PAVING THE WAY FOR MALE HORMONAL CONTRACEPTION: A CONSUMER BEHAVIOR APPROACH

by

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For my mother, who has continually fought for the privilege of achieving higher education.
Her commitment to teaching, learning, and leadership has always inspired me.
She instilled in me, from a young age, the desire to be a lifelong learner.
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ABSTRACT

Background: Male contraceptive options are limited to condoms or vasectomy and have lacked significant developments for about a century, suggesting the value of exploring male hormonal contraceptives (MHC). In October 2018, a transdermal gel method entered Phase 2 clinical trials, indicating MHC may soon be available. However, eventual uptake of potentially contentious innovations, like MHC, requires informed marketing and promotional strategy. Consumer behavior research methodologies can aid in determining consumer perspectives, providing a framework for effective marketing to encourage MHC adoption upon market introduction.

Methods: ***Phases 1 & 2.*** Focus groups (n=29) and individual, in-depth interviews (n=20) among college-aged men and women aged 18-26 years were conducted using a semi-structured approach. Techniques from expanded grounded theory were used, allowing for a constant comparative approach to data contextualization and theme identification. Ads were created based on focus group results and tested in the interviews. Content analysis served as the data analysis strategy, allowing for a constant comparative approach to data contextualization and theme identification. ***Phase 3.*** College-aged men and women (n=1,997) aged 18-26 years participated in a web-based survey. Multiple linear regression was used to examine significant predictors of attitudes toward, interest in, and intention to use or encourage use of MHC. A conjoint analysis procedure was also used to assess the relative importance of attributes on ad effectiveness and preference.

Results: ***Phase 1.*** Three primary themes emerged from focus group discussions: 1) openness to MHC; 2) resistance to MHC; and 3) MHC gel innovation characteristics. Men and women were generally interested in the idea of an MHC method. Hesitance about MHC surrounded the social acceptance of a novel contraceptive product, resistance to changing current contraceptive routines, and fear of health consequences. Participants shared insights about promotional strategies which fell within the diffusion of innovations (DOI) characteristics of relative advantage, complexity, compatibility, and observability. ***Phase 2.*** In-depth interviews offered insight into perceptions of message development for MHC. Four themes emerged: 1) humor, 2) information, 3) relatability, and 4) credibility. Message testing in interviews yielded an understanding of elements participants responded most strongly to, including: 1) ad sentiment, 2) trustworthiness, and 3) visual appeal.

Phase 3. Regression analyses revealed being sexually active (p=0.001) and having prior knowledge of potential MHC methods (p=0.031) aligned with positive MHC attitudes, interest, and intention. Conservative political views (p=0.002) and being satisfied with current male birth control offerings (p=0.000) were associated with negative MHC attitudes. Conjoint analysis identified informational messages as most important (56.62%). Informational (p=0.000) and aspirational messages (p=0.003) paired with relatable characters were the most highly preferred ads.

Conclusions: Findings revealed college-aged men and women express a general interest in the idea of MHC, with hesitance stemming from social acceptance of a novel contraceptive product, resistance to changing current contraceptive routines, and fear of potential side effects and long-term health consequences. Promotional strategy for MHC, or similar novel health products, must focus on stratifying consumers based on their readiness to accept a potential innovation and use tactics like aspirational marketing, social norms marketing, and informational marketing to confirm benefits and address concerns. Qualitative formative research also illuminated salient concepts for MHC advertising. Message testing revealed informational ads with elements of credibility may be most useful for promoting MHC, along with ad concepts audiences feel they can relate to or trust, and practical messaging or imagery meant to increase agency in use. The quantitative survey further supported these findings among a broader, university audience, indicating informational messages or aspirational messages paired with trustworthy, relatable characters are the most effective ad attributes to incorporate into marketing strategy when promoting a novel contraceptive product, like MHC.

CHAPTER 1: INTRODUCTION

With 45% of pregnancies in the United States categorized as unintended (Finer & Zolna, 2016; Guttmacher Institute, 2019), it is imperative to consider contraceptive improvements. The rate of unintended pregnancy in Indiana, specifically, is 49% (Guttmacher Institute, 2016), higher than the national average (Guttmacher Institute, 2019), highlighting Indiana as a state requiring particular attention in unintended pregnancy prevention. Further, more than two-thirds of these unintended pregnancies occur among college-aged women and young adults, aged 20 – 29 (Guttmacher Institute, 2019). Given the age range and life stage of most members of this particular demographic (e.g., pursuing education, unprepared for parenthood), it is uncommon for these pregnancies to end in the baby's birth; in fact, about half end in abortion (Zolna & Lindberg, 2012). Taken together, young adults are disproportionally impacted in unintended pregnancy outcomes. Unintended pregnancies occur due to various factors, such as contraception access barriers, inadequate reproductive health care, and insufficient contraceptive knowledge and use (Guttmacher Institute, 2018; Plana, 2017). An additional factor not commonly considered is the absence of male contraceptive methods (Plana, 2017). Contraception is typically viewed as a woman's duty, yet evidence suggests men are interested in sharing the responsibility—specifically through their willingness to try a male hormonal contraceptive (Gray, 2016; Heinemann et al., 2005).

Contraceptive decision-making varies across partnerships, with personal and relationship characteristics (i.e., age, relationship status, sexual history) often influencing whether these decisions occur jointly or not (Cox et al., 2010; Wyatt et al., 2000). Discussions about contraception in partnerships are strongly linked to contraceptive use, suggesting both men and women can contribute to improved pregnancy prevention outcomes (de Visser & Smith, 2001). However, there is often a disconnect in men's and women's understanding of the appropriate course of action for achieving their pregnancy prevention goals. For example, young adult men are often uninformed and even fearful of highly effective contraceptive methods (i.e., hormonal contraceptives), limiting their confidence and ability to effectively contribute to these conversations (Raine et al., 2010). Additionally, young men express that contraceptive decision-making should be a shared goal among both men and women, but believe that women should be responsible for their own bodies and reproductive health (James-Hawkins, Dalessandro, &

Sennott, 2019). This results in a paradox, suggesting that while men may think decision-making should be equal, they do not always participate equally (James-Hawkins et al., 2019). With a potential male-specific contraceptive method on the horizon, exploring men's perceived contributions to contraceptive decision-making conversations with partners may uncover insights into a potential shift in contraceptive responsibility norms.

In the meantime, social norms continue to perpetuate the idea that women are primarily responsible for pregnancy prevention (Bertotti, 2013; Weber, 2012). The perception of this innate responsibility for women stems from several narratives ascribing the consequences of using contraception, or not, to women (Kimport, 2018). For example, because women are faced with the most direct effect of unintended pregnancy (e.g., gestation) and associated health outcomes (Guttmacher Institute, 2019), some men may fail to truly understand the importance of their participation in pregnancy prevention (Kimport, 2018). Additionally, with the multitude of contraceptive options currently available for women (i.e., daily, non-daily, hormonal, non-hormonal.) and their reputation for high efficacy in concert with the female body (Fennell, 2011), the need for male involvement in contraceptive decisions appears futile. However, with the development, availability, and visibility of a potential male-specific method, the importance of male partner involvement in contraceptive decision-making may become more apparent.

Options for men have not seen significant developments for about a century (Lloyd & Waterfield, 2016). Male-specific methods have been limited to the male condom and vasectomy. Male condoms have typical use efficacy of 87% (CDC, 2019), while vasectomy is 99.9% effective, but a rather invasive and extreme option for men (CDC, 2019). However, recent efforts included increased clinical trials for male hormonal contraception (MHC) and introduction of new potential methods (Byzmek, 2018; Reddy, 2017; Wang & Swerdloff, 2010). Roth (2016) provides a comprehensive review detailing both early and current developments of MHC, including an injection, a transdermal gel, a subcutaneous implant, and a pill.[1] A more recent work by Thirumalai and Page (2019) offers a look at both hormonal and newer non-hormonal male contraception efforts currently underway, providing alternatives for those who may not be comfortable with a

[1] For the purposes of this study, further information regarding the biological processes and chemical mechanisms of these methods are not detailed here, but can be found elsewhere (Byzmek, 2018; Reddy, 2017; Roth et al., 2016; Wang et al., 2016; Wang & Swerdloff, 2010).

hormonal option. Taken together, these recent developments in MHC suggest the prospect of a male-specific method may not be as far off as once imagined.

Barriers & Facilitators to MHC Release

Despite extensive MHC research and developments, impediments to its release persist; side effect concerns, biological difficulties in the efficacy of sperm suppression, and cost/benefit debates all contribute to MHC release delays. Though clinical trials have shown success in lowering sperm concentration enough to cause temporary infertility (Kuo, 2010; Mullin, 2018; Nieschlag & Henke, 2005; Roth et al., 2014; Surampudi et al., 2014; WHO, 1996), concerns surrounding its efficacy among a wider audience persist. Barriers to entry in the pharmaceutical market encompass the majority of cost/benefit debates, further impeding MHC advancement. Funding is limited as drug companies continue to view the potential risks of MHC (i.e., efficacy, side effects, litigation concerns) as outweighing benefits, even with substantial evidence of its positive effects (Anthes, 2017). Further, drug companies may not see urgency for MHC, especially those who profit from existing solutions, such as female hormonal contraception (FHC). These companies fail to see the payoff in investing in a potential competing product and question its marketability (Lissner, 2017). This demonstrates a need to explore marketability to understand the costs, benefits, and consumer needs.

Understanding existing attitudes and perceptions toward the prospect of MHC also offers insight into barriers and facilitators to its eventual uptake, by incorporating authentic perspectives of the target market. Prior literature (Glasier, 2010; Heinemann et al., 2005; Mullin, 2018) suggests men exhibit a general willingness to assume contraceptive responsibility, if available, given its proposed effectiveness in pregnancy prevention and increased comfort in having backup protection (Glasier, 2010). Therefore, a market for this product may exist. However, to tap into the realistic MHC marketability, a deeper understanding of the perceived importance of such products is necessary. While extant literature examining the public's attitudes and perceptions toward MHC is sparse, it does provide insight into its future marketability. Surveys assessing male acceptability of MHC indicate at least 25% (Glasier, 2010; Mullin, 2018) of men, and in some samples, up to 70% (Heinemann et al., 2005; Wenk & Nieschlag, 2006) of men express willingness to use MHC. Some more recent studies (Dismore et al., 2016; Lloyd & Waterfield, 2016; Sax et al., 2019; Walker, 2011) have attempted to decipher the factors influencing this positive response. Shifts in

contraceptive responsibility in relationships (Dismore et al., 2016; Lloyd & Waterfield, 2016; Sax et al., 2019), increased opportunities for reproductive autonomy and control over unintended pregnancy prevention (Dismore et al., 2016; Walker, 2011), and potential distrust of casual female partners (Glasier et al., 2000; Lloyd & Waterfield, 2016) have all been cited as reasons for male acceptability of MHC. Resistance to MHC use indicate preferences for the male condom, reflecting a reluctance to accept MHC as a novel option. Its inability to protect against sexually transmitted infections (STIs) (Walker, 2011) sparks concerns regarding potential increases in STI spread (Dismore et al., 2016). Similar to some women's perceptions about FHC being an unhealthy or unnatural option (DeMaria et al., 2019; DeMaria, Rivera, et al., 2019; DeMaria, Sundstrom, et al., 2019; Johnson et al., 2013; Sundstrom, DeMaria, et al., 2015), males also place importance on having a "visible" option (i.e., male condom) rather than one that alters hormonal processes they cannot control (Walker, 2011). Uncertainty regarding side effects further contributes to averse feelings toward MHC as a viable contraceptive option (Dismore et al., 2016).

Limited extant literature examines women's perceptions of MHC (Eberhardt, van Wersch, & Meikle, 2009; Glasier et al., 2000; Heinemann et al., 2005; Marcell, Plowden, & Bowman, 2005; Martin et al., 2000; O'Connor, Ferguson, & O'Connor, 2005), with relatively mixed findings specifically related to trust in a male partner. Women's attitudes toward MHC are generally positive; however, many express concern surrounding a male partner's ability to employ perfect use (Eberhardt et al., 2009; Marcell et al., 2005). Grounded in perceptions about existing male irresponsibility in sexual encounters, women may be inclined to believe these behaviors will translate to MHC misuse (Marcell et al., 2005). Additionally, as women using an FHC method is associated with male condom use reduction (Walsh et al., 2014), due to misconceptions that FHC's protective ability extends to STI prevention, women may fear a similar effect would occur with MHC methods. Women may also anticipate MHC method use will result in men disregarding male condom use, potentially contributing to an STI increase (Dismore et al., 2016). Partner influence in contraceptive choice is important to consider, as men's perceptions of female contraceptive behaviors has been shown to affect decision-making (Dudgeon & Inhorn, 2004; George et al., 2019). Thus, understanding the potential female influence on MHC decision-making among men and incorporating this in messaging strategy may also enhance MHC messaging efficacy, and ultimately, adoption.

Marketing must attend to MHC perceptions from both male and female perspectives. Looking to existing FHC methods and how some of these misconceptions (i.e., hormonal methods being unhealthy and interrupting the body's natural processes) and public health issues (i.e., condom use reduction resulting in high STI rates) have been assuaged may be the first step in ensuring effective dissemination of MHC upon its release. Exploring how products with similar functionality have been marketed in the past (e.g., FHC, male condom) can aid in assessing current product category knowledge and inform strategy for future novel product distribution (Moreau et al., 2001). Despite this, MHC remains, essentially, a novel product — indicating additional strategic measures must be taken to effectively promote MHC uptake.

Diffusion of Innovations in Marketing Strategy

A crucial component of drug/device development is the creation of marketing/messaging strategy for successful information dissemination and eventual product uptake. This allows marketers to influence demand and product adoption prior to its release (Bruce et al., 2012). It is crucial to get ahead of messaging strategy for products that may be controversial or those serving a similar purpose to existing products (e.g., FHC, male condom). Without prior foundational knowledge about the specific product, effectively promoting MHC will require aid from marketing innovation models. However, there is a dearth of literature surrounding the theoretical underpinnings of such models. Effectively marketing novel health products requires a messaging strategy recognizing consumer needs and wants (Eberhardt et al., 2009). One theory in particular synthesizes these ideas, diffusion of innovations (DOI) (Rogers, 1995), providing a basis for effective ways to progress an innovation forward and can be used to understand MHC marketing opportunities and uptake.

Diffusion of Innovations (DOI) Model

DOI posits that information about innovative products and services diffuse through consumer social systems (Rogers, 1995); thus, understanding critical points of influence among these systems and consumer segments is paramount. There are several facets to DOI that contribute to understanding social systems and the adoption process among consumers (e.g., adopter categories, stages of adoption, innovation characteristics) (Rogers, 2003). Innovation

characteristics, in particular, are helpful when promoting novel products, as these characteristics often aid consumers in determining whether a product is worth adopting (Rogers, 2003). These characteristics include *relative advantage, compatibility, complexity/simplicity, trialability,* and *observability* (Rogers, 2003). DOI may be useful to explore how novel innovations like MHC are perceived, understood, and evaluated by the target market along these dimensions. In a contraceptive context, DOI has been previously applied (Greenberg et al., 2017; Murphy et al., 2017; Sundstrom, DeMaria, et al., 2015; Sundstrom et al., 2016) in efforts to improve information dissemination surrounding effective options and to understand how best to promote their use. One example focuses on influencing adoption of FHC, specifically to improve long- acting reversible contraception (LARC) uptake among women (Greenberg et al., 2017; Murphy et al., 2017; Sundstrom et al., 2016). Understanding key contraceptive attributes perceived as important among the target market (i.e., minimal side effects, ease of use, effectiveness) and focusing on them in promotion efforts and healthcare settings may improve method acceptance (Murphy et al., 2017; Sundstrom, Baker-Whitcomb, et al., 2015). Other efforts occur in developing countries, with a specific focus on identifying influential community members to disseminate messages encouraging male condom use, to prevent the spread of HIV/AIDs (Crittenden et al., 2015; Thapa et al., 2016). Identifying change agents within consumer social systems provides opportunities for accurate contraception information sharing, contributing to behavioral shifts within social networks and the creation of new social norms (Greenberg et al., 2017; Li et al., 2012; Sundstrom et al., 2016). Thus, incorporating DOI in dissemination strategy may aid in information diffusion.

