: A fidelity assessment model for Making Proud Choices. Evaluation and Program Planning, 46, 94–102. https://doi.org/10.1016/j.evalprogplan.2014.05.010

Daley EM, Buhi ER, Wang W, Singleton A, Debate R, Marhefka S, et al. Evaluation of Wyman's Teen Outreach Program® in Florida: Final Impact Report for Florida Department of Health. Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program. 2015.

DeVito, Josephine,PhD., R.N. (2010). How adolescent mothers feel about becoming a parent. The Journal of Perinatal Education, 19(2), 25-34. doi:http://dx.doi.org.ezaccess.libraries.psu.edu/10.1624/105812410X495523

De Vries, H., Dijkstra, M., & Kuhlman, P. (1988). Self-efficacy: The third factor besides attitude and subjective norm as a predictor of behavioral intentions. *Health Education Research*, 3, 273-282.

Driscoll, A. K. (2014). Adult outcomes of teen mothers across birth cohorts. Demographic Research, 30(44), 1277–1292. http://doi.org/10.4054/DemRes.2014.30.44

ETR Associates. (2017). Program Success Center for Sexual and Reproductive Health. Retrieved from: https://www.etr.org/ebi/programs/

Family and Youth Services Bureau. (2016). Personal Responsibility Education Program Fact Sheet. Retrieved from Family and Youth Services Bureau: https://www.acf.hhs.gov/fysb/resource/competitive-prep-fact-sheet

Fishbein, M., & Jacard, J. J. (1973). Theoretical and methodological considerations in the prediction of family planning intentions and behavior. Representative Research in Social Psychology, 4, 37-51.

Ganchimeg, T., Ota, E., Morisaki, N., Laopaiboon, M., Lumbiganon, P., Zhang, J., … Mori, R. (n.d.). Pregnancy and childbirth outcomes among adolescent mothers: a World Health Organization multicountry study. BJOG: An International Journal of Obstetrics & Gynaecology, 121(s1), 40–48. https://doi.org/10.1111/1471-0528.12630

Gold, R., Kennedy, B., Kawachi, I., & Connell, F. (2002). Teen births, income inequality, and social capital: Developing an understanding of the causal pathway. Health And Place, 8(2), 77-83. doi:10.1016/S1353-8292(01)00027-2

Guzzo, K. B., & Hayford, S. R. (2018). Adolescent Reproductive and Contraceptive Knowledge and Attitudes and Adult Contraceptive Behavior. Maternal and Child Health Journal, 22(1), 32–40. https://doi.org/10.1007/s10995-017-2351-7

Institute of Public Policy. (2017). Personal Responsibility Education Program (PREP). Retrieved from: https://ipp.missouri.edu/wp-content/uploads/sites/2/2017/07/Missouri-Personal-Responsibility-Education-Fact-Sheet-2017.pdf

Jemmott, J., Jemmott L., Fong, G. (1998). Abstinence and Safer Sex HIV Risk-Reduction Interventions for African American Adolescents: A Randomized Controlled Trial. JAMA. 1998;279(19):1529–1536. doi:10.1001/jama.279.19.1529

JSI Research & Training Institute, Inc. (2015). Integrating a Social Determinants of Health Approach in Teen Pregnancy Prevention. Retrieved from: http://3cjh0c31k9e12hu8v920fcv0.wpengine.netdna-cdn.com/wp-content/uploads/2016/04/SDH-Case-Study.Final_.pdf

Jutte, D. P., Roos, N. P., Brownell, M. D., Briggs, G., MacWilliam, L., & Roos, L. L. (2010). The Ripples of Adolescent Motherhood: Social, Educational, and Medical Outcomes for Children of Teen and Prior Teen Mothers. Academic Pediatrics, 10(5), 293–301. https://doi.org/10.1016/j.acap.2010.06.008

Kane, J. B., Morgan, S., Harris, K. M., & Guilkey, K. D. (2013). The Educational Consequences of Teen Childbearing. *Demography, 50, 6, 2129-2150.* doi:10.1007/s13524-013-0238-9.

Kar, S., Marcus, E., Rykwalder, A., Serko, L., & Tell, E. (1979). Pregnancy risk-taking among young unmarried women: An analysis of its determinants and prevention. Patient Counselling And Health Education, 1(4), 151-163. doi:10.1016/S0738-3991(79)80004-X

Kearney, M. S., & Levine, P. B. (2012). Why is the Teen Birth Rate in the United States So High and Why Does It Matter? Journal of Economic Perspectives, 26(2), 141-166.

