

## Research Brief

# Evaluating the Use of Monetary Incentive in Text-Delivered Sexually Transmitted Infection Education

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## ABSTRACT

**Background:** The Centers for Disease Control and Prevention (CDC) reported increases in chlamydia, gonorrhea, and syphilis from 2016 to 2017 despite numerous testing and education programs. In addition, young adults are at an increased risk of STIs.

**Aim:** To describe the effectiveness of monetary incentives provided to college females for engaging with automated mobile messaging delivered education over the course of six weeks concerning sexually transmitted infections (STIs).

**Methods:** A longitudinal cohort study was conducted at a large Southeastern, public university in the United States. One hundred and fifty-six female college students (18-24 years in age) participated in a mobile messaging and marketing automation platform delivered once a week for six weeks. Engagement with weekly education was measured by clicks on educational content.

**Results:** Out of the six messages,  $\chi^2$  analysis revealed that paid participants were more likely to engage with the STI education in weeks two, four, five, and six. In this study, simple linear regression ANOVA confirmed that compensation was the main extrinsic motivator for engagement rather than other factors, such as the delivery method.

**Conclusions:** Monetary incentive can increase engagement with STI education in college females while mobile messaging also has the potential.

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Sexually transmitted infections (STIs) affect a growing number of Americans each year. Increases in cases of chlamydia, gonorrhea, and syphilis occurred from 2016 to 2017, with higher rates observed among adolescents and young adults (Centers for Disease Control and Prevention [CDC], 2017). There were over 1.7 million reported cases of chlamydia, close to 600,000 cases of gonorrhea, and over 30,000 cases of primary and secondary syphilis reported in the United States (US) in 2017 (CDC, 2017). Young adults 15-24 years of age are more negatively affected, accounting for over half of all newly diagnosed cases of STIs in the US (CDC, 2019). The true burden of STIs is not fully known due to lack of reporting to the CDC as well as failure to be tested and treated by at risk individuals. Due to the increased burden of those in the 15-24 years age group, these individuals are at an increased risk of contracting an STI. At-risk youth often avoid testing due to invasive test delivery methods, fear of disclosure to family through insurance claims, and embarrassment.



## BACKGROUND AND LITERATURE REVIEW

Over \$16 billion is spent each year on the treatment and prevention of STIs (Healthy People, 2020). Innovative methods of education delivery warrant exploration to engage young adults to overcome identified barriers to seeking services such as stigmatization, embarrassment, and fear of parental notification; in addition, young adults may choose to avoid participation in sexual health related education or enroll in educational programs without active engagement (Avuvika et al., 2017; Cuffe, Newton-Levinson, Gift, Mcfarlane, & Leichter, 2016; Normansell, Drennan, & Oakeshott, 2016; Thatte, Bingenheimer, Ndiaye, & Rimal, 2016). Meaningful and effective education has the ability to increase healthy sexual behaviors, STI testing, and STI treatment, thus reducing the future number of diagnosed cases. Providing forms of cash payment for participation in health behavior modification efforts as well as delivering education through text message-based platforms are well documented in the literature (Burns, Keating & Free, 2016); however, utilizing these two methods together in the college age female population warrants additional study. Current literature provides well documented evidence for cash payment in the imprisoned and sex worker population (Packel et al., 2012; Gallaraga et al., 2014) but lacks clear evidence in college age females. Evidence supports positive outcomes in utilizing monetary incentive to encourage individuals to partake in STI testing, enroll in educational programs, and engage with programs for longer periods of time (Reisner et al., 2008; Gallaraga et al., 2014; Packel et al., 2012). In addition, there are no current studies that link cash payment and education utilizing mobile messaging and marketing automation platforms.

The use of technology to reach young adults with accurate sexual health information continues to need more exploration. According to the CDC, 75% of teens report accessing a cell phone with internet several times a day (Kachur et al., 2013). Remote, text message based counseling provided through health departments, community centers or other health clinics can overcome reported barriers including embarrassment, concerns of confidentiality, and time commitment (Aicken et al., 2016). Numerous studies support the use of text message delivered sexual health information to young adults, citing the preference for education delivered to a smart phone and enjoyment of short, informative, and social messages that address the questions and concerns they may have (Perry et al, 2012; Gold, Lim, Hellard, Hocking, & Keogh, 2010). These studies employed a variety of methods in the use of text messaging including scheduled ad campaigns, STI test result delivery, and two-way messaging allowing young adults to ask professionals questions regarding sexual health. Text message delivered education also led to increased condom use and reports of monogamous relationships (Juzang, Fortune, Black, Wright, & Bull, 2011; Suffoletto et al., 2013) and STI knowledge (Lim et al., 2012). Young adults most often had questions concerning contraception, STIs, and unplanned pregnancy (Giorgio, Kantor, Levine, & Arons, 2013; Levine, McCright, Dobkin, Woodruff, & Klausner, 2008; Nsakala, Coppieters, & Kayembe, 2014).