DOI Innovation Characteristics & MHC Adoption

Because MHC is not currently available for consumer purchase, research is limited to identifying existing innovation characteristics that may influence product desirability and purchase. However, existing literature examining attitudes and perceptions toward MHC as a potential contraceptive option (ACOG, 2018; Dismore et al., 2016; Glasier, 2010; Heinemann et al., 2005; Mullin, 2018; Wenk & Nieschlag, 2006) provides important considerations for effective DOI implementation. This offers insight into successful approaches for positioning MHC as an acceptable, novel method. Preceding MHC release with research examining its marketability is crucial (Belk et al., 2012; Truong & Dang, 2017), as concerns that MHC may experience difficulties winning the approval of the target market exist (Anthes, 2017). This may relate to the

uncertainty surrounding MHC as a viable contraceptive solution, or questions linked to its novelty, due to its functional similarity to existing products (i.e., FHC) (Lissner, 2017; Mullin, 2018). Nevertheless, understanding current perceptions, desired features or attributes, perceived importance, and adoption/use intention can help assess MHC market potential and contribute to tailored diffusion strategies following the DOI innovation characteristics, to ultimately influence uptake (Rogers, 2003).

Relative Advantage. *Relative advantage* refers to how the current innovation compares to competing options in terms of improvements. In a study using DOI as a framework for designing a contraception uptake campaign strategy, Sundstrom, et al. (2015) presented *relative advantage* by emphasizing LARC methods as the most effective forms of contraception compared to the rest. This resulted in positive responses from participants, indicating that the display of *relative advantage* of the desired product versus others effectively altered opinions in favor of LARC (Sundstrom, DeMaria, et al., 2015).

There are opportunities for highlighting the *relative advantage* of MHC. A general willingness among men to assume contraceptive responsibility due to comfort in the prospect of backup contraception (Glasier, 2010; Heinemann et al., 2005; Mullin, 2018) indicates demand for MHC availability. Shifting toward contraceptive decision-making equity suggests men may favor individual control over unintended pregnancy prevention and may value not having to rely on women's contraceptive use (Dismore et al., 2016; Lloyd & Waterfield, 2016). Favorable attitudes also relate to feelings of safety when considering MHC efficacy compared to male condoms, related to pregnancy prevention (Walker, 2011), as male condoms are approximately 87% effective in pregnancy prevention (Guttmacher Institute, 2018), significantly lower than the proposed 95% of MHC methods (Handelsman, 2000). In weighing the MHC benefits versus existing options by highlighting the components of MHC that satisfy needs and desires, messaging strategy may clarify these relative advantages (e.g., MHC allows an opportunity for men to exercise reproductive autonomy in unintended pregnancy prevention; MHC is more effective than male condoms in preventing unintended pregnancy).

Compatibility. *Compatibility* addresses how well an innovation matches and can be easily incorporated into a consumer's lifestyle. Zhang et al. (2015) used DOI to understand the feasibility and acceptance of consumer e-health (i.e., making appointments online, viewing online medical records) among Australian patients. Participants preferred to make appointments via phone due to

their desire to have conversations with a person, indicating a *compatibility* factor hindering consumer e-health system adoption and providing insights for filling the *compatibility* gap (e.g., integrating a voice messaging system, simulating a receptionist, to address real-time patient concerns) (Zhang et al., 2015).

Introducing an innovation a target market may not have previously felt a need for, like MHC, faces difficulties in ensuring *compatibility* (Rogers, 2003). Concerns related to relying on a synthetic compound to alter the body's natural reproductive processes (Walker, 2011) may limit acceptability of MHC as an option that would fit into one's lifestyle. Similarly to some women's perceptions of the hormonal properties in FHC as unhealthy or unnatural (Johnson et al., 2013; Sundstrom, DeMaria, et al., 2015), men may also be hesitant to adopt a hormonal option over the familiar male condom (Walker, 2011). Exploring messaging that would alleviate *compatibility* concerns, (e.g., emphasizing MHC efficacy, safety, and ease of use) can increase the possibility of its eventual adoption (Rogers, 2003).

Simplicity. Complexity, or *simplicity*, indicates the perceived difficulty or ease involved in learning to use the given innovation. A qualitative study (Elison et al., 2014) assessing the implementation of a computer-assisted therapy system titled, Breaking Free Online (BFO), for drug misuse found the introduction of such a system to be disruptive among participants' routines, representing complexity in its adoption. Increasing exposure and training for digital systems such as BFO was cited as a potential way to promote *simplicity* in innovation adoption (Elison et al., 2014).

While incorporating taking a pill or applying a gel into one's daily routine is not overly complex, similar to daily FHC methods (Berenson & Rahman, 2012; Martínez-Astorquiza-Ortiz de Zarate et al., 2013), it may seem inconvenient for a consumer unaccustomed to the extra step. Some men may not see the value in using MHC if it is not conveyed as a near effortless task (Lloyd & Waterfield, 2016). Emphasizing *simplicity* (Rogers, 2003) and convenience of MHC method use and access (Lloyd & Waterfield, 2016) (e.g., "use this contraceptive gel and stay protected all day"; informing that one prescription provides a supply for a specified time frame—no need to refill each month) may minimize perceptions of complexity preventing adoption.

Trialability. *Trialability* is the extent to which consumers can explore or trial the innovation before fully committing to adoption. Doyle, Garrett, & Currie (2014) used DOI as a model for integrating mobile devices into nursing curricula. To ensure trialability, mobile devices

were used as reference resources and for activities/games in pharmacology courses, allowing ample time for students to be successful in their device incorporation (Doyle et al., 2014).

Allowing for *trialability* of a novel product can provide comfort among consumers, as a trial requires little commitment, reducing potential fear of disliking a product and being "stuck" with it long-term (Rogers, 2003). With some proposed MHC methods, such as the gel or the pill, the ability to discontinue use is controlled by the consumer, offering one opportunity for *trialability*. An important factor to consider in medical product/service adoption, specifically, is the perception of side effects. This, of course, applies to MHC, especially given the side effects uncertainty. Men express little tolerance for negative side effects (van Wersch et al., 2012), potentially posing a barrier to uptake. Thus, providing opportunities for *trialability* may mitigate these concerns (e.g., free samples, rebates, money-back guarantees), allowing men to try the method first, and assess lifestyle fit.

Observability. Finally, *observability* of a novel product can aid consumers in identifying whether the given innovation's benefits are evident, visible, and advantageous (Rogers, 2003). Chew, Grant, and Tote (2004) used DOI to identify strategies for encouraging internet use among family physicians. A survey assessing internet use and identifying medical information sources was distributed, with hierarchical regressions used to predict internet use based on the innovation characteristics as variables. *Observability*, specifically the physician's ability to observe internet use benefits, contributed to the perception of its usefulness in clinical practice and influence internet adoption (Chew et al., 2004).

An apparent advantage of MHC is providing men a method to share contraception burden, which is cited as a desirable benefit (Glasier, 2010; Wilson, 2018; Windsperger et al., 2012). Framing MHC as a product that can improve contraceptive control among men, lessen the contraceptive burden placed upon women, and prevent other undesirable outcomes (i.e., financial obligations tied to unintended pregnancies) may help (Oaks, 2009). Thus, messaging strategy highlighting o*bservability* (e.g., encouraging taking an active role in contraception; "join other men who have assumed the contraceptive role") may be valuable.

Through formative research methodologies and the DOI framework, marketers and researchers can explore the adoption methods of new, and existing, contraceptive options. MHC is an interesting case—though yet to be on the market, we can begin to determine desired DOI innovation characteristics by examining these preliminary perceptions and incorporating them in

MHC messaging and promotion. Thus, DOI provides a framework through which to produce effective marketing strategy and encourage MHC adoption upon release.

MHC: Filling the Gap

Exploring MHC perceptions among college-aged students in the Midwest would aid in understanding MHC's potential in reducing unintended pregnancy, given these rates are particularly high among college-aged individuals and in Indiana. Approximately 45.1% of college men and 44.9% of college women engage in vaginal sex (ACHA, 2017), signifying college as a critical time to prevent unintended sexual and reproductive health outcomes. Additionally, young men and women are significantly more likely to use less effective contraceptive methods, such as the pill and the male condom (Guttmacher Institute, 2018). Further, this demographic is more likely to use these methods incorrectly, inconsistently, or not at all (Guttmacher Institute, 2018; Lamme et al., 2017), contributing to the potential unintended pregnancy risk in college environments. Despite this, about 77% of sexually active college-aged women report using some sort of contraceptive method during sex (Huber & Ersek, 2009), indicating this demographic accounts for a significant segment of hormonal contraceptive users. This may demonstrate acceptability of hormonal contraception use among a college population, including of newer, male-specific contraception.

College-aged men and women, in particular, also represent a demographic with high motivation to prevent unintended pregnancies, as their engagement in educational and early career building endeavors often indicate a desire to avoid a pregnancy in the immediate future (Higgins, 2017). College-aged women also experience the highest incidence of induced abortion (Bryant, 2009; Sundstrom, Baker-Whitcomb, et al., 2015), an additional consequence of unintended pregnancy in a college environment. Thus, providing college-aged individuals with additional options for preventing unwanted outcomes, such as MHC, may contribute to improving their overall well-being. College-aged individuals may also represent a critical purchasing demographic as they tend to adopt innovative products (Kim et al., 2014), respond to targeted advertisements (Kirkpatrick, 2016), and act in response to peer influence (DeMaria, Sundstrom, Moxley, & Meier, 2017; Sundstrom, DeMaria, et al., 2017). Therefore, obtaining access to a college population in Indiana, a state with higher unintended pregnancy rates compared to the US, provides an opportunity to build targeted and effective messaging among these consumers. Purdue University,

in particular, has a population of approximately 45,000 students and is relatively ethnically diverse, with White, Black, Hispanic/Latino, American Indian, Native Hawaiian, and Asian backgrounds represented within the student body (Purdue Data Digest, 2019). While the majority of students enrolled at Purdue are from rural and urban counties within Indiana, upwards of 135 countries are represented in the student population (Purdue Student Enrollment, 2018). The unique demographic spectrum present at Purdue allows for increased insight into what matters to a diverse range of undergraduate students regarding novel health product marketing. Though Purdue University will serve as a convenience sample, these attributes will enhance generalizability within a college population, allowing for monitoring to ensure the sample represents diverse participants and insights.

Despite the obstacles MHC development has faced, it remains newsworthy—clinical trials currently in progress have emerged in public conversations, especially via social media (Calfee, 2018; NIH, 2018; Praderio, 2018; Rivas, 2018). More specifically, the transdermal gel, which reduces sperm concentration to a point of temporary infertility when applied on the back of the arms and shoulders daily, entered a phase 2b clinical trial in October 2018 (Burke, 2019; Mullin, 2018). Thus, it may not be long before men and women begin to make their needs known, not only in peer-reviewed journals, but in the public eye—indicating the timeliness of this topic. Getting ahead of MHC's eventual release via consumer behavior research and marketing efforts is especially important to ameliorate the novelty and shock of this innovation (Chandrasekaran & Tellis, 2007; Cooper, 2000; Moreau et al., 2001). DOI has been shown to increase health innovation uptake and use (Doyle et al., 2014; Sundstrom, DeMaria, et al., 2015; Zhang et al., 2015) and should be employed in exploring unanswered questions and influencing positive health behavior change.

The example of MHC as a novel health product is well-positioned for the current study because, as it is not yet available, the baseline for past behavior or use is zero, eliminating bias from experiences or extensive preconceived notions. As a result, the data reflected the raw, true perspectives of the target audience. Therefore, conducting formative research among consumers with little to no knowledge about a product preceding its release can infuse reliable consumer insights into marketing strategy, better representing consumer narratives and instilling product trust (Belk et al., 2012) This strategy may also provide opportunities for rebranding existing products, suggesting use of this strategy at all stages of marketing and messaging.

Purpose

This study employed a mixed-methods design to identify current perceptions of existing male contraceptive methods, as well as prospective MHC options among college-aged (18–26 years old) men and women attending Purdue University. An additional study purpose was to examine perceptions of effective marketing strategies and influential ad attributes for an example MHC method, the transdermal gel. Consumer insights provided a foundation for MHC ad prototypes design and creation, which were then tested qualitatively and quantitatively. Message testing aided in evaluating ad prototype appeal among college-aged men and women and identify salient message attributes for effective MHC promotion.

Data for this study were collected in three phases: focus group discussions (Phase 1), individual in-depth interviews (Phase 2), and a web-based survey (Phase 3), a combination suited for gathering robust consumer insights. Purdue University's institutional review board (IRB) approved the study. Results from this study will extend scientific knowledge in consumer research practice related to novel health product marketing and health promotion efforts. This work will shed light on important insights into current perceptions of a novel reproductive health product and provide valuable and practical recommendations for future potential messaging strategy, building on prior calls to address MHC attitudes and uptake (Sax et al., 2019). Additionally, study results will extend concepts, methods, and theory in the fields of public health, health communication, and consumer behavior to offer translational findings to develop pregnancy prevention programs, campaigns, and interventions.

Research Questions

Phase 1: Focus Group Discussions

RQ 1: How do college-aged men and women discuss their attitudes about, interest in, and willingness to adopt novel MHC methods in a group setting?

RQ 2: How does the MHC transdermal gel example fit within the DOI innovation characteristics?

RQ 3: What messaging strategies are most effective in marketing a novel MHC method to college-aged men and women?

Phase 2: Individual, In-Depth Interviews

RQ 1: What are the most effective attributes in a marketing message for a new MHC method?

RQ 2: How do messaging concepts/strategies resonate with college-aged men and women?

Phase 3: Web-Based Survey

RQ 1: What attributes of MHC method advertisements are most important to participants?

RQ 2: What are college-aged men and women's knowledge, attitudes, behaviors, and interest surrounding existing and potential MHC methods?

CHAPTER 2: "NORMALIZING [MALE HORMONAL CONTRACEPTION] IS GOING TO BE HUGE": A DIFFUSION OF INNOVATIONS APPROACH TO MARKETING A NOVEL CONTRACEPTIVE PRODUCT

Abstract

Background: Contraceptive options for men are limited to the male condom, or other extreme options (i.e., vasectomy), and lacking significant developments for about a century, suggesting the value of exploring male hormonal contraceptives (MHC). In October 2018, a transdermal gel method entered Phase 2 clinical trials, indicating MHC may soon become available. However, uptake of potentially contentious products or those serving similar purposes to existing products (i.e., female contraception, condom, etc.) requires informed messaging and promotional strategy.

Methods: Focus groups (n=29) and semi-structured interviews (n=20) among college-aged men and women aged 18-26 years were conducted. Techniques from expanded grounded theory were used, allowing for a constant comparative approach to data contextualization and theme identification.

Results: Three primary themes emerged: 1) openness to MHC; 2) resistance to MHC; and 3) MHC gel innovation characteristics. Men and women were generally interested in the idea of an MHC method. Hesitance about MHC surrounded the social acceptance of a novel contraceptive product, resistance to changing current contraceptive routines, and fear of health consequences. Participants shared insights about promotional strategies which fell within the diffusion of innovations (DOI) characteristics of relative advantage, complexity, compatibility, and observability.

Conclusions: Findings suggest three key messaging strategies' effectiveness for MHC promotion: 1) aspirational marketing, 2) informational marketing, and 3) social norms marketing. Concepts from consumer behavior and DOI can inform effective promotional strategy for a potential male contraceptive method.

Introduction

Contraception is widely accepted as a method for reducing unintended pregnancies and other adverse reproductive health outcomes, with some methods including non-contraceptive benefits, such as protection against sexually transmitted infections (STI) (Dehlendorf et al., 2014; DeMaria, Sundstrom, et al., 2019; Downey et al., 2017; Secura et al., 2010; Sundstrom, Baker-Whitcomb, et al., 2015). About 99% of women in the United States report having used at least one form of contraception (ACOG, 2015); yet, approximately half of US pregnancies in the United States are unintended (Guttmacher Institute, 2019). Hormonal contraceptive options, in particular, are recommended as the first-line option for pregnancy prevention among women (ACOG, 2017) (Guttmacher Institute, 2018; Winner et al., 2012) Difficulties in hormonal contraceptive acquisition (e.g., cost, access) (Beeson et al., 2014; Dennis & Grossman, 2012; Eisenberg et al., 2013; Sundstrom, Baker-Whitcomb, et al., 2015), inadequate reproductive health care (e.g., lack of contraceptive counseling) (Dehlendorf et al., 2010; Meier et al., 2019), and insufficient contraceptive use knowledge (Gomez & Freihart, 2017; Hall et al., 2016; Pazol et al., 2015) contribute to unintended pregnancy incidence.

Male-specific contraceptive options have been limited to the male condom, or other more permanent options, such as vasectomy, and have not seen significant developments for about a century (Amory, 2016; Lloyd & Waterfield, 2016). Male condoms can be 98% effective in preventing pregnancy when used perfectly (Hatcher, 2011); however, no user is perfect, with a typical use efficacy of 87% (CDC, 2019). In 2014, male condoms were the most commonly used contraceptive among women who experienced unintended pregnancies ending in abortion (Guttmacher Institute, 2017). Thus, the absence of male-specific contraceptive methods beyond the male condom may contribute to unintended pregnancy incidence (Plana, 2017). Contraception is commonly viewed as women's responsibility, yet evidence suggests men are interested in sharing the burden, including willingness to try a male hormonal contraceptive (Gray, 2016).