Kearney, Melissa S., and Phillip B. Levine. (2014a). Teen Births Are Falling: What's Going On? Brookings Policy Brief. Washington, DC: Brookings Institution.

Kearney, Melissa S., and Phillip B. Levine (2014b). "Income Inequality and Early Non-Marital Childbearing: An Economic Exploration of the 'Culture of Despair.'" Journal of Human Resources . 49(1):1-31.

Kotchick, B. A., Shaffer, A., Miller, K. S., & Forehand, R. (2001). Adolescent Sexual Sisk Behavior: A Multi-System Perspective. Clinical psychology review, 21(4), 493-519.

Lindberg, L. D., & Maddow-Zimet, I. (2012). Consequences of Sex Education on Teen and Young Adult Sexual Behaviors and Outcomes. Journal of Adolescent Health, 51(4), 332–338. https://doi.org/10.1016/j.jadohealth.2011.12.028

Levine, Phillip B. (2001). "The Sexual Activity and Birth Control Use of American Teenagers," in Jonathan Gruber (ed.), An Economic Analysis of Risky Behavior among Youths. Chicago: University of Chicago Press.

Malow, R. M., Stein, J. A., McMahon, R. C., Devieux, J., Rosenberg, R., & Jean-Gilles, M. (2009). Effects of a culturally adapted HIV prevention intervention in Haitian youth.

JANAC: Journal of the Association of Nurses in AIDS Care, 20(2), 110-121.

Manlove, J., Karpilow, Q., Welti, K., and Thomas, A. (2015). Linking Changes in Contraceptive Use to Declines in Teen Pregnancy Rates. Societies. 6:1 doi:10.3390/soc6010001

Mermelstein, S. & Plax, K. (2016). Contraception for Adolescents. *Curr Treat Options Peds 2:* 171-183. https://doi.org/10.1007/s40746-016-0053-9

Messer, L.C., Shoe, E., Canady, M., Sheppard, B.K. & Vincus, A. (2011). Reported adolescent sexual norms and the development of a social marketing campaign to correct youth misperceptions. Journal of Children and Poverty, 17(1), 45-63. DOI: 10.1080/10796126.2011.539197.

Missouri Kids Count. (2016). University of Missouri Office of Social and Economic Data Analysis (OSEDA) and University of Missouri Extension. Retrieved from: http://www.missourikidscountdata.org/browser.ph

Nation, M., Crusto, C., Wandersman, A., Kumpfer, K., Seybolt, D., Morrissey-Kane, E., & Davino, Katrina. (2003). What Works in Prevention: Principles of Effective Prevention Programs. *American Psychologist 58, 6/7,* 449-456. 10.1037/0003-066X.58.6-7.449

Peipert, J. F., Madden, T., Allsworth, J. E., & Secura, G. M. (2012). Preventing Unintended Pregnancies by Providing No-Cost Contraception. Obstetrics and Gynecology, 120(6), 1291–1297.

Perper, Kate, Peterson, Kristen, & Manlove, Jennifer (2010). Diploma Attainment Among Teen Mothers. *Child Trends*. Washington D.C.:

Power to Decide. (2017). Missouri Data. Retrieved from Power to Decide: The Campaign to Prevent Unplanned Pregnancy: https://powertodecide.org/what-we-do/information/national-state-data/missouri

Santelli, J. S., Lindberg, L. D., Finer, L. B., & Singh, S. (2007). Explaining Recent Declines in Adolescent Pregnancy in the United States: The Contribution of Abstinence and Improved Contraceptive Use. *Research and Practice*, 97, 150-156.

SmithBattle, L., & Leonard, V. (2012). Inequities Compounded: Explaining Variations in the Transition to Adulthood for Teen Mothers' Offspring. Journal of Family Nursing, 18(3), 409–431. https://doi.org/10.1177/1074840712443871

St. Lawrence, Janet S. (1993). African-American Adolescents' Knowledge, Health-related Attitudes, Sexual Behavior, and Contraceptive Decisions: Implications for the Prevention of Adolescent HIV Infection. *Journal of Consulting and Clinical Psychology, 61, 1, 104-112.*

St. Lawrence JS, Braseld TL, Jefferson KW et al. (1995). Cognitive-Behavioral Intervention to Reduce African American Adolescents' Risk for HIV Infection. Journal of Consulting and Clinical Psychology; 63:221-237