Monetary incentive to promote healthy behaviors first originated in Latin America in the 1990s. Payment was used to encourage low-income households to access services providing basic nutrition, primary healthcare, and education; and now has also focused on modifying sexual behaviors (DeWalque et al., 2012). Overall, monetary incentive has a positive effect on participation in preventative educational programs and reduction in reported risky sexual behaviors. Although significant limitations may exist, monetary incentive has the ability to engage individuals who would not typically receive *any* robust sexual health education.

The Health Belief Model (HBM) predicts and explains health behaviors. The model, composed of six concepts, guided this study. These concepts include perceived susceptibility, perceived severity, perceived benefits, perceived

barriers, cues to action, and self-efficacy (Glanz et al., 1997). This model has been utilized in a variety of health settings, including STI education delivery. In this study the hypothesized benefit of the experimental group was the incentive received for participating in and engaging with education. This study aimed to increase interaction and engagement with mobile messaging that could potentially lead to changing health behaviors long term. Monetary incentive has the ability to engage individuals who may typically view the education as useless. This study overcame identified barriers to education access through the ease of use of mobile messaging as well as the supply of monetary incentive to the experimental group.

## METHODS

### Study Setting and Population

This study took place at a large Southeastern, public university in 2018. This university educates approximately 38,000 students, with 75% of the population identifying as White/Caucasian and 25% identifying as nonwhite. Fifty-seven percent of the student population is female. Education delivery occurred through a mobile messaging and marketing automation platform. Eligibility criteria included being an 18-24-year-old female enrolled at the college in which the study took place and having access to a smart phone. From September to November 2018, 156 (76 paid and 76 unpaid) participants began the text message delivered STI prevention and education program.

### Research Design

An experimental study design tested the efficacy of the use of a monetary incentive in an STI education program with a sample of 18-24-year-old female college students. Recruitment methods included the posting of fliers throughout campus buildings and in-person delivery of recruitment fliers from August to September 2018 to gain a convenience sample. Interested individuals were directed to email the investigator for follow-up and to sign up for the study. This project was approved by the appropriate Institutional Review Board.

This study implemented a cohort design to examine differences between the experimental and control groups who participated in the program (entitled Increasing Sexual Health Knowledge [ISHK]) by using monetary incentives to encourage engagement with STI education. The study was guided by the CDC's program, Get Yourself Tested (GYT)<sup>™</sup>, developed in 2009 for empowering young people to get tested and treated for STIs and providing information on prevention, testing, and open dialogue with healthcare providers following positive results (CDC, 2019b; McFarlane et al., 2015; Friedman et al., 2013). ISHK adapted topics suggested by GYT<sup>™</sup> and delivered education through text messages, including infographics and videos using Mobit<sup>™</sup> Technology (a brand of a mobile messaging and marketing automation platform). There is a cost associated with the use and delivery of messaging through Mobit<sup>™</sup> Technology that was incurred by the investigator. The study was implemented over the course of one semester to a group of female college students, divided into an experimental/paid and control/unpaid group. The experimental group received compensation and the control group received no compensation; both groups received the same education. After recruitment, participants provided informed consent and enrolled in the mobile messaging and marketing automation platform group by text. As outlined by the research protocol, participants provided consent by enrolling in the messaging; individuals could opt out of the study at any time by replying with

the code “Stop.” Information collected through the study about participants and engagement with education was stored in a secure online account interface as well as a password-protected electronic document.

Participants were randomly assigned one of two codes to blindly enroll in the paid or unpaid group. After enrollment, each participant received a welcome message. For six weeks, each participant received a weekly pre-designed and prescheduled educational message delivered to a smart phone. The six educational messages briefly covered an STI topic including facts and statistics, tips for discussing sexual health with a healthcare provider, signs and symptoms of STIs, methods to avoid contraction of STIs, testing methods, and additional resources. Experimental group participants were compensated \$25 after the delivery of the message in week three as well as \$25 following week six. The participants were made aware of enrollment in the incentivized group following the delivery of the education in week three of the study. The investigators sent reminder text messages to participants throughout the study who were no longer engaging with the weekly educational text messages in both groups.

### **Data Collection and Instrumentation**

The mobile messaging and marketing automation platform’s user interface tracked if each user clicked the delivered educational message. Engagement with each message was defined as one click on the link to the educational content. The dependent variable was defined as engagement with each weekly message and the independent variable was defined as random assignment to the paid or unpaid group. Demographic data was also collected.

### **Data Analysis Strategies**

Primary analysis for this experimental study compared engagement with weekly smart phone delivered STI education of 156 female participants.  $\chi^2$  test of independence was performed to examine the relation between enrollment in the paid versus unpaid participant group and engagement with weekly delivered STI education. In addition, simple linear regression ANOVA was performed to determine moderator effect of the use of monetary incentive and technology on engagement with delivered sexual health education. Analyses were completed using SPSS version 24.

## **RESULTS**

This study hypothesized that the use of monetary incentives in text delivered STI education was a viable method to increase the engagement with education provided to college females. The majority of participants were non-Hispanic white (87%), ages 21-22 (55.7%), majoring in nursing (59.6%), and a senior in school (62.8%). There were no significant differences in characteristics between participants in each group (Table 1). Of note, 40 nursing students were randomly assigned to the unpaid group while 53 nursing students were randomly assigned to the paid group.