Male hormonal contraception (MHC) is in clinical trials (Byzmek, 2018; Reddy, 2017; Wang & Swerdloff, 2010). Versions include an injection (Behre et al., 2016), a subcutaneous implant (Wang et al., 2016), an oral pill (Bakare, 2019), and a transdermal gel (Anawalt et al., 2019; Ilani et al., 2012; Roth et al., 2013). In October 2018, the transdermal gel entered Phase 2 clinical trials. Applied once daily to the shoulders, the promising compound suppresses sperm creation while sustaining healthy testosterone levels and minimizing negative side effects

(Anawalt et al., 2019; Population Council, 2020). Taken together, recent developments in MHC suggest the prospect of a male-specific hormonal method may not be as far off as once imagined, which could encourage male involvement in contraceptive decision making and unintended pregnancy prevention.

Barriers & Facilitators to MHC Release

Impediments to MHC release persist, despite continued research, development, and improvements. Side effect concerns (Glasier, 2010; Walker, 2011; Wersch, Eberhardt, & Stringer, 2012), biological difficulties (Anthes, 2017; Lissner, 2017), and cost/benefit debates (Lissner, 2017; Murdoch & Goldberg, 2014; Roth et al., 2016) contribute to MHC development delays. Clinical trials have demonstrated temporary infertility via lowered sperm concentration; however, efficacy concerns continue to arise (Kuo, 2010; Mullin, 2018; Roth et al., 2014; Surampudi et al., 2014). Barriers to pharmaceutical market entry further hinder MHC advancement (Lissner, 2017; Murdoch & Goldberg, 2014; Roth et al., 2016). Funding is limited as pharmaceutical corporations fail to see the benefits outweighing potential MHC risks (i.e., efficacy, side effects, litigation concerns) as outweighing benefits, despite substantial evidence suggesting otherwise (Anthes, 2017). Further, pharmaceutical corporations may have difficulties recognizing the market for MHC, especially those who profit from existing methods, like female hormonal contraception (FHC) (Lissner, 2017). Corporations fail to see the payoff in investing in a self-competing product and question marketability, despite evidence indicating launching a second brand to address a distinct unmet need in a current brand can maximize value creation (Subramanian & Baqri, 2016). This contradiction demonstrates a need to explore MHC marketability, understand its costs and benefits, and assess consumer needs.

Men's MHC Perceptions. Understanding attitudes toward the potential introduction of MHC will illuminate barriers and facilitators to its eventual uptake. Prior literature suggests men exhibit a general willingness to assume contraceptive responsibility, if available, given its proposed effectiveness in preventing pregnancy and feelings of comfort in having backup protection (Glasier, 2010). As most men indicate they would accept a male-specific hormonal option (Glasier, 2010; Mullin, 2018), recent studies have focused on uncovering what influences this positive response. Openness toward accepting the shift in contraceptive roles and responsibilities MHC provides suggests MHC support among men (Dismore et al., 2016; Lloyd &

Waterfield, 2016). Men perceive MHC as an opportunity for increased reproductive autonomy (Dismore et al., 2016; Walker, 2011). Some men favor increased contraceptive responsibility to relieve the burden on women (Campo-Engelstein, Kaufman, & Parker, 2019), while others distrust casual female partners' contraceptive usage (Glasier et al., 2000; Lloyd & Waterfield, 2016). The evidence for MHC support—including the majority of men who say they are interested in trying it (Wang et al., 2016)—indicate a market for this product. However, understanding its marketability requires more information about favorable and unfavorable perceptions.

Despite overwhelming evidence of MHC efficacy in clinical trials (Behre et al., 2016; Soufir et al., 2011; Thirumalai & Page, 2019), MHC's potential market entry is still met with some resistance. Preferences for male condoms and reluctance to accept a novel option may impede MHC adoption (Walker, 2011). Some express STI concerns, as MHC would not protect against them (Dismore et al., 2016; Plana, 2017; Walker, 2011). Similar to some women's perceptions about hormonal methods being unhealthy or unnatural (Johnson et al., 2013; Sundstrom, DeMaria, et al., 2015), men also seem to prefer a "visible" option (i.e., male condom) rather than one they cannot control (Walker, 2011). Side effect uncertainties also contribute to skepticism about MHC (Dismore et al., 2016). Men express little tolerance for negative side effects (van Wersch et al., 2012); thus, fears of potential adverse health outcomes such as ejaculation interference (Wilson, 2018) and loss of fertility (Walker, 2011) pose a potential barrier to uptake. Threats to conventional masculinity may also impede MHC uptake (Dismore et al., 2016; van Wersch et al., 2012; Wilson, 2018), as contraception holds a traditionally "female" connotation. Constructions of emasculation based on the idea of "male birth control" indicate the social climate may require preparation for such a shift in contraceptive discourse (Campo-Engelstein, 2012; Dismore et al., 2016).

Women's MHC Perceptions. Women often bear primary responsibility for contraception (Bertotti, 2013; Weber, 2012). Thus, women's attitudes and opinions could impact men's MHC uptake (Peterson et al., 2019). Studies exploring women's MHC perceptions are limited and mixed (Dorman et al., 2018; Eberhardt, van Wersch, & Meikle, 2009; Glasier et al., 2000; Heinemann et al., 2005; Marcell et al., 2005; Martin, Anderson, et al., 2000; O'Connor et al., 2005; Peterson et al., 2019). Women generally hold positive attitudes toward MHC; however, they question a male partner's ability to correctly employ a hormonal method e. Beliefs about male irresponsibility, specifically in sexual encounters, may also contribute to women believing these behaviors will translate to MHC misuse (Marcell et al., 2005). Women may also expect MHC use to result in

disregarding male condom use, potentially exacerbating STI risk (Dismore et al., 2016). As women often face the most direct effects of unintended pregnancy and associated health outcomes (Guttmacher Institute, 2019), some fear that men may fail to understand the importance of their participation in pregnancy prevention efforts (Kimport, 2018). Men's perceptions of female contraceptive behaviors have been shown to affect decision-making (George et al., 2019), indicating partner influence in contraceptive choice is a crucial consideration. Contraception discussions in partnerships are strongly linked to contraceptive method choice and use (Masters et al., 2017), suggesting both men and women can contribute to improved pregnancy prevention outcomes. The effect may, therefore, be bidirectional—as men impact women's contraceptive choices and behaviors, women may also impact men's choices (French & Holland, 2013; Holland & French, 2012; Horan & Cafferty, 2017).

Diffusion of Innovations in Marketing Strategy

A crucial component of product development, particularly with novel products, is an effective marketing and messaging strategy. Novel health product marketing requires marketers to begin to influence demand, adoption intention (Bruce et al., 2012), and messaging strategy recognizing consumer needs and desires, before the product's release. Without prior foundational knowledge surrounding MHC, effectively promoting it will require the inclusion of marketing innovation models. One theory, diffusion of innovations (DOI), structures these ideas, providing a foundation for understanding MHC marketing opportunities and potential uptake influencers. DOI theorizes there are five key characteristics of innovations influencing an innovation's adoption, or resistance (Rogers, 1995). These are: *relative advantage* to the user*, compatibility* or ease of product integration into one's lifestyle*,* perceived *complexity/simplicity* in learning to use the product*, trialability* or the ability to trial a product before adoption commitment*,* and *observability* of the benefits of using the given innovation (Rogers, 2003). Marketers can emphasize these characteristics in their messaging strategy when promoting an innovative product, which can aid consumers in determining whether a product is worth adopting. Given an innovation like MHC, marketers are tasked with promoting a product similar in function to existing contraceptive options, yet novel in concept. Marketers can highlight the relative advantages of using MHC versus existing options, its compatibility, its simplicity, its trialability, and its observability. Formative research methodologies, or developmental research conducted to inform

and design practices or processes (Truong & Dang, 2017), marketers can determine the desired levels of these characteristics among the target consumer and apply it to MHC messaging and promotion. Thus, DOI provides a framework for an effective marketing strategy to encourage MHC adoption upon market introduction.

Marketing Considerations

Marketing must attend to MHC perceptions among both men and women in the target demographic. Aspirational marketing may provide one opportunity to present MHC as a good choice for consumers, as it can confirm their values (Belk, 1988; Nichols & Schumann, 2012). This value-based marketing may, therefore, capitalize on consumer willingness to purse MHC. Further marketing strategy includes informational marketing to inform consumers about a product and its attributes (Bagwell, 2007) to reduce the effort it takes to learn about a new product. This may be especially important for consumers who want to ensure the product is safe and effective. To address concerns about social opinions and acceptability, social norms marketing may contribute to normalizing products among those a target audience identifies with (Berkowitz, 2003).

Study Purpose

The purpose of this study is to identify current perceptions of existing male contraceptive methods, as well as prospective MHC options among college-aged men and women attending a Midwestern university in the United States. Additionally, the study seeks to understand attitudes related to DOI-informed marketing strategies for MHC. The study will examine the following research questions:

> RQ 1: How do college-aged men and women discuss their attitudes about, interest in, and willingness to adopt novel MHC methods in a group setting?
>
> RQ 2: How does the MHC transdermal gel example fit within the DOI innovation characteristics?
>
> RQ 3: What messaging strategies are most effective in marketing a novel MHC method to college-aged men and women?

This is the first empirical study assessing consumer insights and applying the DOI framework to a novel MHC product before its release. The findings provide practical first steps for marketers that can be applied to future MHC or other novel contraceptive product marketing and promotion efforts.

Methods

Focus group discussions and in-depth individual interviews were conducted with college-aged men and women attending a large Midwestern university from April to November 2019.This combination of methodologies allowed for the collection of interpretations emerging in group and individual settings surrounding existing male contraceptive methods, prospective MHC options, and potential MHC marketing strategy opinions.Focus groups allowed researchers to explore the topic and collect group language and experiences. Following with in-depth semi-structured individual interviews reveals how insights gathered in the focus group environment converged or diverged with individualized perspectives (Belk et al., 2012; Sundstrom, DeMaria, et al., 2015). Insights offered in focus groups and in one-on-one settings could differ; thus, question guide and protocol consistency allowed for improved comparison between focus group and interview findings. The authors' university institutional review board (IRB) approved the study.

Focus Group Discussions

Six gender-exclusive focus groups (three focus groups with only women, and three with only men) were conducted with a total of 29 participants (13 female, 16 male). Male focus group participants were recruited via targeted e-mail communication to exclusively male undergraduate students, aged 18-26 years, in-person recruitment, and snowball sampling. Recruitment materials specified focus group scheduling, including locations and duration. Participant availability during one of the three provided times constituted an additional eligibility criterion. Informed consent was obtained at the start of the focus group period, including for audio-recording. Upon focus group completion, participants were also asked to complete a brief demographic survey. The female-only focus groups followed similar sampling procedures, with the distinction that recruitment occurred primarily in-person. Participants did not receive a monetary incentive, but pizza and drinks were provided to encourage participation.

Two trained female moderators led the male and female focus groups, which lasted from 90 to 120 minutes (76.72±27.81) and were audio-recorded. The first author served as the primary moderator, driving the discussion, while the secondary moderator observed, recorded, and managed tasks. A semi-structured focus group question protocol allowed for flexibility in adding questions or changing question order to build group rapport (Rubin & Rubin, 2012). The format allowed researchers to go beyond the guide, probing further on relevant topics, ensuring each focus group discussion was tailored to capture unique group dynamics. The focus groups provided participants the opportunity to present ideas and narrate their health-related experiences, contraceptive behaviors, and consumer insights. Each discussion in the male-only groups began by asking participants' experiences and knowledge of existing male contraceptive methods (e.g., "Take a moment to write down what comes to mind when you hear the words birth control," and "Can you share some of your experiences with birth control?"). Then, participants' knowledge and interest in alternative male contraceptive methods were explored (e.g., "How do you think you would feel if there were more [birth control] options available for you?" and "What would an ideal male birth control method look like to you? How would it feel? What would it do?"). Participants received a brief news article in conjunction with this series of questions, detailing an example MHC method, the transdermal gel. They were asked to read and discuss their immediate thoughts, which the primary moderator recorded on a whiteboard. This allowed participants to interact and view commonalities and differences in opinions among their peers. Lastly, participants were asked to provide recommendations surrounding potential effective marketing strategy (e.g., "What would you like to see in an advertisement about a new male birth control method?" and "What messaging/imagery would have to be included on an advertisement to get your attention and [influence MHC] purchase?"). The female-only focus groups covered the same topics discussed in the male-only focus groups. However, as women would not be directly using MHC methods, specific questions surrounding usage or usage intention were framed to better understand how women would feel if their partners, or the men in their life, were to use such a product (e.g., "How well do you think the male birth control gel would fit into the lifestyle of your partner/men in your life?" and "What would an advertisement have to include in order to get your partner's/men in your life's attention about the product?").

Individual Interviews

A total of 20 participants, 7 females and 13 males, completed in-depth semi-structured interviews. Participants were recruited primarily via in-person presentations and snowball sampling, using e-mail communication only if necessary (i.e., follow up or requested communication). In-person recruitment occurred via communication with leaders and executive members of university-sponsored organizations (e.g., fraternities, sororities, cultural centers, health-related clubs) where the first author requested time to speak and solicit participation at organized meetings with each group. Interviews were scheduled after the brief talk to solidify and encourage participation. Informed, signed consent was obtained at the start of the interview period, including agreement to be audio recorded. Upon interview completion, each participant completed a brief demographic survey to compare individual characteristics and received a $25.00 electronic Amazon gift card to compensate for their time and insights.

Each interview lasted between 45 and 60 minutes (51.73±10.28). The semi-structured interview protocol allowed for researcher flexibility. This methodology also permitted participants to introduce new and relevant concepts organically throughout the conversation. To assess consistency across group and individual insights, the interview inquired into similar topics as the focus groups. Interviews began with questions surrounding participants' experiences and knowledge of existing male contraceptive methods (e.g., "Can you share some of your experiences with birth control?" and "What do you like about the options available? What do you dislike?"). Then, participants' knowledge and interest in alternative male contraceptive methods were explored (e.g., "Do you think these options [condoms and vasectomy] are enough for men? Why or why not?" and "How do you think you would feel if there were more male-specific options available?"). Participants also received the same news article detailing the transdermal gel example and were asked to share their immediate thoughts.

Data Analysis

Focus group and interview audio files were transcribed verbatim and an expanded grounded theory approach provided the data analysis framework. Expanded grounded theory is an inductive approach placing participant narratives at the forefront of thematic and code development, incorporating extant theoretical constructs to structure data analysis (Corbin &

Strauss, 2008). DOI served as the theoretical framework in initial data analysis. HyperRESEARCH 4.0.1, a qualitative data management program., assisted in analyses. A codebook was developed based on the focus group and interview guides, initial reading results, and existing literature. The codebook consisted of *in vivo* codes, a list of keywords and phrases extracted from participant narratives, contributing to meaning making and aiding in breaking down and sorting the data. Codes containing aspects of the accompanying theory, DOI (e.g., displays of relative advantage; barriers/facilitators to MHC interest/potential use) were also included. Open coding occurred first, in which keywords and phrases included in the codebook were attached (i.e., highlighted or flagged) to transcript sections based on the content of those sections (Deterding & Waters, 2018). Initial impressions of the data were then refined, and axial coding followed. The codes attached to focus group and interview sections were sorted by consistent patterns between and within focus group discussions and synthesized into categories, allowing for emergent theme identification. Axial coding in expanded grounded theory allowed codes and categories to be compared to theoretical concepts (e.g., DOI concepts) and extant literature to better explain the data. This process was repeated for all focus group and interview transcripts by the first author and confirmed by the second author.

Results

Resulting themes and subthemes are presented below. Quotes are marked with MFG or FFG to indicate insights shared in either the male or female focus groups, respectively, and with FI or MI noting female or male individual interviews. Participant demographic information is outlined in Table 1.

Table 1. Participant Demographics

	(n=49)
	Mean/Prop.
Age	21.61±1.78
Sex	
Female	20 (40.82%)
Male	29 (59.18%)
Sexual Orientation	
Heterosexual	43 (87.76%)
Bisexual	6 (12.24%)
Relationship Status	
In an exclusive/monogamous relationship	22 (44.89%)
Sexually active, but do not consider it a relationship	13 (26.53%)
Not currently sexually active with another person	11 (22.45%)
Have never been sexually active with another person	3 (6.12%)
Primary Contraceptive Method*	
Male condom	19 (38.78%)
Female hormonal contraception	18 (36.73%)
Withdrawal	7 (14.29%)
None	2 (4.08%)

Note: Results represented as M±SD or n(%)

*Values that do not add to sample total indicate missing data

Openness to MHC

Male and female participants shared a willingness to pursue a potential novel MHC method, primarily due to desires for male contraceptive autonomy among men, safer sex, and providing a range of birth control choices for men.