The National Campaign to Prevent Teen and Unplanned Pregnancy. (2017). PREP at a Glance. Retrieved from Power to Decide: https://powertodecide.org/what-we-do/information/resource-library/prep-at-a-glance

United Health Foundation. (2018). 2018 Health of Women and Children Report. Retrieved from: https://www.americashealthrankings.org/api/v1/render/pdf/%2Fcharts%2Fstate-page-extended%2Freport%2F2018-health-of-women-and-children-report%2Fstate%2FMO/as/AHR-2018-health-of-women-and-children-report-MO-full.pdf?params=mode%3Dfull

United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), & Division of Vital Statistics Report. (2015). Retrieved from: https://www.hhs.gov/ash/oah/grant-programs/teen-pregnancy-prevention-program-tpp/evidence-based-programs/index.html

van de Bongardt, D., Reitz, E., Sandfort, T., & Deković, M. (2015). A Meta-Analysis of the Relations Between Three Types of Peer Norms and Adolescent Sexual Behavior. Personality and Social Psychology Review, 19(3), 203–234. https://doi.org/10.1177/1088868314544223

Viner, R., Ozer, E., Denny, S., Marmot, M., Resnick, M., Fatusi, A., Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet 379:9826,* 1641-1652. doi: 10.1016/S0140-6736(12)60149-4

Wright, A., Duffy, J., Kershner, S., Flynn, S., & Lamont, A. (2015). New Opportunities in Teen Pregnancy Prevention: Identifying Individual and Environmental Differences Between Youth Who Abstain, Use Contraception, and Use No Contraception: New Opportunities in Teen Pregnancy Prevention. Journal of Community Psychology, 43(8), 931–953. https://doi.org/10.1002/jcop.21724

**Table 1: Missouri PREP Curricular Types (BART, MPC, TOP)**

| Program | Program type | Number of Lessons | Time Frame / Intervention Length | Target Population | Age Group | Curricula Focus |
|---|---|---|---|---|---|---|
| BART | Comprehensive | 8 | 8 weeks / 1 lesson per week | African-American Youth | 14-18 years | HIV/AIDS prevention, Communication, Negotiation, and Problem-Solving |
| MPC | Comprehensive | 8 | One day - 8 weeks / 1-4 modules a day (shorter) or 2 modules/week (longer) | At-Risk and Foster Youth | 11-18 years | Abstinent choices, Healthy relationships, Sensitive to and addresses issues of concern to youth in care |
| TOP | Adult Preparation | 205+ | 9 months / 1 lesson per week | At-Risk Youth | <13-19 years | Youth development, Community service learning, and Relationship building |

Source: Missouri Department of Health and Senior Services. (2010). Personal Responsibility Education Program (PREP) Post Award State Plan.

**Table 2: Descriptive Statistics of Youth PREP Demographics and Survey Components Overall and by Program Curricula**

| | Full Sample | BART | MPC | TOP | |
|---|---|---|---|---|---|
| | % | % | % | % | |
| Grade level | | | | | |
| 6th Grade | 9.60 | 0.00 | 3.90 | 26.10 | |
| 7th Grade | 13.40 | 1.60 | 8.80 | 29.80 | |
| 8th Grade | 19.90 | 7.10 | 21.10 | 26.40 | |
| 9th Grade | 18.50 | 28.60 | 21.10 | 7.10 | |
| 10th Grade | 17.50 | 31.80 | 20.20 | 2.90 | |
| 11th Grade | 13.90 | 23.10 | 15.60 | 4.50 | |
| 12th Grade | 7.30 | 7.80 | 9.40 | 3.20 | |
| Gender | | | | | |
| Male | 44.40 | 52.90 | 47.80 | 32.50 | |
| Female | 55.60 | 47.10 | 52.20 | 67.50 | |
| Race | | | | | |
| White | 43.25 | 24.31 | 48.83 | 45.91 | |
| Black | 36.80 | 59.22 | 27.78 | 37.99 | |
| Other | 19.95 | 16.47 | 23.39 | 16.09 | |
| | **Full Sample** | **BART** | **MPC** | **TOP** | |
| | mean | mean | mean | mean | range |
| Pre-Program Efficacy | 22.91 | 22.87 | 22.72 | 23.27 | [0, 32] |
| Intentions to Abstain from Sex | 2.87 | 2.68 | 2.75 | 3.20 | [1, 4] |
| County Wellbeing Index | 7.14 | 7.24 | 6.31 | 8.57 | [3, 11] |
| Classroom Behaviors | 0.77 | 0.87 | 0.90 | 0.48 | [0, 3] |
| n | 1,318 | 255 | 684 | 379 | |