Table 1

*Demographic Data of Participants*

Variable	Frequency	Percent
<i>Age</i>		
18	13	8.33%
19	13	8.33%
20	22	14.1%
21	60	38.46%
22	27	17.31%
23	14	8.97%
24	7	4.49%
<i>Race</i>		
White	137	87.82%
Hispanic/Latino	3	1.92%
African American	7	4.49%
Asian	2	1.28%
Native American	1	0.64%
Other	6	3.85%
<i>Class Ranking</i>		
Freshmen	15	9.62%
Sophomore	10	6.41%
Junior	33	21.15%
Senior	98	62.82%
<i>College</i>		
Arts and Sciences	21	13.46%
Business	10	6.41%
Communications	5	3.21%
Education	6	3.85%
Engineering	12	7.69%
Human Environ. Sciences	7	4.49%
Nursing	93	59.62%
Social Work	1	0.64%
Other	1	0.64%

A  $\chi^2$  test of independence was performed to examine the relation between assignment to either the paid or unpaid group and engagement with the education. The relation between variables was significant for week two ( $X^2 [1, N = 156] = 11.778, p = .001$ ); week four ( $X^2 [1, N = 156] = 34.281, p < .001$ ); week five ( $X^2 [1, N = 156] = 40.655, p < .001$ ); and week six ( $X^2 [1, N = 156] = 32.390, p < .001$ ). Paid group members were more likely to engage with education than unpaid group members during these weeks. Overall, unpaid participants' engagement with educational

materials delivered greatly declined following the first monetary compensation halfway through the study. This result demonstrated that money was an extrinsic motivator in the intervention. Those in the unpaid group who engaged with the educational materials throughout the course of the study following the lack of compensation could have continued due to the ease of delivery and access. Paid participants were more likely to engage with STI education. There was significant effect on engagement based on group assignment.

Simple linear regression ANOVA revealed that the number of educational intervention views before and after compensation overall for both groups was not statistically significant ( $F [1,3] = 1.048, p = .406$ ). Further, simple linear regression revealed that the number of educational intervention views per week was statistically significant ( $F [1,11] = 5.348, p = .043$ ) based on random assignment to the paid or unpaid group. This confirmed that compensation was the main factor in motivating interaction with the education rather than other varying factors alone such as delivery of education through the use of technology. Additional study is warranted to view additional short- and long-term effects on engagement and behavior from monetary incentive and text-based delivery as extrinsic motivators in STI education.

## **DISCUSSION**

There was a difference in engagement with the education between the paid and unpaid group. Paid participants demonstrated higher rates of engagement with the majority of the weekly delivered messages, and unpaid group participants had a sharp decline in engagement at the halfway point of the study. This study supports current literature in the use of monetary incentive. Much like the results of studies exploring the use of monetary incentive to increase engagement with education, the incentivized group of participants continued with participation and engagement whereas those who knew after week three they were not going to be incentivized left the study. The majority of studied populations in the established literature include low income populations (Packel et al., 2012; Gallaraga et al., 2014), opening a new population of interest in this particular study. The two participant groups in this study, the paid and unpaid, engaged differently with the text messages following the third message and compensation of the first half of the \$50 provided for completing the study. Overall, unpaid participants' engagement with the delivered educational materials greatly declined following the first monetary compensation, i.e., halfway through the study. This result demonstrated that money was a motivator in the intervention from deterring participants from dropping out; however, paid participant clicks did not increase over time. In addition, study participation was positive and the ease of use with technology delivery was favorable.

## **LIMITATIONS & SIGNIFICANCE**

Selection bias could have affected the validity of the study due to convenience sample recruitment. Study participants were mostly white nursing students aged 21-24 years; therefore, the results may not be generalizable to diverse populations of students. Other limitations include the inability to determine the amount of time each participant spent engaging with the education due to the mobile messaging and marketing automation platform's capacity to track time spent viewing and engaging with education. Contamination of the participant pool due to discussions among participants about the incentive could have also limited the results of the study.

Monetary incentive may contribute to overcoming known barriers in accessing STI education and testing for young adult females in the US. The identification of innovative methods for increasing engagement with education is

important for addressing the growing numbers of STIs, as reported by the CDC (2017). If effective in more diverse populations, such as young adults in rural settings, a monetary incentive may have the potential for implementation into existing education programs.

### **CONCLUSION**

Despite identified limitations to the study, results revealed that monetary compensation has the ability to incentivize college females to engage with a text delivered STI related educational program. There is limited research that explores STI prevention and innovative programs in college age females, with none exploring a monetary incentive combined with text-based education. Although results utilizing a monetary incentive were favorable in this study, additional work needs to be done to further explore the long-term effects of monetary incentive on engagement as well as behavior change. STI rates continue to grow in those 15 to 25 years of age while continued research should aim to find innovative methods of engaging this population with education and promoting future changes in behaviors.

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