Desire for autonomy: 'It [would] give me more peace of mind'. Most participants across focus groups and interviews expressed a willingness to pursue a potential novel MHC method, with men describing a desire for increased control and choice in their reproductive health decisions. One male participant described feeling as though his only option was to voice his opinions to female partners, given the limited contraceptive actions men can take:

> It's scary as a dude to know you can [get someone pregnant]. If it happens, we can voice our opinion as much as we want, [but] it's out of our hands. Whereas the options don't end after sex for women, [while for men], after you empty the chamber, it's out of your hands. [MFG]

Some men expressed feeling powerless as a result of the limited contraceptive choices they have, "I feel a little powerless, I guess, because guys can't really do that much after pull out, condom, and possible vasectomy. All you can do is remind whoever you're with…to continue to take their [birth control]." [MFG] The feeling of powerlessness given men's limited options translated to this desire to act themselves, rather than relying solely on women, suggesting how men identify their contraceptive roles in discussions with female partners. As one male participant stated, "I think I'd like [having an MHC method available] because then the man could take an even bigger role and take part in that responsibility." [MI] Other participants felt a potential MHC method would increase their peace of mind, knowing they are protected, "I would [use an MHC method], because it's a lot easier to trust myself and know that I've put it on daily…I would like the peace of mind knowing that like, 'Hey, I did put this on. I'm good.'" [MI] Some of these accounts arose from prior negative experiences and potential distrust of female partners, resulting in a desire to take control and have a line of defense for themselves, "I've had a girl fake a pregnancy test on me. And it would be wonderful if I could be like, 'nah, I'm on [MHC] chill! It ain't mine!'" [MFG] While others described contraceptive control as a form of freedom, "[having an MHC method] would definitely [give me] more freedom…because it's all on the other person right now. Whereas if we have the option too, we would have freedom to not worry…we [could] just have it in our hands." [MFG] The idea of contraceptive control and autonomy for men arose in conversations

with women as well, suggesting women also favored their male partner's participation in pregnancy prevention:

> For my single male friends, I know they worry about their partners being in control…even if they're being safe and they're like 'I always wear a condom,' okay that's fine, but your partner might not [be on birth control], even if they say they are. So [being on MHC] would give [men] more control over that. Like 'I know I'm doing this every day and that's lowering my chances of getting someone pregnant.' [FI]

Female participants reacted favorably to men's contraceptive autonomy as a method of relieving the burden on women, "I think it would shift more of like the [narrative], it would give at least an option of it not just being on the woman." [FI] Some male participants agreed, suggesting the availability of an MHC method would eliminate the need to rely on their female partners, "it seems like there's a burden of birth control [among women], [they feel like] 'I have to be the one to take this.' I feel like they would be relieved [if an MHC method was available]. [MFG] Thus, the desire for men's autonomy in contraceptive decisions translated across men and women, indicating broad interest in a potential MHC method.

Increased security and safer sex: 'An extra safety net'. Participants discussed the availability of a potential MHC method as supporting safer sex. Most participants stated they would still use an MHC method in conjunction with another method for increased security, "condoms are not always foolproof. So, like, if there was like another…like if [men] had a pill or something too and both partners were on [contraception]. I think it's just like a safer way to prevent pregnancy." [FFG] Some mentioned this as providing an "extra safety net," [MFG] suggesting an MHC method would be a viable way to practice dual method use, "right. They always like to say to use two forms, you know…if they don't want to use condoms, they can have their own kind of birth control." [FFG] One female participant suggested this could be especially useful in monogamous relationships, where the fear of contracting STIs is reduced, "I think it would be good too if you're in a relationship and you both don't like condoms and maybe if you both use something, that could be kind of nice." [FFG] Almost all participants felt as though the contraceptive offerings available for men were severely lacking, limiting men's ability to choose an ideal method for engaging in safer sex.

> I don't like that for my protection…that there's only condoms, I feel like there should be other options besides that. Obviously, I work with it because [that's all I have]. But I feel like since there's so many options for females, if there was like a pill or something for guys to take, that would be helpful too. [MI]

The desire to have a range of birth control options for men was echoed by female participants, with most speaking from an equality standpoint:

> Oh, it might make me feel a little bit better. Just because I know they have more options to choose from, and then you don't feel like it's on you [as a woman] just because you have more options. [Men] also have as many opportunities as you to prevent it. [FI]

Men felt that more options would also indicate a progression toward improving male contraceptive agency and choice, "how many [contraceptive options] can we list for women? And there's two for men? Are we just gonna put a physical barrier between the goods and everything [forever]?" [MFG]

Resistance to MHC

While fewer participants expressed resistance to a potential MHC option, those who resisted shared two main thoughts: there is little reason to consider a male contraceptive option because the contraceptive reality "is what it is," and hesitation to try a new medical product.

'It is what it is'. Some male participants felt as though a potential MHC option would be superfluous, considering the way things are to be sufficient, "yeah. [We have] both; the convenience, with condoms, and then the permanent and also semi-permanent with the vasectomy." [MI] Some men felt this to be a benefit for them, "I sort of get it, though. Because like, if you benefit from the status quo, why would you want to change the status quo?" [MFG] while others felt that due to the lack of options for men they were forced to accept the reality, "I guess like for men there's pretty much just like condoms and that's just kind of it. Like [we accept that], 'oh, that's it, like, don't worry about it,'" [MI] and "I don't know. I mean, it's been working pretty well so far. And it's just kind of how it is. So, we just kind of conform to it." [MFG]. One male participant also felt that women would agree with this sentiment, "Among women as well, like, 'what we have is working, so why should we take an interest?'" [MFG] One female participant did feel there would be a split response from men, supporting this idea, "I think there would be some people willing to try it because it might be easier on everyone involved. Others might default and say 'there's already a way that's working for them, so why change it?'" [FI] Some participants felt that because contraception has been a woman's responsibility, that it should remain that way. "I leave it…it's up to them. Honestly, it's not really my place to control women's bodies," [MI] and

"Yeah, the only say that I really have is just, you know, providing and using the condoms. That's about it," [MI] suggesting a resistance to switching contraceptive roles. One female participant agreed, "[men] just don't see it as a problem, they think that it is the woman's responsibility to make sure that that [pregnancy] doesn't happen." [FI] Thus, resistance to MHC was displayed through an acceptance of the contraceptive reality, and lack of desire to change.

'I don't know if I would be the pioneer'. Despite displaying an interest in pursuing a potential MHC method, most participants did mention not wanting to be among the first to try it, "I don't know if I would be the pioneer," [MFG] and "yeah, I mean, [I would use MHC] if it can be proven effective, for sure, but you know, I don't want to be a guinea pig by any means." [MI] Participants also expressed skepticism surrounding the novelty of such a method, suggesting a layer of this resistance may stem from the innovation itself:

> Because [MHC] is the first of its kind. Like the first iPhone was a complete piece of sh*t when it first came out, just because it was new…when the first technology comes out, they are almost always somehow bad. There are tweaks that need to be worked out. We're talking about our testicles, and, you know, future and all that kind of stuff. [MFG]

Participants mentioned wanting to see the effects of a potential MHC method before adopting it themselves, "I would let it play out for maybe a year and see what happens before I buy it. I'd want to see how it works, see how many bugs they gotta fix…that's just how it is. [MFG] One primary reason for this hesitance was due to uncertainty surrounding potential MHC long-term side effects, "I would wait to see the long-term effects…sometimes things don't peep their ugly heads out until a year or years later. You don't ever take the first offer. It always gets better." [MI] Fears of negative effects on future fertility were most often discussed as a reason for not wanting to be among the first to adopt a potential MHC method, "Like, for the most part [birth control] can be reversed whereas like the idea of [a potential MHC method] just like, f**k, you take one wrong pill and you got dead swimmers." [MFG] Another participant expanded on his uncertainty of potential negative health outcomes, "my worry about it is if [the gel makes you] fire blanks, can you ensure that when you get off of it... you could still have kids down the road? Who's to say [what will happen] later on." [MFG] Some participants suggested normalization of MHC, in general, would need to be achieved before the acceptance and adoption of a potential MHC method could occur, "I feel like [most men] would just have to wait a while and see it and, you know, it would just kind of [have to] become normalized before they would actually start to use it." [MI]

A female participant agreed with this, suggesting marketing as a potential key component in pushing the normalized idea of MHC, “I think [men adopting MHC] would depend on the way it's advertised. Men would be wary about [it being] inside of their bodies until they’re done using it, or its usefulness expires. [Men might be] uncomfortable with the uncertainty.” [FI] Adoption of a potential MHC method is thus limited by its innovativeness, suggesting highlighting its positive components via marketing strategy is key to improving MHC visibility, combatting negative misperceptions, and fostering MHC normalization.

Characterizing the MHC Gel Innovation

Upon introduction to the example gel MHC method, participants shared their initial impressions of the method along with potential effective marketing and messaging strategy. Participants’ perceptions related to the gel fell within the following DOI characteristics: relative advantage, complexity, compatibility, and observability. While some participants discussed potential trialability of the gel, representing trialability for a medical health product that is not yet released appeared to be a less salient marketing strategy than others.

Relative advantage: ‘If it’s better…that’s pretty good’. Many participants felt the gel method was comparatively better than existing contraceptive options, specifically referring to it as “filling the need for a middle ground between the other two options [male condoms and vasectomy].” [FI] Some participants noted the low commitment required to use the gel method made it a preferred option, especially over vasectomy, “I kind of like the commitment thing, because it's right in the middle, like condoms are just, in the wind. But a vasectomy is a fully committed procedure. This is just kind of right in the middle ground.” [MFG] Though the gel’s efficacy was unknown at the time of the study, many participants shared that if the gel’s efficacy was found to be comparable or better than existing contraceptive options, it would be considered a better option overall, potentially influencing future adoption, “I'd always heard [perfect use for] condoms is 99% and birth control is 99.99%. So, if typical use [for the gel is] 93% and condoms are 88%, that's pretty high. If it's better than 88%, that's pretty good.” [MI] Another male participant agreed, implying the gel’s efficacy compared to other contraceptive methods would influence his choice to adopt or not, “I know, at least in my case if I was like looking at two things on the shelf. And if [the gel] is 5% better than that, then, you know, I'll use [the gel].” [MI] Participants also shared suggestions for potential gel method messaging strategies, specifically, by

presenting the gel method compared to existing methods, “You could compare it to other things that exist now too, like '[the gel is] 99% as effective as the pill.'” [FFG].Another female participant suggested comparing the gel to female methods specifically may inspire women to encourage their male partners to adopt it, “yeah if they said it was like, as effective as the birth control pill, like some girls might go to their boyfriend, 'yeah, go get this because I'm tired of taking the pill.'” [FFG] Another female participant agreed, recommending the gel be presented among an array of known contraceptive options, “I guess it would be cool to see like, what's the failure rate compared to condoms? Is it better? Is it better than known female contraceptives? That would definitely be something that would interest people.” [FFG] A male participant offered further insight, specifying one type of comparison that might not be well accepted in marketing strategy, “I think one problem is if [the marketing strategy is] denigrating other options that people might be happy with. Just make it clear that this is a good alternative or like this might work very well for your lifestyle.” [MFG] Thus, presenting the relative advantage of an MHC method upon release compared to other existing products may encourage the adoption of an innovation that may initially spark hesitance.

Complexity: ‘If they made it difficult for guys, we would f**k it up’. The gel method was frequently referred to as “convenient” and “easy to use” among both male and female participants. A female participant explained its convenience stemming from the ability to start and stop using the gel without having to visit a doctor, “it's way more convenient. You can buy it, use it, if you don't want to use it anymore, you can just stop. Whereas some options [IUD, implant] you have to get removed when you don't want it anymore.” [FFG] Other female participants discussed the ease of use as particularly beneficial for men, “it really seems like it's easy, and [men] can't really mess it up,” [FFG] and “I just think the application will be so easy like for guys. They'd be like, 'oh, it's a gel, you just rub it in.' I mean, that seems really easy.” [FFG] Another female participant suggested the simplicity of the gel may aid in increasing men’s confidence in adopting the method, “they might feel confident in doing this, so they might be more motivated to try it.” [FFG] Male participants agreed, pointing out the ease of use as the important aspect of the gel, “it's such like a sexist way of thinking, but it's so f**king true. So, if they made it difficult for guys, like, we would f**k it up. We just would.” [MFG] Another male participant felt the ease of use might also contribute to the future adoption of the gel method among men, “I can assume that many people would use [the gel, when released] because it sounds awfully easy.” [MI] Though the gel was mostly discussed in terms of its simplicity, a few participants did mention its application (to the

shoulders and back) may pose some difficulty, “I don't know how picky it is but it would be harder for a guy to [apply] it by himself if it's on his back and shoulders.” [FI] An additional male participant stated that while other aspects of a potential MHC method that may be considered deterrents did not bother him, difficulty in applying the gel may hinder his desire to use it, “the biggest thing for me is the [gel’s] application. I don't mind if it's expensive…but if I have to spend half an hour to get it on, that's a little annoying.” [MFG] Despite the perceived simplicity of the gel method, this participant felt it may not be worth spending too much time applying it. One female participant offered a comparison to a commercial for an FHC method, emphasizing how ease of use could be adequately presented in marketing strategy for the gel:

> There was an [IUD] commercial that showed a girl with a voiceover saying, 'oh my god, I forgot to take the pill' or 'oh my god, we didn't use a condom.' Then she'd look back, smile, and be like 'it's okay because I have an IUD!' It would be so funny for a guy if he was in the shower and all of a sudden, he's like 'oh my god, I didn't use a condom last night' and then he's like, 'oh, wait, I have the gel." Like that would be funny and also get the point across that it's really easy to use. [FFG]

This suggests presenting the gel’s simplicity related to its application and encouraging ease of use may be crucial in marketing messages upon its release.

Compatibility: ‘Just one more step in their morning routine’. Participants repeatedly pointed out the ability to easily incorporate the gel method into their daily routine, frequently stating that using the gel would be comparable to common daily routines, “I think [the gel] seems like something you can incorporate into your daily, your morning routine, something that could become, hand in hand with brushing your teeth or eating breakfast.” [MI] One male participant explained this association with common daily practices may prevent forgetting to use it, “it'd be easy to make it part of your morning routine like. We can be bad about schedules, but like, we all hopefully brush our teeth every morning.” [MFG] Female participants agreed, suggesting the gel would be compatible with men’s lifestyles, “I feel like that's super easy for men to think about because in the morning they have a routine of brushing their teeth, doing their hair, it's just one more step in their morning routine.” [FI] One female participant mentioned that fear of unintended pregnancy among men would provide an added motivation to easily incorporate the gel method in their lifestyles, “I feel like it would fit pretty well because guys I know really do not want to have kids right now, so anything that can help them avoid that, they'll eventually become receptive to…because it is added security.” [FFG] A male participant offered a run-down of how his daily routine might look if he were to incorporate the gel:

> So, if it's just putting [the gel] on every day, put it in the bathroom, next to the toothpaste. When you wake up in the morning, brush your teeth, put some gel on your shoulders. It doesn't seem like it's that demanding…it's not like giving yourself a shot every day. It's throwing some gel on your shoulders and your body does the rest. [MI]

Some participants felt the fact that the gel would require daily application would hinder how easily it would fit into men's lifestyles, "I would have to be sure to remember to [apply the gel]. I have a couple hair products I use regularly, so if I put it there...but if I leave it somewhere else, I might forget it." [MI] Female participants also shared these concerns, one participant, in particular, speaking firsthand, comparing it to difficulties in remembering to take daily female methods, "I think remembering to do it is a concern…I mean, there are women who forget to do it. So, I mean, we should expect that it could be difficult for men to remember to do it too." [FFG] Some distrust of male partners surrounding accurate daily gel use arose among female participants, "[I think] some guys are lazy and might not want to apply it every day." [FFG] One female participant shared a concern, specifically if the gel were a method both partners were depending on for contraception, "I think my only hesitation is they would forget to do it. So, like if you're depending on it, you know, and like you forget to use it..." [FI] Some participants suggested emphasizing how using the gel would not significantly affect your daily routine or lifestyle would be especially crucial in marketing messages, "maybe if [MHC marketing emphasized], like you can still have fun, this is not something that's going to prevent you from doing what you want to do [that would be effective]." [FFG] Marketing messages that highlight "this is an extra step you can take [to prevent unintended pregnancy]" [MFG] may be most influential in displaying the compatibility of a potential MHC method, like the gel.