**Table 3: Change in Knowledge and Attitudes by PREP Curricula Program**

| | N | Knowledge Score Pre | Knowledge Score Post | Difference | Test statistic | Attitude Score Pre | Attitude Score Post | Difference | Test statistic |
|---|---|---|---|---|---|---|---|---|---|
| All Programs | 1,318 | 5.719 | 7.397 | 1.678 | 22.108*** | 27.868 | 28.412 | 0.544 | 2.977*** |
| BART | 255 | 6.698 | 7.851 | 1.153 | 7.604*** | 28.463 | 28.835 | 0.373 | 1.08 |
| MPC | 684 | 6.235 | 7.966 | 1.731 | 16.612*** | 28.263 | 28.794 | 0.531 | 2.21** |
| TOP | 379 | 4.129 | 6.063 | 1.934 | 12.675*** | 26.755 | 27.438 | 0.683 | 1.695* |

Note: Test statistics are shown for paired t-tests

*p<.10; **p<.05; ***p<.01

**Table 4 (A/B): Nested Regression Results for BART Youth Post-Knowledge (A) and Attitudes (B)**

| | *(A) Knowledge* | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| | *B* | se | *B* | se | *B* | se |
| Variable | | | | | | |
| Pre-program knowledge | 0.397*** | 0.051 | 0.382*** | 0.051 | 0.353*** | 0.053 |
| Grade level | -0.084 | 0.110 | -0.124 | 0.111 | -0.131 | 0.111 |
| Gender | | | | | | |
| Female | 0.201 | 0.244 | 0.130 | 0.246 | 0.154 | 0.263 |
| Race | | | | | | |
| White | 0.443 | 0.284 | 0.458 | 0.287 | 0.414 | 0.286 |
| Classroom behaviors | | | -0.046 | 0.120 | -0.091 | 0.121 |
| Pre-program efficacy | | | -0.001 | 0.020 | -0.013 | 0.021 |
| County Wellbeing Index | | | -0.155** | 0.064 | -0.148** | 0.064 |
| Intentions to abstain from sex | | | | | -0.220* | 0.122 |
| Pre-program attitudes | | | | | 0.057** | 0.027 |
| R2 | 0.215 | | 0.233 | | 0.255 | |
| Change in R2 | | | 0.019** | | 0.022** | |
| | *(B) Attitudes* | | | | | |
| | Model 4 | | Model 5 | | Model 6 | |
| | *B* | se | *B* | se | *B* | se |
| Pre-program attitudes | 0.232*** | 0.052 | 0.198*** | 0.055 | 0.160*** | 0.057 |
| Grade level | 0.304 | 0.228 | 0.249 | 0.230 | 0.143 | 0.231 |
| Gender | | | | | | |
| Female | 0.766 | 0.521 | 0.825 | 0.529 | 0.967* | 0.549 |
| Race | | | | | | |
| White | -0.310 | 0.593 | -0.182 | 0.598 | -0.359 | 0.596 |
| Classroom behaviors | | | 0.194 | 0.249 | 0.076 | 0.253 |
| Pre-program efficacy | | | 0.066 | 0.044 | 0.066 | 0.044 |
| County Wellbeing Index | | | -0.227* | 0.134 | -0.175 | 0.133 |
| Intentions to abstain from sex | | | | | -0.229 | 0.256 |
| Pre-program knowledge | | | | | 0.293*** | 0.110 |
| R2 | 0.105 | | 0.125 | | 0.152 | |
| Change in R2 | | | 0.020 | | 0.028** | |