Observability: 'Normalizing [MHC] is going to be huge'. After being introduced to the gel, participants shared their perceptions of the potential benefits of the product. Observability was conceptualized by participants as ways the product would need to be marketed to make the gel's benefits visible and socially accepted, "I feel [encouraging gel use] would [happen through word of mouth] like because so much it would be like social acceptance." [MFG] A female participant agreed, stating an advertisement for the gel should include, "benefits of [the gel] like, easy to use, and your girlfriend won't get pregnant. Then they're like 'okay, sold!'" [FFG] Participants repeatedly discussed that a potentially effective way of presenting observability of the gel's benefits could occur via endorsements by various trusted sources. Word of mouth was discussed

most frequently, as social acceptance and normalizing a male contraceptive option would be key to encouraging eventual uptake, “I definitely think word of mouth is gonna be the biggest thing. Because it's so new and something that guys are not used to, normalizing [MHC] is going to be huge.” [MFG] One female participant agreed, suggesting word of mouth, specifically from people she knows, boosts the validity of the product, “sometimes on social media, if I see other people plugging something without some other type of an agenda, I'm usually like 'hmm, there's some merit to this.' If other people I know are talking about it, seems valid.” [FFG] One male participant felt that knowing other men who have tried it would be enough to encourage widespread adoption, “honestly, it's just gonna take like one or two guys to do it and start spreading the word, and then everyone would join in.” [MFG] Other participants felt that endorsements of the gel by legitimate entities, such as the FDA, would be an effective method of sharing information of the gel’s benefits by trusted sources, “if they present actually cited statistics or facts with the advertisement that people can look at and know it is backed by the FDA, that holds a lot of weight…that would probably get my attention.” [MFG] The discussion of a trusted condom brand endorsing the gel method spanned across all focus groups, primarily surrounding the idea of established brand recognition working as support for a new MHC method, “because of [Trojan’s] brand recognition, somebody would just see that name and would be like 'oh hey that must work.'” [MFG] A female participant explained why she felt attaching the gel to a trusted condom brand would be effective:

> [It wouldn’t work] if [the gel] just jumped in like right away, trying to [be competitive with other contraceptive products]. But the Trojan commercials…are trustworthy, they can be funny because they have trust built with their customers. And they like have global recognition, they've been around. [FFG]

This suggests observability of the gel’s benefits could be presented and supported by trusted endorsements, which may be an effective way of normalizing the innovation and encouraging uptake.

Discussion

Findings suggest participants were generally interested in the idea of an MHC method, consistent with prior literature (Glasier, 2010; Heinemann et al., 2005; Mullin, 2018). Hesitance toward an MHC method surrounded the social acceptance of a novel contraceptive product (Campo-Engelstein et al., 2019), resistance to changing current contraceptive routines, as well as

fear of potential side effects (Dismore et al., 2016; van Wersch et al., 2012) and long-term health consequences (Walker, 2011). Three promising messaging strategies emerged from the data: 1) aspirational marketing, 2) informational marketing, and 3) social norms marketing. Consumers who may already be accepting of MHC see the benefits the product could provide for them and a current or potential partner. However, these messages must be at the forefront of messaging strategy to confirm these benefits and attract this audience. Thus, aspirational marketing may be a viable method to further support and reassure this audience that using a potential MHC method is a good, smart choice (Belk, 1988; Nichols & Schumann, 2012). Additionally, those who express resistance to MHC may be a few steps behind in acceptance, requiring strategies such as informational marketing, which would inform consumers of the product and its attributes (Bagwell, 2007), and social norms marketing, which would contribute to normalizing the method as a socially acceptable contraceptive choice (Berkowitz, 2003). DOI constructs appeared to diverge into the two messaging strategies targeted at neutralizing resistance. Insights from relative advantage and complexity suggested informational marketing may be a solution, and compatibility and observability supported social norms marketing.

Aspirational Marketing

College-aged men and women indicate a general willingness and desire to adopt a potential MHC method upon release. As women can choose to be autonomous in contraceptive decision making (Dehlendorf et al., 2013; Downey et al., 2017), there is a need for this to extend to men as well (Marcell et al., 2016). The perceived control over pregnancy prevention brought about by a potential MHC method was seen positively among men due to feelings of powerlessness in contraceptive choice, negative prior experiences with FHC, and relieving women's contraceptive burden. Men are often stereotyped as sexually irresponsible and careless regarding the consequences of unprotected sex (Marcell et al., 2003, 2005; Reich & Brindis, 2006); however, the reoccurring desire for responsibility and autonomy in men's narratives contrasts this, demonstrating an opportunity to leverage these sentiments in MHC marketing. Additionally, most participants felt contraceptive offerings for men were significantly lacking, suggesting desire for other options (Wang et al., 2016). The idea of a potential MHC method providing additional options for men supports the desire for safer sex among men, suggesting men may be more attentive to the consequences of unprotected sex and value participation in contraceptive decision-

making. Products representing consumer values play a role in supporting self-identity (Nichols & Schumann, 2012), indicating an opportunity for aspirational marketing to leverage these desires among men and support from women to aid in achieving these personal goals. Aspirational messages in the context of MHC could highlight important values, including contraceptive agency for men and a lessening of women's contraception burden. Messages targeting men could incorporate aspirational language such as, "voice your opinion; choose [hypothetical MHC]," or "know you're protected; choose [hypothetical MHC], which would reflect the narratives of men desiring autonomy and contraceptive control. Among female consumers who viewed MHC favorably, aspirational messages should focus on encouraging male partners to share contraceptive responsibility. Messages like, "have a partner in birth control with [hypothetical MHC]" or "birth control now has no limits; talk to the men in your life about [hypothetical MHC]" can both inform women who have an interest in an additional method for men, while also catalyzing women to encourage men to look into MHC as a viable contraceptive alternative.

Informational Marketing

Those who expressed resistance to MHC mentioned efficacy and safety concerns, specifically tied to a novel product. Additional barriers included not understanding how the product differed from other contraceptive options, combined with status quo acceptance. Informational marketing reduces the effort a consumer has to expend on seeking information about a product, as relevant content would already be displayed within the advertisement (Bagwell, 2007; Zhang et al., 2012). For consumers expressing hesitance to adopt a novel product, minimizing the cognitive effort required to learn about it may be effective. Straightforward informational marketing can clarify uncertainty, plainly offering relevant facts that address particular MHC concerns, such as efficacy, safety, and side effects. The DOI characteristics of relative advantage and complexity are ideally suited to meet these informational needs, specifically in the MHC gel example. While some participants viewed the gel method as comparatively better and simpler than existing contraceptive methods, including FHC, others needed additional convincing.

Relative advantage (Rogers, 2003) was conceptualized by participants as a need to present the gel method's effectiveness compared to similar existing contraceptive methods to display its benefits, without defaming competing products. Thus, informational messages framed within a relative advantage provide a combination of straightforward information and display why a

potential MHC product would be more advantageous than what exists. Because MHC methods are still in development, efficacy statistics are currently unknown. However, upon release of this information, an advertisement for men incorporating language comparing a potential MHC method to condoms, vasectomy, FHC methods, etc. may directly address efficacy and safety concerns among hesitant consumers. While young women are mostly aware of FHC method efficacy (Frost et al., 2012), messages suggesting direct comparisons to FHC might inform female consumers of the relative advantage of MHC. Complexity, in the case of the MHC gel example, was mostly discussed as simplicity, as a daily application of a gel was referred to as "convenient" and "easy." Elements of complexity arose surrounding the gel's application. Because innovations' perceived complexity tends to slow consumers' progress in learning to use it and incorporating it into their lives (Rogers, 2003), a potential MHC method must exhibit the simplicity of use via informational marketing messages. Using imagery may be most effective in informing consumers of the ease of use (Branthwaite, 2002), specifically the application of the gel example. Marketing messages might benefit from the inclusion of a diagram clearly outlining the points of application, or an image or clip of a male in the process of applying the gel. These visual representations may emphasize simplicity, which may also increase confidence (Branthwaite, 2002) in MHC use. Thus, presenting the DOI constructs of relative advantage and complexity via informational marketing may provide additional depth and clarity to MHC messaging strategy, getting ahead of concerns that may deter consumers from adoption.

Social Norms Marketing

According to participant accounts, demonstrating compatibility via lifestyle fit and observability of benefits (Rogers, 2003) is critical and translates to MHC marketing needs. As social norms marketing considers the importance of both descriptive norms (i.e., perceptions of normal behavior) and injunctive norms (i.e., perceptions of which behaviors are socially acceptable or unacceptable) (Cialdini, 2003), this approach may be successful in targeting topics of MHC normalization and lifestyle compatibility. Male participants generally discussed the MHC gel example as easy to incorporate in a daily routine, including it in the same category as other common daily habits (i.e., brushing one's teeth, eating breakfast, etc.). Previous work indicates lifestyle factors matter when making contraceptive choices, specifically related to FHC (Watkins, 2012). Female and some male participants expressed concerns surrounding men's ability to

remember to use the MHC gel example, suggesting the lifestyle-driven component of MHC may require additional support via marketing messages. The consensus that the gel example would be easily compatible in men's lifestyles suggests leveraging this in messaging strategy as an element of normal behavior may motivate this action. Messages like "[hypothetical MHC]: just one more step in your morning routine" or "there don't have to be limits to having fun and staying protected; choose [hypothetical MHC]" may highlight the compatibility of MHC as a normal and viable lifestyle choice to fulfill their contraceptive needs. Among women who may question the compatibility of such a method in the lives of men they are familiar with, messages addressing relatable topics such as, "[hypothetical MHC]: men, set your birth control alarms" or "[hypothetical MHC]: a birth control he'll never forget" may situate MHC use as an equally normal behavior among men as it is among women.

Additionally, participants discussed the observability of the gel example as best demonstrated via marketing messages that center around the visibility of the gel's benefits and social acceptance. Specifically, discussion surrounded the normalization of the gel through various endorsement methods, including word of mouth (WOM) and trusted, credible sources. Observability of benefits may be arguably the most important element of MHC marketing strategy. Demonstrating observability via marketing messages can further confirm MHC as a good option among those who are already interested, while also contributing to normalizing the method among hesitant audiences, positioning it as a behavior that is socially acceptable and supported by others. Participants repeatedly mentioned WOM and trusted, credible sources as the most influential ways of disseminating MHC information, suggesting a need for social confirmation that MHC is an acceptable contraceptive choice for men. WOM is an effective method of influencing brand awareness and positive attitude change, especially for novel products (Gopinath et al., 2014; Kirby, 2010; Thorbjørnsen et al., 2015). Thus, marketing messages incorporating real insights from relatable sources may be necessary to spark MHC normalization and information dissemination via WOM. Endorsements from credible sources and trusted brands, such as Trojan, may also speed up MHC market introduction and uptake by allowing consumers to more easily evaluate whether MHC would be a beneficial option for them.

Limitations and Future Research

Combining multiple qualitative methodologies allowed for the collection of robust consumer insights related to the potential introduction of MHC, including attitudes, perceptions, and marketing considerations. Findings contributed practical and applicable solutions for marketers to prepare consumers for the introduction of a novel health product. However, study limitations exist. Due to the nature of qualitative research, generalizability is limited, specifically outside of a university setting. While focus group participants were encouraged to keep others' responses confidential, complete confidentiality cannot be guaranteed, potentially limiting open sharing within the group and introducing social desirability bias. Additionally, participants were recruited via email and in-person recruitment in a university setting, resulting in a convenience sample and, thus, not representative of the entire campus population. The overall sample consisted of more male than female participants, indicating potential overrepresentation of male perspectives in the results. Despite these limitations, this study offers novel contributions to MHC acceptability research and serves as the first empirical study applying consumer insights and the DOI framework to a novel male contraceptive product before its release. Future research should consider creating messaging prototypes based on consumer insights and test the effectiveness of these messages on MHC acceptability and intention to use.

Conclusions

This is the first empirical study assessing consumer insights and applying the DOI framework to a novel MHC product before its release. The purpose was to understand attitudes toward existing and prospective male contraceptive methods and to identify DOI-informed marketing strategies for MHC. Findings suggest three key messaging strategies may be most effective for MHC promotion based on consumers' openness to the innovation: 1) aspirational marketing, 2) informational marketing, and 3) social norms marketing. Results provide practical first steps for marketers that can be applied to future MHC or other novel contraceptive product marketing and promotion efforts. Concepts from consumer behavior and DOI can inform promotional strategies for male contraceptive methods.

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CHAPTER 3: USING FORMATIVE CONSUMER RESEARCH TO DEVELOP AND TEST NOVEL HEALTH PRODUCT MESSAGING: A CASE STUDY OF MALE HORMONAL CONTRACEPTION

Abstract

Background: In October 2018, a novel male hormonal contraceptive (MHC) gel entered Phase 2 clinical trials, a promising development for family planning. However, eventual uptake of potentially controversial innovations, like MHC, requires informed marketing and promotional strategy. Formative research methodologies can aid in determining consumer perspectives, providing a framework for effective marketing strategy to encourage MHC adoption upon market introduction.

Methods: Six focus groups (n=29) and semi-structured interviews (n=20) among college-aged men and women aged 18-26 years were conducted. Ads were created based on focus group results and tested in the interviews. Content analysis served as the data analysis strategy, allowing for a constant comparative approach to data contextualization and theme identification.

Results: Focus groups offered insight into perceptions of message development for MHC. Four themes emerged: 1) humor, 2) information, 3) relatability, and 4) credibility. Message testing in interviews yielded an understanding of elements participants responded most strongly to, including: 1) ad sentiment, 2) trustworthiness, and 3) visual appeal.

Conclusions: Findings suggest representations of genuine experiences, trustworthy characters, and practical messaging were most appealing to participants in the context of an MHC ad. The example of MHC as a novel health product was well-positioned for the current study because, as it is not yet available, the baseline for past behavior or use is zero, eliminating bias from experiences or extensive preconceived notions. Results provide practical implications for marketing practice that can be applied to future promotional efforts for MHC, or similar novel health products.

Introduction

In October 2018, a novel reversible male hormonal contraceptive (MHC) gel entered Phase 2 clinical trials (Anawalt et al., 2019; NIH, 2018), a promising family planning development that may soon impact the lives of reproductive-aged men and women. Until recently, male-specific contraceptive options had not seen significant developments for over a century, limiting available methods to the male condom and vasectomy (Amory, 2016; Lloyd & Waterfield, 2016). MHC developments include the aforementioned transdermal gel (Anawalt et al., 2019; Roth et al., 2013), an injection (Behre et al., 2016; Gu et al., 2009), a subcutaneous implant (Wang et al., 2016), and an oral pill (Bakare, 2019). These advances suggest the prospect of MHC may soon become a reality, providing another family planning and pregnancy prevention tool. As approximately half of all pregnancies in the United States are reported as unintended (Guttmacher Institute, 2019), contraceptive barriers and potential improvements must continue to be examined, including novel developments and male-specific options, like MHC. Foundational knowledge surrounding MHC among the target market has been studied in the context of acceptability (Dismore et al., 2016; Glasier, 2010; Heinemann et al., 2005; Lloyd & Waterfield, 2016; Wilson, 2018), suggesting the importance of examining the target market's existing perspectives. Investigating the perspectives and interest of a novel health product like MHC, (Truong & Dang, 2017), coupled with formative market research methodologies (Truong & Dang, 2017), may be well-positioned to inform the effective promotion and uptake of MHC, upon release.

Current MHC Consumer Perspectives of MHC

An effective marketing and messaging strategy is crucial to novel product development. Marketing these products requires marketers to begin to influence demand, adoption intention (Bruce et al., 2012), and messaging strategy that recognizes consumer needs and desires before a product's release. Therefore, understanding existing MHC consumer perspectives, interest, and concerns is critical to market introduction.

Male Consumers. Glasier (2010) suggests men are generally willing to assume contraceptive responsibility given its proposed effectiveness in pregnancy prevention and security in having backup protection. Openness toward accepting a shift in contraceptive roles, responsibilities, and autonomy suggests evidence of MHC support among men (Dismore et al., 2016; Lloyd & Waterfield, 2016; Walker, 2011). Some men desire increased contraceptive responsibility to relieve partner burden (Campo-Engelstein, Kaufman, & Parker, 2019), while

others want control due to potential partner distrust (Glasier et al., 2000; Lloyd & Waterfield, 2016). Despite evidence of MHC efficacy in past clinical trials (Behre et al., 2016; Soufir et al., 2011; Thirumalai & Page, 2019), hesitation toward MHC exists. Barriers to MHC acceptance include preferences for male condom use and reluctance to accept a novel option (Walker, 2011), along with negative side effects (van Wersch et al., 2012) and adverse health outcomes (i.e., ejaculation interference (Wilson, 2018), loss of fertility (Walker, 2011). As contraception is commonly associated with women, constructions of emasculation based on the idea of a "male birth control" indicate the social climate may require adequate preparation for this shift in contraceptive discourse (Campo-Engelstein, 2012; Dismore et al., 2016).

Female Consumers. Social norms perpetuate the idea that women are primarily responsible for contraception and pregnancy prevention (Bertotti, 2013; Weber, 2012). Thus, upon MHC release, women's positive attitudes, support, and trust could potentially influence men's uptake behaviors (Glasier et al., 2000; Peterson et al., 2019), indicating an understanding of their position on MHC is crucial. Studies exploring women's MHC perceptions are limited and mixed (Dorman et al., 2018; Eberhardt et al., 2009; Glasier et al., 2000; Heinemann et al., 2005; Marcell et al., 2005; Martin, Anderson, et al., 2000; O'Connor et al., 2005; Peterson et al., 2019). Women are optimistic toward the prospect of MHC; however, they share doubts about a male partner's ability to use MHC correctly (Eberhardt et al., 2009). Existing perceptions surrounding male irresponsibility in sexual encounters may contribute to women believing this behavior will translate to MHC misuse (Marcell et al., 2005). Women may also expect MHC release to result in decreased male condom use, potentially contributing to increased STI transmission (Dismore et al., 2016). As women are faced with direct health and social effects of unintended pregnancy (Guttmacher Institute, 2019), some believe men may fail to understand the importance of participating in pregnancy prevention efforts (Kimport, 2018). However, men's perceptions of female contraceptive behaviors have been shown to affect contraceptive decision-making (George et al., 2019), suggesting women may also impact men's choices. Women can strategize to influence male partner condom use (French & Holland, 2013; Holland & French, 2012; Horan & Cafferty, 2017); thus, these behaviors may translate to MHC negotiation. Understanding and addressing perspectives and concerns among both men and women may assist in preparing for MHC release.

Consumer Research in Marketing Strategy

Qualitative consumer research and its utility in marketing strategy first gained recognition in the 1930s and has since continued to gain currency in the market research field (Belk et al., 2012). Qualitative consumer research aids in exploring the depth of discourse or cultural underpinnings that infuse consumer behavior with meaning (Belk et al., 2012). As consumers are more likely to respond to advertisement/messaging strategies aligning with their own values (Belk, 1988; Nichols & Schumann, 2012), understanding and applying consumer wants and needs in product promotion is especially valuable. While quantitative methodologies, based in theory, measurement, and testing, have been central in marketing research (Iacobucci & Churchill, 2009), qualitative methodologies are shown to be especially well-equipped to access the intricacies present in consumer narratives, specifically related to product advertising (Wardle, 2002). Focus groups are a mainstay in qualitative research, allowing for perspectives to be shared and understood in a communal setting (Belk et al., 2012; Gill et al., 2008; Kitzinger, 1995; Krueger & Casey, 2014). Data from focus groups is not only generated from the content of the conversations; this methodology also considers patterns and trends of participant interaction as part of the data, as well (Belk et al., 2012; Gill et al., 2008; Krueger & Casey, 2014). However, focus groups have limitations. Data obtained from focus groups may not reflect individual participants' actual thoughts, as groupthink and attempts to fit in may influence responses (Boateng, 2012).

Semi-structured interviews are an additional staple of qualitative consumer research. The semi-structured nature of the interview allows for dynamic movement throughout the questions, as researchers have the flexibility to ask the participant questions, listen to their answers, probe on their responses, and ask more questions within the context of their responses (Belk et al., 2012; Rubin & Rubin, 2012). Learning about individual experiences, preferences, and needs via participant accounts results in rich, interpretive data. This approach offers a level of in-depth insight unparalleled by many other qualitative and quantitative methods. Thus, coupling interviews with focus groups increases the likelihood of gathering true, personal perspectives both in one-on-one and group settings, while offsetting potential groupthink mentality or social desirability concerns (Belk et al., 2012; Gill et al., 2008). Given an innovation like MHC, marketers are tasked with promoting a product similar in function to existing contraceptive options, yet novel in concept. Through formative research methodologies, marketers can determine the true perspectives of the target consumer (Belk et al., 2012; Denehy et al., 2016; Martinez et al., 2012;

Sundstrom et al., 2015) and apply it to MHC messaging and promotion. Thus, consumer research can provide a framework for effective marketing strategies to encourage MHC adoption upon market introduction.

Advertisements (ads) are prominent representations of marketing strategy. Ads have several purposes: to drive sales and improve product recognizability, and also to change attitudes (Belk, 2017; Wardle, 2002). Social advertising relies on the power of advertising to influence attitudes (Bart et al., 2014; Belk, 2017; Wardle, 2002), a particularly important purpose in the case of MHC, given the potential controversy it may introduce in response to existing contraceptive norms. Thus, understanding what ads may need to incorporate for successful MHC promotion may combat resistance, setting the stage for more positive MHC reception. Effective ads and social marketing efforts, specifically for contraception, have primarily leveraged messaging strategies emphasizing lifestyle factors (van Leeuwen et al., 2016; Watkins, 2012), information (i.e., statistics and straightforward facts) (Sundstrom, DeMaria, et al., 2015), relatability (DeMaria et al., 2017), and choice (Medley-Rath & Simonds, 2010). Given previous success in using qualitative consumer research for ad development, this methodology provides a unique opportunity to assess effective attributes for the promotion of an innovative product like MHC. Available research surrounding potential MHC ad design is limited and dated (Curtis, 1997). Thus, there is a need for investigation into the effective design and evaluation of ad messages from a consumer behavior perspective, specifically focused on promoting MHC acceptability and future adoption.

Study Purpose

The purpose of this study was to examine college-aged men's and women's perceptions of effective marketing strategies and influential ad attributes for an example MHC method, the transdermal gel. Consumer insights provided a foundation for MHC ad prototypes design and creation. An additional study purpose was to evaluate the appeal of the ad prototypes among college-aged men and women and identify salient messaging concepts for effective MHC promotion. The study examined the following research questions:

RQ 1: What are the most effective attributes in a marketing message for a new MHC method among college-aged men and women?

RQ 2: How do messaging concepts/strategies resonate with college-aged men and women?

This research served as the first empirical study incorporating consumer insights to design and test marketing messages for a novel male contraceptive product before its release. These findings provide practical first steps for marketers that can be applied to future marketing and promotional efforts for MHC, or similar novel health products.

Methods

Focus groups and individual semi-structured interviews were conducted among college-aged men and women attending a large Midwestern university from April to November 2019. Message concepts and design preferences were collected via 6 focus groups across 29 men and women. Ad prototypes were then designed based on insights from focus groups and tested in 20 individual semi-structured interviews. Focus groups, in particular, allow researchers to explore a topic, collecting group language and experiences and apply them in later stages (Gill et al., 2008). In this case, the focus group data contributed to ad prototype design, as well as the message testing that occurred in the interviews. This iterative process, where message concepts and designs are created and tested to be ultimately revised, is essential to ensure the formative research process remains data-driven and reliable (Colarossi et al., 2010; Sundstrom, DeMaria, et al., 2015). Both focus group and interview samples were independent of one another, yielding a total sample size of 49. The authors' university institutional review board (IRB) approved the study.

Focus Group Discussions

Male-only and female-only focus groups were conducted with 29 participants across all six focus groups (female n=13; male n=16). Participants for male focus groups were primarily recruited via targeted e-mail communication to male undergraduate students at a large Midwestern university, aged 18-26. Secondary tactics consisted of in-person recruitment, and snowball sampling. Focus group scheduling, including locations and duration, was specified in recruitment materials. Participant availability during one of the three provided times served as an additional eligibility criterion. Participants were also asked to complete a brief demographic survey. The female-only focus groups followed similar sampling procedures, with the distinction that recruitment occurred primarily in-person. Focus groups continued until theoretical saturation was reached, or when no new data occurred and the thematic categories were reinforced by additional

data (Corbin & Strauss, 2008; Guest et al., 2017). The number of focus groups necessary for explanatory power has been recommended by past methodological literature (Carlsen & Glenton, 2011; Guest et al., 2017). A review examining focus group sampling found that approximately 80% of themes are discovered within the first two to three focus groups and 90% were discovered between three to six focus groups (Guest et al., 2017). Thus, the number of focus groups adequately achieved theoretical saturation.

The first author and a secondary trained moderator led the male and female focus groups, which were audio-recorded, ranging from 45 to 120 minutes (76.72±27.81). The first author served as the primary moderator, driving the discussion, while the secondary moderator observed, recorded, and managed tasks. Participants did not receive a monetary incentive, but refreshments (i.e., pizza, soft drinks) were provided to encourage participation and create a comfortable atmosphere. The semi-structured focus group protocol allowed for flexibility in adding and editing questions or modifying question order (Rubin & Rubin, 2012). This methodology also permitted participants to introduce new and relevant concepts organically throughout the conversation. Overall, a semi-structured approach ensured each focus group discussion was tailored to each group to maximize capturing unique experiences related to study aims. Each discussion in the male-only groups began by asking participants about their experiences with and knowledge of existing male contraceptive methods. Then, participants' knowledge and interest in novel male contraceptive methods were explored. Participants received a brief news article in conjunction with this series of questions, detailing one particular MHC method that had entered phase 2 of clinical trials in the recent past, a transdermal gel. They were asked to read and discuss their immediate thoughts. Lastly, participants were asked to provide recommendations surrounding potential effective marketing strategy (e.g., "What would you like to see in an advertisement about a new male birth control method? " and "What messaging/imagery would have to be included on an advertisement to get your attention and [influence MHC] purchase?"). The data examined in the current study focused on this last section of questioning, specific to recommendations for effective messaging strategy, which were used to design the ad prototypes tested in the interviews. The female-only focus groups covered the same topics discussed in the male-only focus groups. However, as women would not be directly using MHC methods, specific questions surrounding use or use intention were framed to better understand how women would feel if their partners, or other men in their life, were to use such a product.

Individual Interviews

College-aged men and women participated in individual semi-structured interviews, with a total sample size of 20 participants (female *n*=7; male *n*=13). Semi-structured interviews followed the completion of the initial focus group study. Participants were recruited primarily via in-person presentations and snowball sampling, using e-mail communication only if necessary (i.e., follow up or requested communication). In-person recruitment occurred via communication with leaders and executive members of university-sponsored organizations, such as fraternities, sororities, cultural centers, and health-related clubs, where the first author requested time to solicit participation at organized group meetings. Interviews were scheduled after the brief talk to solidify and encourage participation. Each individual interview lasted from 45 to 60 minutes (51.73±10.28). The first author conducted all interviews at a time and place convenient to each participant. Upon completion of the interview, participants completed a brief demographic survey and received a $25.00 Amazon gift card to compensate for their time and insights.

The semi-structured interview protocol, similar to the focus groups, allowed for flexibility in moving through question order to encourage organic introduction to new and relevant concepts (Rubin & Rubin, 2012). To assess consistency across group and individual insights, the interview inquired into similar topics as the focus groups. Additionally, the interviews included a message testing component, where the interviewer displayed a series of advertisement prototypes, designed based on the formative research provided by the focus groups, and assessed their responses to each (e.g., “What would you change, add, or delete on this particular advertisement?” and “How well do you feel this advertisement relates to you? Your life? Your friends?). Attributes present in the advertisement prototypes included a combination of either an informational or colloquial message along with one other additional attribute relating to either: message/image relatability (e.g., aspirational or realistic), sentiment (e.g., serious or humorous), or perceived credibility (e.g., image of a doctor vs. other image). Table 2 provides a clear visualization of attribute dimensions and levels incorporated in ad prototype design.

Table 2.Ad Prototype Attribute Matrix

	Attribute Levels	
Attribute Dimensions	**Option 1**	**Option 2**
Message Strategy	Informational	Colloquial
Message/Image Relatability	Aspirational	Relatable
Message/Image Sentiment	Serious	Humorous
Perceived Credibility	Image of Doctor	Other Image

Further, items in this section also asked participants to rate on a scale of 1 to 10 how informational/realistic/serious/humorous/etc. they perceived each advertisement to be (e.g., "On a scale of 1 to 10, how informational do you perceive this advertisement to be?"). Participants were then prompted to share more about why they rated each advertisement the way they did. This aided in understanding whether the advertisements were adequately representing the attributes intended to be present in each, while also allowing participants to contribute insights on how to improve ad appeal and effectiveness. This method contributed to understanding which messaging concepts resonated best with the target audience, and whether group insights were echoed on a more individualized level.

Interviews continued until theoretical saturation was reached. A sample size of approximately 12 to 15 is recommended by methodological literature, as concepts are typically fully developed within this sample range (Guest et al., 2006). As the main objective of interview methodology is understanding participant narratives (Corbin & Strauss, 2008; Small, 2009; Weller et al., 2018), the sampling strategy is determined by logical inference, that is, the validity is assessed based on the depth of the information participants can provide (Headworth, 2019; Malterud et al., 2016). Thus, theoretical saturation in the current study was achieved within the range of interviews conducted.

Data Analysis

Focus group and interview audio were transcribed verbatim and content analysis within and across transcripts provided a basis for data analysis. Content analysis allowed for a constant comparison approach, allowing for meaning making from within participant words, phrases, and overall narratives. HyperRESEARCH 4.0.1, a qualitative data management program, facilitated data organization and management. A codebook was developed based on focus group and

interview guides, initial reading results, and existing literature, and consisted of keywords and phrases extracted from participant narratives, aiding in breaking down and sorting the data. For the interview transcripts, codes to sort data from the message testing component by ad (i.e., ad ratings, requested modifications) were also included. Open coding occurred first, in which keywords and phrases included in the codebook were attached (i.e., highlighted or flagged) to transcript sections based on the content of those sections (Deterding & Waters, 2018). Initial data impressions were then refined, and axial coding followed, which allowed codes and categories to be compared to overarching concepts and extant literature to better explain the data. This process allowed for emergent theme identification through code and category comparisons of overarching concepts and extant literature to better explain the data. This process was repeated for all focus group and interview transcripts, independently. Ad ratings from the interview message testing component were also reported, offering the means and medians for each ad attribute rating (see Table 3).

Table 3.Ad Ratings

		(n=20)	
		Mean/Prop.	**Median**
Ad 1	Informational	2.90	2.00
	Realistic	5.15	5.00
	Humorous	7.85	8.00
	Credible	3.50	3.50
Ad 2	Informational	3.95	4.50
	Realistic	7.20	7.50
	Humorous	1.20	1.00
	Credible	5.65	6.00
Ad 3	Informational	5.45	6.00
	Realistic	7.45	8.00
	Humorous	2.95	2.50
	Credible	6.30	7.00
Ad 4	Informational	4.80	4.50
	Realistic	7.55	8.00
	Humorous	3.35	4.00
	Credible	5.90	7.00
Ad 5	Informational	9.00	9.00
	Realistic	8.10	8.00
	Humorous	1.20	1.00
	Credible	8.75	9.00
Ad 6	Informational	4.15	4.00
	Realistic	6.60	6.50
	Humorous	1.75	1.00
	Credible	6.65	7.00

Results

Message development and testing results are presented below. Quotes are marked with MFG or FFG to indicate insights shared in either the male or female focus groups, respectively, and with FI or MI noting female or male individual interviews, respectively. Participant demographic information is outlined in Table 4.

Table 4. Participant Demographics

	(n=49)
	Mean/Prop.
Age	21.61±1.78
Sex	
Female	20 (40.82%)
Male	29 (59.18%)
Sexual Orientation	
Heterosexual	43 (87.76%)
Bisexual	6 (12.24%)
Relationship Status	
In an exclusive/monogamous relationship	22 (44.89%)
Sexually active, but do not consider it a relationship	13 (26.53%)
Not currently sexually active with another person	11 (22.45%)
Have never been sexually active with another person	3 (6.12%)
Primary Contraceptive Method*	
Male condom	19 (38.78%)
Female hormonal contraception	18 (36.73%)
Withdrawal	7 (14.29%)
None	2 (4.08%)

Note: Results represented as M±SD or n(%)
*Values that do not add to sample total indicate missing data

Phase 1: Message Development

After exposure to the MHC transdermal gel example, focus group discussions surrounded perceptions of necessary marketing and messaging strategy of a potential MHC method. Four themes emerged suggesting the most salient concepts for participants were: 1) information, 2) relatability, 3) humor, and 4) credibility.