*p<.10; **p<.05; ***p<.01

**Table 5 (A/B): Nested Regression Results for MPC Youth Post-Knowledge (A) and Attitudes (B)**

| | *(A) Knowledge* | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| | *B* | se | *B* | se | *B* | se |
| Variable | | | | | | |
| Pre-program knowledge | 0.322*** | 0.035 | 0.311*** | 0.035 | 0.308*** | 0.036 |
| Grade level | 0.057 | 0.056 | 0.050 | 0.059 | 0.055 | 0.059 |
| Gender | | | | | | |
| Female | 0.440*** | 0.166 | 0.459*** | 0.166 | 0.412** | 0.174 |
| Race | | | | | | |
| White | 0.190 | 0.169 | 0.183 | 0.169 | 0.178 | 0.170 |
| Classroom behaviors | | | -0.017 | 0.086 | -0.012 | 0.087 |
| Pre-program efficacy | | | 0.038** | 0.017 | 0.033* | 0.018 |
| County Wellbeing Index | | | 0.032 | 0.041 | 0.032 | 0.041 |
| Intentions to abstain from sex | | | | | 0.051 | 0.084 |
| Pre-program attitudes | | | | | 0.011 | 0.018 |
| R2 | 0.149 | | 0.157 | | 0.158 | |
| Change in R2 | | | 0.008 | | 0.001 | |
| | *(B) Attitudes* | | | | | |
| | Model 4 | | Model 5 | | Model 6 | |
| | *B* | se | *B* | se | *B* | se |
| Pre-program attitudes | 0.253*** | 0.040 | 0.232*** | 0.042 | 0.202*** | 0.044 |
| Grade level | 0.103 | 0.127 | 0.090 | 0.134 | -0.015 | 0.140 |
| Gender | | | | | | |
| Female | 0.836** | 0.406 | 0.923** | 0.410 | 0.929** | 0.411 |
| Race | | | | | | |
| White | 0.321 | 0.401 | 0.307 | 0.402 | 0.220 | 0.402 |
| Classroom behaviors | | | -0.040 | 0.205 | -0.078 | 0.205 |
| Pre-program efficacy | | | 0.072* | 0.043 | 0.057 | 0.043 |
| County Wellbeing Index | | | 0.074 | 0.096 | 0.043 | 0.096 |
| Intentions to abstain from sex | | | | | 0.172 | 0.198 |
| Pre-program knowledge | | | | | 0.256*** | 0.085 |
| R2 | 0.079 | | 0.085 | | 0.097 | |
| Change in R2 | | | 0.005 | | 0.013*** | |

*p<.10; **p<.05; ***p<.01

**Table 6 (A/B): Nested Regression Results for TOP Youth Post-Knowledge (A) and Attitudes (B)**

| | *(A) Knowledge* | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| | *B* | se | *B* | se | *B* | se |
| Variable | | | | | | |
| Pre-program knowledge | 0.336*** | 0.048 | 0.341*** | 0.049 | 0.322*** | 0.053 |
| Grade level | 0.257*** | 0.088 | 0.256*** | 0.090 | 0.290*** | 0.092 |
| Gender | | | | | | |
| Female | -0.676** | 0.263 | -0.668 | 0.266 | -0.809*** | 0.283 |
| Race | | | | | | |
| White | 0.349 | 0.248 | 0.334 | 0.251 | 0.314 | 0.253 |
| Classroom behaviors | | | -0.155 | 0.173 | -0.135 | 0.175 |
| Pre-program efficacy | | | 0.001 | 0.028 | -0.003 | 0.029 |
| County Wellbeing Index | | | -0.049 | 0.060 | -0.023 | 0.062 |
| Intentions to abstain from sex | | | | | 0.177 | 0.115 |
| Pre-program attitudes | | | | | 0.013 | 0.021 |
| R2 | 0.198 | | 0.201 | | 0.208 | |
| Change in R2 | | | 0.003 | | 0.068 | |
| | *(B) Attitudes* | | | | | |
| | Model 4 | | Model 5 | | Model 6 | |
| | *B* | se | *B* | se | *B* | se |
| Pre-program attitudes | 0.144*** | 0.043 | 0.142*** | 0.043 | 0.070 | 0.047 |
| Grade level | 0.439** | 0.186 | 0.459** | 0.189 | 0.224 | 0.203 |
| Gender | | | | | | |
| Female | 0.777 | 0.625 | 0.694 | 0.629 | 0.822 | 0.628 |
| Race | | | | | | |
| White | -0.434 | 0.560 | -0.531 | 0.567 | -0.590 | 0.562 |
| Classroom behaviors | | | -0.311 | 0.391 | -0.320 | 0.388 |
| Pre-program efficacy | | | 0.046 | 0.064 | 0.033 | 0.063 |
| County Wellbeing Index | | | 0.082 | 0.135 | 0.063 | 0.138 |
| Intentions to abstain from sex | | | | | 0.144 | 0.256 |
| Pre-program knowledge | | | | | 0.426*** | 0.118 |
| R2 | 0.063 | | 0.068 | | 0.101 | |
| Change in R2 | | | 0.005 | | 0.033*** | |

*p<.10; **p<.05; ***p<.01