Information. Participants emphasized the importance of facts and information within an ad or marketing message. A female participant supported this, suggesting the novelty of a potential MHC method may be enough to spark interest, but that information was key:

> Honestly, [ads] literally [need] to just talk about what it is. Because it's so new. The product itself is enough for me to be curious about it. So, as long as an [MHC] ad explains how [cutting] edge and new it is, then I would [read the information] about it [being] the only [male birth control] that we're offering right now and it works. [FFG]

Another female participant commented on the importance of information over sentiment or emotion-inducing messages (i.e., humor), "[An MHC method ad] probably doesn't even have to be as funny, as [it needs to be] informative to get the word out then it starts to get people to really want to use it." [FFG] Another participant supported this, stating, "I think you have to have like a picture, for sure, to catch attention, but I think my eyes would start looking for like…clinically proven, it's been tested, works this amount of the time." [FFG] Female participants also shared that getting ahead of potential side effect concerns via informational messaging may be effective, especially among men, "yeah, also reaffirming [to men] that the testosterone is not going to affect your muscles. And you won't get emotional, don't worry." [FFG] Male participants agreed with this informational strategy, indicating visible MHC statistics or facts would increase interest and decrease hesitation: "if they present actually cited statistics or facts in the advertisement that people can look at and know it is backed by the FDA." [MFG] Another male participant in the same focus group supported this, suggesting information might serve as a gateway for discussion among social networks, "I think information will be really good…then you can talk [about MHC] with your friends or with your doctor…because it's new. So, you want to really have any information about it [on an ad]." [MFG] Participants also discussed the importance of MHC ads being "straightforward," "simple," and "honest." One male participant shared, "don't sugar coat it to the point that it's kind of a lie. Don't raise expectations and then disappoint people." [MFG] Another participant commented on the common negative perceptions of ads, and suggested how MHC ads could combat this:

> I honestly hate [ads] just because you know, they're [ads], so they're cheesy as f**k. I wouldn't want a couple being like, 'it worked for us.' I just want a picture of [the MHC method] saying, 'hey, here it is. FDA approved. It works.' Cool. Let's go. [MFG]

Thus, an informational, straightforward messaging strategy may counteract hesitation due to the novelty of a method and circumvent side effect/efficacy concerns.

Relatability. Participants also mentioned relatability as a relevant concept to be incorporated in messaging strategy for a potential MHC method. Relatability was conceptualized in various ways by participants, with some participants valuing the representations of real experiences in ad messages. One female participant offered an example of a relatable message, "'Scared that your condom broke?' [The message should be] something relatable to people. I think that most people can be like, 'yeah that happened to me!'" [FFG] Another female participant offered further explanation of the importance of relatable messages, especially for a potential MHC method:

> I think of a tampon commercial, and I always think of the happy girl on the beach saying, 'I don't have my period!' I don't know, it's kind of off-putting, it seems like it's trying to be what the experience is not. I would be more drawn to something that is just more genuine, honest, real and like the person that's pitching it cares about how it's affecting consumers. [FFG]

By highlighting the consequences of marketing messages that downplay human experiences, this participant also stressed the importance of representing genuine, honest experiences in relatable marketing. A male participant discussed that marketing messages focused on normalizing birth control among men may also contribute to relatability, "I definitely think…the biggest thing is gonna be normalizing [MHC in ads] because it's so new and something that guys are not used like, normalizing [MHC] is going to be huge." [MFG] Another participant agreed, suggesting successful MHC promotion may require social acceptance and normalization, so an MHC ad should be approached, "maybe like the way you'd approach like, a friend almost." [MFG] A female participant also weighed in on the importance of normalizing MHC via marketing messages:

> I just think normalizing [MHC is important] too. Sex is a very normal, healthy thing that everybody engages in. So, saying like, 'this isn't going to make you like less of a person or like a man, it's just providing you an extra something to protect you' [might work well]. [FFG]

Other female participants suggested relatable marketing messages may "encourage [MHC] as a smart choice, the smart thing to do." [FFG] Another supported this, stating:

> I would say at least project that it's enabling you to have more fun and be responsible. So, you don't have to have more concern in the back of your mind, like it is just easier for you to have fun. [FFG]

Representing relatability as a smart choice appeared to appeal to female participant values, resulting in relatable feelings toward the ad message, and subsequently, the product.

Humor. Humor was described as an effective advertising method in similar products (i.e., male condoms), with some participants suggesting this could transfer to marketing a potential MHC method. One male participant offered an example of how a popular male condom brand used humor in their messaging strategy:

> Like, I don't know if you guys have seen like some of the newer Trojan commercials, but they're just f**king funny. Like, he's like, oddly holding a banana [and putting the condom on it] that's just funny to me, it's just silly. So, it needs to be kind of something more along the lines of that. [MFG]

Another male participant shared an additional example of a humor message that appealed to him, "I wouldn't mind seeing a comedic [MHC ad]. Like 'do you hate kids?'" [MFG] A female participant agreed with this, again referencing a popular male condom brand and suggesting humorous messages may be more likely to captivate target audiences:

> In my opinion, [MHC ads should be] oriented towards like a younger crowd because sex is more fluid now in our generation…there's always like a bunch of Trojan condom advertisements, and they've made them funny now, it would get like a younger person's like attention. [FFG]

Participants did note, however, that instilling trust in the product and promoting brand recognition were necessary prerequisites to releasing a humorous MHC ad, which was why they felt ads by the trusted condom brand was effective, "I literally trust Trojan with my life…I mean just like having that brand recognition, you see that name and think, 'oh hey that must work.'" [MFG] A female participant agreed with this, insinuating humorous ad efficacy is contingent on brand trust:

> If [an MHC ad] just jumped in like right away… [it would not be] competitive. With the Trojan commercials, they're funny but you know what it is, right? It's trustworthy…they can be funny about it because they have trust built with their customers. And they like have like a global recognition, you know, they've been around. [FFG]

While most participants felt humor would be a better approach to MHC messaging, some suggested serious or a combination of serious and humorous messages may be more effective in promoting MHC, due to its novelty. A female participant explained, "I think it should have some maturity value in it. It should open with some humor and go into something a little bit more serious, to catch the eye of consumers." [FFG] A male participant expanded on this, suggesting humor could aid with MHC ad recall, "it would have to be something that people would take seriously,

but would still kind of make ‘em laugh a little bit and [help them] think about it later.” [MFG] Thus, leveraging humor, combined with an element of trust, may provide a unique MHC marketing opportunity.

Credibility. Participants considered credibility a necessary component of MHC messaging, building upon the discussion of trust mentioned in the aforementioned theme. A male participant explained, “I feel like [whether you pay attention to] a product is based off of…the credibility of [the ad], like not too many ads are actually good, but if you see a [credible] ad…you might be more likely to look at it.” [MFG] Primarily among men, the association of a product with a “legitimate entity” was also shared as contributing to credibility:

> It appears the credibility of ads would be through physicians themselves. So, the ad would say ‘consult your primary physician’…then you can try it and if it doesn't work then...you know, so it being from a credible source, that really helps. It's being trustworthy. [MFG]

Legitimate sources were also discussed as regulated or trustworthy MHC informants, further demonstrating the importance of representing credibility on MHC ads. “If it was like a [sales] rep…if there was just a dude walking around campus that was like 'hey, I'm here to talk about this'…I know it’s regulated.” [MFG] Another male participant alluded to perceptions of legitimacy as most important in MHC ads, “if the [ad is] well done and seems legit…I'd be more willing to do it.” [MFG] Interestingly, while men cited legitimate sources as physicians and sales representatives, women felt that men would be most influenced by celebrity endorsements and be more likely to view them as credible, “doesn't Shaq do those commercials? Like if you have a pretty well-known celebrity in the male world, that would help credibility.” [FFG] Another female participant agreed, “you're talking in like a marketing context, having someone like the Rock…a celebrity endorsement of someone who's like very masculine.” [FFG] Male participants directly opposed this, “P1: Yeah, I don't care about celebrities. Or at least guys don't. P2: Yeah, guys don't give a s**t. P3: I don't really care what you're advertising, put points on the board. That's your job.” [MFG] Though representing credibility was important for both men and women, the definition of credible, legitimate sources differed across genders.

Phase 2: Message Testing

Focus group findings from Phase 1 informed the design of the ad prototypes used in the message testing component (see Figure 1). In the analysis, themes emerged related to the elements of the ads participants responded most strongly to: 1) sentiment, 2) trustworthiness, and 3) visual appeal.

Ad 1: Humorous | Ad 2: Serious | Ad 3: Relatable

Ad 4: Aspirational | Ad 5: Informational/Credible | Ad 6: Non-Informational/Credible

Figure 1. Ad Prototypes

Sentiment. Participants responded to the message and imagery sentiments, attributing these to how the ad prototypes would make them feel about a potential MHC product. As Ads 1 (humorous) and 2 (serious) represented opposite responses to an unintended pregnancy situation, participants were able to evaluate the sentiments they preferred to see in that situation. One male participant commented on the humorous ad, stating this approach may negatively alter his view, "[I would view MHC] probably a little bit negatively [because the ad] is kind of like trying to catch your attention with some shock value, but it doesn't seem like something I associate with a medical product." [MI; Ad 1] A female participant agreed, suggesting a "more serious route [may be more effective for an MHC ad] because the pregnancy part seems more like it would be upsetting for

both of them." [FI; Ad 1] Upon viewing the serious ad, a male participant further confirmed the serious sentiment as more favorable for promoting MHC, "I feel like this one would play on my emotions better because this is more how I would feel about the situation. Not good. It's not a light-hearted situation." [MI; Ad 2] Making light of the situation via the humorous sentiment was not received well, contrary to contentions made in the focus groups, suggesting that in the context of a novel reproductive health product ads that present genuine experiences may be more effective.

Trustworthiness. Various dimensions of trust and trustworthiness emerged within participants' evaluations of the ad prototypes, particularly in the discussion of Ads 5 and 6, both containing images of a doctor. Aligning with credibility discussions in focus groups, most participants favored Ad 5, mainly referring to the doctor image increasing credibility and trust, "I [like that this is] trying to give off credibility. Having a doctor [on the ad] puts it out there that you can ask your doctor about it…[they're] prescribing it or telling you to use it, so it's effective." [MI; Ad 5] A female participant also alluded to the perceived trust in doctors as credible figures, "people usually trust doctors. So, in an audience, where there's concern of unwanted pregnancy, [this might be effective]." [FI; Ad 5] Even with the acknowledgment that a doctor on an ad may not be a real doctor, participants still felt this imagery contributed to credibility and trust in an MHC product, "[This ad shows that MHC] is something that's been tested by doctors, adding the doctor to it, whether he's an actor or not, he likely is, it just makes it seem more credible." [MI; Ad 6] This suggests images of trustworthy characters, such as doctors, may instill feelings of dependability and trust in a potential MHC product. Participants also mentioned informational messaging as an additional contributor to presenting trustworthiness of the product. A male participant expanded on this, suggesting the informational component made Ad 5 the most effective in instilling trust for him:

> If I'd seen [this ad] for the [MHC] product, it would be the most effective because it relates to me and how serious I feel the problem is by portraying all the information. It uses kind of that lingo, so I feel that it's something that's been approved by the FDA...everything's just feels right, it feels like an [effective] medication ad. [MI; Ad 5]

Trustworthiness was conceptualized by the presentation of informational messaging, echoing insights from focus groups and indicating the importance of implementing this strategy in MHC marketing efforts. Participants responded most positively to the combination of both informational

messaging and the doctor character in Ad 5, demonstrating these elements may work together to represent trustworthiness in a novel contraceptive product ad.

Visual Appeal. Participants commented on the visual appeal of the ad prototypes, with some preferring relatable or aspirational concepts, while others preferred the doctor image, as stated above. One male participant expressed favorable views on Ad 3, alluding to the appeal of a relatable character, "this [Ad 3] really caught me. I like it, just the words on there and obviously, [I can relate to it], it's a guy getting ready in the morning, it just appeals to me." [MI; Ad 3] A female participant commented on Ad 4's visual appeal, the aspirational concept, suggesting the imagery successfully contextualized a potential situation in which one might use MHC, "I think that picture is really good, I feel like it gives a good context of things [related to MHC]." [FI; Ad 4] Other participants echoed previous perspectives, favoring the doctor image because "it makes [the ad] seem more official, more professional. It's kind of something that you'd want to go talk to your doctor about." [MI; Ad 5] Participants also offered suggestions for MHC ad concepts, most commonly related to representations of how the product is used, "maybe a picture of a guy rubbing [the gel on] actually, like their hand on their shoulder. I just think a picture of him using the product [would be helpful]." [FI; Ad 3] A male participant further detailed this addition would increase appeal:

> I kind of like [Ad 3] because it tells you, like you just add one more step your routine, like you get out of the shower, trim your beard, you're putting on your moisturizer, doing your hair. I just think [it should also show] putting the gel on your shoulders. [MI; Ad 3]

Thus, ad concepts audiences feel they can relate to or trust, along with practical messaging or imagery meant to increase agency in use may be best represented via the visual appeal of an MHC ad. Figure 2 lays out the ad prototypes in order of most to least preferred by interview participants, along with the frequencies of interview participants who felt positive, neutral, and negative sentiments toward each ad.

Ad 5: Informational/Credible
[Positive *n*=18; Neutral *n*=2; Negative *n*=0]

Ad 3: Relatable
[Positive *n*=12; Neutral *n*=6; Negative *n*=2]

Ad 4: Aspirational
[Positive *n*=10; Neutral *n*=8; Negative *n*=2]

Ad 6: Non-Informational/Credible
[Positive *n*=9; Neutral *n*=3; Negative *n*=8]

Ad 2: Serious
[Positive *n*=8; Neutral *n*=3; Negative *n*=9]

Ad 1: Humor
[Positive *n*=4; Neutral *n*=4; Negative *n*=12]

Figure 2. Ad Prototypes by Preference

Discussion

This study utilized qualitative consumer research to examine college-aged men's and women's perceptions of effective marketing strategy and influential ad attributes for a novel hormonal contraceptive product for men. Studies demonstrating the utility of employing formative research to inform ad development are valuable, yet limited (Martinez et al., 2012; Noar, 2012; Sundstrom, DeMaria, et al., 2015), especially in the context of contraceptive and reproductive health products (Campo et al., 2013; Colarossi et al., 2010; DeMaria et al., 2017; Sundstrom, DeMaria, et al., 2015; Sundstrom et al., 2016). This indicates a valuable, yet underexplored area for consumer researchers and marketers.

Focus group discussions illuminated salient concepts for MHC marketing, including humor, relatability, information, and credibility—supporting past research in contraceptive advertising (Campo et al., 2013; Colarossi et al., 2010; DeMaria et al., 2017; Sundstrom, DeMaria, et al., 2015; Sundstrom et al., 2016). Humor in marketing has been shown to contribute to increasing ad likeability while creating a positive mood related to the product (Djambaska et al.,

2015); however, when used inappropriately (e.g., crude, offensive), humor can result in negative side effects (Koneska et al., 2017). In contraception, as most individuals are knowledgeable contraceptive benefits, humor has been used as a strategy to increase awareness in a lighthearted manner (Vega, 2013). Upon ad creation and message testing, the lightheartedness perpetuated by the humorous ad was not well-received, indicating the use of this sentiment in the context of a novel contraceptive product may not be as effective. Relatability also emerged as a relevant and well-accepted concept among participants, supporting past contraceptive promotion research (DeMaria et al., 2017) and further emphasizing the importance of representing real experiences in potential MHC marketing strategy. Message testing confirmed relatability as a significant marketing tactic among participants, specifically contributing to the ads' visual appeal. Thus, in the context of MHC or other novel contraceptive products, the representation of a relatable character or drawing on authentic experiences most people can relate to may better align with consumer values.

Participants felt informational ads with elements of credibility were most useful for promoting MHC. This builds on previous efforts in contraceptive promotion which also suggest information on ads (i.e., statistics, straightforward facts) are compelling to consumers (Sundstrom, DeMaria, et al., 2015), while contraceptive messaging credibility can significantly impact uptake and correct use (Neumark et al., 2012; Wagner et al., 2018). Participants in the message testing component also reinforced this strategy, primarily referring to this combination as instilling trust in a potential MHC product. As credibility in an ad message is most influential when a recipient has little to no information about a product (Munnukka et al., 2016), understanding consumer conceptualizations of credibility is crucial for novel product marketing. Credibility is often comprised of trustworthiness and expertise (Munnukka et al., 2016), supporting participant narratives surrounding partiality toward the doctor image, as well as suggestions to present how the product is used in an ad. As the purpose of informational advertising is to reduce the cognitive effort required to search for new product information (Zhang et al., 2012), this strategy, along with ad concepts audiences feel they can relate to or trust, and practical messaging or imagery meant to increase agency in use, may be an effective combination for marketing a novel contraceptive product, like MHC.

Implications for Marketing Practice

Despite the commercial unavailability of MHC, findings from this study provide practical implications for marketing practice within the context of novel health products. Using focus groups to gather initial insights, then creating ad prototypes, and testing them in follow-up interviews ensured participant narratives drove the research process, increasing reliability (Colarossi et al., 2010; Sundstrom, DeMaria, et al., 2015). Informing marketing strategy with formative research can aid in uncovering the intricacies of consumer perspectives, especially surrounding novel health products. Understanding and applying consumer wants and needs in product promotion is valuable, not only to ensure commercial success, but to also instill trust and consumer loyalty (Sahin et al., 2011). Little is known surrounding how innovativeness affects consumer loyalty (Pappu & Quester, 2016); however, because loyalty is built upon trust, satisfaction, and perceived value (He et al., 2012), innovative products may benefit from representing elements that instill feelings of loyalty in marketing messages. For novel health products, the lack of prior product knowledge and use experience elucidates the utility of infusing information and credibility messages in marketing strategy to better position the product as trustworthy among target consumers. The example of MHC as a novel health product was well-positioned for the current study because, as it is not yet available, the baseline for past behavior or use is zero, eliminating bias from experiences or extensive preconceived notions. As a result, the data reflected the raw, true perspectives of the target audience. Therefore, conducting formative research among consumers with little to no knowledge about a product preceding its release may be a valuable first step to take in marketing practice. This can infuse reliable consumer insights into marketing strategy, better representing consumer narratives and instilling product trust (Belk et al., 2012), which may also provide opportunities for rebranding existing products, suggesting use of this strategy at all stages of marketing and messaging.

Limitations and Future Research

Focus groups and interviews allowed participants to provide robust consumer insights related to the potential introduction of MHC, including marketing considerations and testing. The iterative process of basing message concepts and designs on formative research, creating them, and then testing them contributed to study reliability (Colarossi et al., 2010; Sundstrom, DeMaria,

et al., 2015). Findings provide applicable solutions for marketers to consider when promoting novel contraceptive products, such as MHC. However, study limitations exist.

Due to the nature of qualitative research, generalizability to wider populations is limited, specifically outside of a university setting. Despite emphasizing the importance of confidentiality in focus groups, complete confidentiality cannot be guaranteed, posing a threat to open and honest sharing within the group and potentially introducing social desirability bias. Additionally, participants were recruited in a university setting via email and in-person recruitment, resulting in a convenience sample. The university sample also resulted in a participant pool with little variability in educational attainment, geographic location, and socioeconomic status. The overall sample consisted of more male than female participants, indicating male perspectives may be more amply represented in the results. Further, the order in which participants were shown the ad prototypes may have influenced their opinions, as participants may have compared ads to those previously shown, as opposed to evaluating them independently.

Despite these limitations, this study offers novel contributions to the contraceptive advertising and promotion research body, serving as the first empirical study incorporating consumer insights to design and test effective marketing messages to a novel male contraceptive product before its release. Findings provided practical first steps for marketers that can be applied to future marketing and promotional efforts for MHC, or similar novel health products. Future research should test the utility of employing the current methodology and its application to a novel health product other than MHC. Implementation of a survey to better understand perceptions of novel health products among broader audiences may also be a valuable next step. Other studies should gather consumer insights surrounding preferred marketing strategy for a novel contraceptive product, like MHC, outside of a university setting to better understand necessary consumer segmentation in marketing efforts.

Conclusions

This study sought to understand college-aged men's and women's perceptions of effective marketing strategies, influential ad attributes, and appealing messaging concepts for an example MHC method, the transdermal gel. Consumer insights provided a foundation for the creation of MHC ad prototypes and message testing identified elements participants responded most strongly to. Representation of a relatable character, or drawing on authentic experiences, aligned best with

consumer values. Additionally, practical messaging or imagery meant to increase agency in use may be an effective combination for marketing a novel contraceptive product, like MHC. Findings provide practical first steps for marketers that can be applied to future marketing and promotional efforts for MHC, or similar novel health products.

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CHAPTER 4: ACCEPTABILITY AND ADVERTISING PREFERENCES OF A NOVEL FAMILY PLANNING PRODUCT: A CASE STUDY OF MALE HORMONAL CONTRACEPTION

Abstract

Background: Recent advances in male hormonal contraception (MHC) include a promising transdermal gel. Novel health products require consumer research-informed marketing to generate interest and influence adoption. Designing and testing MHC advertisements via conjoint analysis may serve as a useful tool to identify effective ad attributes to encourage MHC uptake upon market introduction.

Methods: College-aged men and women (n=1,997) aged 18-26 years (20.71±1.94) participated in a web-based survey. Multiple linear regression was used to examine significant predictors of attitudes toward, interest in, and intention to use or encourage use of MHC. A conjoint analysis procedure was also used to assess the relative importance of attributes on ad effectiveness and preference.

Results: Regression analyses revealed being sexually active (p=0.001) and having prior knowledge of potential MHC methods (p=0.031) aligned with positive MHC attitudes, interest, and intention. Conservative political views (p=0.002) and being satisfied with current male birth control offerings (p=0.000) were associated with negative MHC attitudes. Conjoint analysis identified informational messages as most important (56.62%). Informational (p=0.000) and aspirational messages (p=0.003) paired with relatable characters were the most highly preferred ads.

Conclusions: Findings suggest informational messages paired with trustworthy, relatable characters were preferred among participants. The MHC example as a novel contraceptive product was well-suited for the current study because its unavailability provides a baseline for past behavior or use of zero, which eliminates bias from previous perceptions and experiences. Results contribute to and extend the MHC acceptability literature and provide practical implications for future promotion of novel contraceptive products, such as MHC.

Introduction

In October 2018, a novel male hormonal contraception (MHC) gel progressed to Phase 2 clinical trials (Anawalt et al., 2019; NIH, 2018), a promising development for reproductive-aged men and women. MHC has not seen significant developments for over a century, limiting available methods to the male condom and vasectomy (Amory, 2016; Lloyd & Waterfield, 2016). Recently, MHC development efforts have advanced, yielding the aforementioned transdermal gel (Anawalt et al., 2019; Roth et al., 2013), an injection (Behre et al., 2016; Gu et al., 2009), a subcutaneous implant (Wang et al., 2016), and an oral pill (Bakare, 2019). Nearly one half of all pregnancies in the United States are reported as unintended (Guttmacher Institute, 2019); thus, understanding contraceptive barriers and implementing improvements remains a priority.

Despite extensive research and development efforts in the MHC realm, researchers continually face obstacles, which impede progress and, subsequently, the ability to make MHC a reality. Concerns surrounding potential side effects (Glasier, 2010; Walker, 2011; Wersch, Eberhardt, & Stringer, 2012), efficacy (Kuo, 2010; Mullin, 2018; Roth et al., 2014; Surampudi et al., 2014), and marketability of a novel contraceptive product (Lissner, 2017) are key contributors to MHC release delays. Consumer perspectives on barriers and facilitators to MHC use have been explored in the context of acceptability (Dismore et al., 2016; Glasier, 2010; Heinemann et al., 2005; Lloyd & Waterfield, 2016; Wilson, 2018), offering insight into the target market's preparedness for a potential novel contraceptive method. Among men, preferences for male condom use (Walker, 2011), reluctance to accept a novel option (Walker, 2011), adverse health outcome concerns (Walker, 2011; Wilson, 2018), and feelings of emasculation with "birth control" suddenly being associated with men (Campo-Engelstein, 2012; Dismore et al., 2016) hinder MHC acceptability. Women feel MHC availability may result in decreased male condom use and increased STI transmission (Dismore et al., 2016), and distrust in a male partner's ability to employ accurate MHC use and/or understand the importance of their participation in pregnancy prevention efforts (Kimport, 2018). Thus, understanding this foundational knowledge and addressing perspectives and concerns among both men and women may be crucial to remain ahead of concerns, assess consumer needs, and better prepare the market for MHC introduction.

Marketing and messaging strategy can serve as invaluable tools to influence novel product appeal, demand, adoption intention, and uptake (Bruce et al., 2012; Sundstrom, DeMaria, et al., 2015; Truong & Dang, 2017). Messaging strategies representing the target market's perspectives,

concerns, and needs are especially well-received by consumers (Hawkins & Mothersbaugh, 2010), suggesting consumer research-informed marketing and promotional efforts may be a critical layer in generating MHC interest and influencing subsequent adoption. Advertisements (ads), in particular, are used extensively in marketing strategy, as they can contribute to driving sales, improving product recognition, and changing attitudes (Belk, 2017; Wardle, 2002). The latter is especially important for MHC, as it may pose a threat to existing contraceptive norms (Lissner, 2017). Evaluating relevant ad attributes prior to MHC release may improve MHC promotion and messaging strategies, and, ultimately, uptake. Conjoint experiments are often used for this purpose (Gustafsson et al., 2000; Hing et al., 2017; Scholz et al., 2010), specifically to assess the value consumers place on myriad attributes comprising a product or service (Green & Srinivasan, 1978, 1990). Exposing participants to multiple profiles and asking them to consider and, ultimately, choose which they prefer allows researchers to elicit participant preferences and estimate the relative importance of each attribute (Green & Srinivasan, 1978, 1990; Hensher et al., 2018; Rubin et al., 2006). Additionally, as the stimuli represent real choice situations, this method offers a degree of realism to participants (Hair et al., 2009). Available research surrounding potential MHC ad design is limited and dated (Curtis, 1997). Thus, designing and testing MHC advertisements via conjoint analysis may be useful in identifying salient attributes among today's consumers, which can inform effective MHC marketing and promotional strategy to influence adoption upon release.

The purpose of this study was to evaluate the appeal of hypothetical MHC ad prototypes among college-aged men and women to identify effective message attributes for an example MHC method, the transdermal gel. A secondary study goal was to examine college-aged men's and women's attitudes toward, interest in, and intention to use or support use MHC. This study is part of a larger mixed methods project; thus, consumer insights were collected qualitatively before this study phase, informing survey items, relevant message attributes, and MHC ad prototype design. The study examined the following research questions:

RQ 1: What attributes of MHC advertisements are most important to participants?

RQ 2: What are college-aged men's and women's attitudes toward, interest in, and intention to use or encourage use of potential MHC methods?

This research served as the first empirical study to employ a conjoint experiment to test consumer insight-informed marketing messages for a novel MHC product before its release. Findings build on previous calls to address MHC attitudes and potential uptake (Sax et al., 2019) and provide future marketing and promotional efforts for MHC, or similar novel health products.

Methods

Sample

College-aged men and women (n=1,997) between the ages of 18 and 26 (20.71±1.94) attending a large Midwestern university participated in a web-based survey in February 2020. Questions assessed current and novel male birth control attitudes, behaviors, and interest. The survey also included a conjoint study component, where participants viewed MHC advertisement prototypes and were asked a series of questions to elicit advertisement preferences and effectiveness in influencing MHC adoption intention. Due to the researchers' interest in studying college-aged men and women and maintaining consistency with prior studies (Ramos-Ortiz & DeMaria, 2020a, 2020b), the data were collected from one Midwestern university, providing the ability for maximum variation sampling, to gather a range of diverse perspectives while also allowing for comparison across study aims (Etikan, 2016; Given, 2008). Participants were primarily recruited via targeted e-mail communication, with in-person recruitment (i.e., classroom presentations) serving as a secondary strategy. All procedures and protocols were approved by the university's Institutional Review Board.

Procedure

Participants were first presented with an informational overview of the study, prompting them to click to continue the survey and allowing for implied consent to be obtained. Participants were then screened through initial survey questions asking about age, sexual orientation, sexually active status, and university enrollment. Men and women who met the required inclusion criteria continued onto the survey, while participants who did not were thanked for their time and the survey concluded. Participants eligible to be included were: 1) between the ages of 18 and 26 years; 2) currently engaging in heterosexual or bisexual sexual relationships; and 3) enrolled as a student at the specified Midwestern university. As this was part of a larger study on MHC consumer

insights, the current study focused on sections related to: 1) male contraception attitudes and interest; 2) MHC intention, and 3) conjoint experiment with MHC ad prototypes. Conditional questions differentiated items meant to be answered by men, versus those to be answered by women. For example, women did not complete Section 3, as the main interest of this section was to assess ideal attributes in a potential MHC from a male's perspective. Upon survey completion, all participants were eligible to enter a drawing to win 1 of 15 $25.00 Amazon gift cards for their time and efforts. The survey took approximately 13 minutes (12.91±6.42) to complete.

As the example MHC gel method had not been released at the time of the study, the use of genuine ads was not possible. Thus, the experimental design using conjoint analysis examined the effectiveness of the message attributes specifically designed for this study. Relevant attribute dimensions related to message strategy, message relatability, message sentiment, perceived credibility, and background image. Table 5 outlines the attribute dimensions and levels present in the ad prototypes.

Table 5.Ad Prototype Attribute Matrix

	Attribute Levels	
Attribute Dimensions	**Option 1**	**Option 2**
Message Strategy	Informational	Non-Informational
Message Relatability	Aspirational	Relatable
Message Sentiment	Serious	Humorous
Perceived Credibility	Image of Man in Doctor Coat	Image of Man in Regular Clothing
Background Image	Doctor	Regular Guy

A total of 14 ad prototypes were designed reflecting a message on the background of either an image of a doctor (Figure 3) or an image of a "regular guy" (Figure 4). Messages did not vary based on the image; that is, the same humorous message associated with the "regular guy" was also present on the humorous ad with the doctor. One exception was the perceived credibility of either an image of a doctor (Figure 3) or an image of a "regular guy" (Figure 4) Messages did not vary based on the image; that is, the same humorous message associated with the "regular guy" was also present on the humorous ad with the doctor. One exception was the perceived credibility attribute. This was assessed with a unique set of ad prototypes where one condition was an ad with an image of a man in a doctor coat, to represent credibility, and the other condition was the same

man, but in regular clothing. The experiment component of the survey exposed participants to two MHC ad prototypes, which were randomly assigned in Qualtrics. After viewing the first ad, participants were asked a question related to ad appeal (e.g., how appealing is this ad to you?) and ad effectiveness (e.g., how effective is this ad in generating your interest in a male birth control method?). They were then exposed to the second ad, where they were prompted to answer the same questions. After viewing both ads, participants then chose their preferred ad (e.g., which male birth control advertisement do you prefer?).

Data Analysis

Multivariate linear regression was used to examine significant predictors of attitudes toward, interest in, and intention to use or encourage use of potential MHC methods to understand their impact on the relevant outcomes. A conjoint analysis procedure (Green & Srinivasan, 1978, 1990) was also used to assess the relative importance of the main attributes and estimate the utility of each attribute level on ad effectiveness and preference. The conjoint analysis identified the utility value of each attribute level, based on participant advertisement preferences. That is, the more participants distinguished within attribute levels, the wider the range in utility value. For instance, if a humorous advertisement was strongly preferred when compared to a serious advertisement, the humorous advertisement would have a utility value that was highly positive, while the serious advertisement would have a utility value that was highly negative. Relative importance scores measured the extent to which each attribute dimension contributed to ad effectiveness and preference. This measure reflects the relative ranges of the utility values across all attribute dimensions as a proportion of the sum of all utility range values, which allowed for comparisons between them (Green & Srinivasan, 1978, 1990). Higher importance and utility scores indicated greater preference. Data were analyzed using Stata 16.0 and SAS 9.4.

Aspirational/Doctor Image | Relatable/Doctor Image | Credible | Non-Credible

Humorous/Doctor Image | Serious/Doctor Image | Informational/Doctor Image | Non-Informational/Doctor Image

Figure 3. Ad Prototypes on Doctor Image

Aspirational/Regular Guy Image | Relatable/Regular Guy Image | Humorous/Regular Guy Image

Serious/Regular Guy Image | Informational/Regular Guy Image | Non-Informational/Regular Guy Image

Figure 4. Ad Prototypes on Regular Guy Image

Results

Multivariate linear regression analyses for attitude, interest, intention, and ad effectiveness, along with conjoint analysis results are presented below. Participant demographic information is outlined in Table 6.

Table 6. Participant Demographics

	(n=1,997)
	Mean/Prop.
Age (years)	20.71±1.94
Sex	
Female	1,214 (60.79%)
Male	783 (39.21%)
Sexual Orientation	
Heterosexual	1751 (87.68%)
Bisexual	246 (12.32%)
Race	
White	1519 (76.06%)
Black	51 (2.55%)
Hispanic/Latino	151 (7.56%)
Asian	252 (12.62%)
Other/Prefer not to answer	24 (0.70%)
Sexually Active	
Yes	1570 (79.62%)
No	426 (21.33%)
School Year	
Freshman	400 (20.03%)
Sophomore	444 (22.23%)
Junior	410 (20.52%)
Senior	357 (17.88%)
5th year or higher	52 (2.60%)
Graduate	227 (11.37%)
Professional	98 (4.91%)
Income	
Comfortable	1468 (73.51%)
Just enough to make ends meet	424 (21.23%)
Not enough to make ends meet	49 (2.45%)
Prefer not to answer	56 (2.80%)
Political Views*	
Liberal	807 (40.41%)
Moderate	834 (41.76%)
Conservative	321 (16.07%)

Note: Results represented as M±SD or n(%)

*Values that do not add to sample total indicate missing data

Descriptive Analyses

Of the total sample (n=1,997), the majority (67.85%; n=1,356) reported using birth control "all of the time" when engaging in sex with a partner. The top three primary birth control methods were female hormonal contraception (FHC) (n=946; 47.22%), the male condom (n=796; 39.91%), and withdrawal (n=139; 7.01%). Most participants (n=1,617; 80.87%) felt the current available male birth control options (e.g., male condom, vasectomy) were not sufficient and a majority (n=1,560; 78.02%) had not heard of male-specific birth control methods, other than the male condom or vasectomy. Over one half of men (n=404; 51.91%) of men and 64.30% (n=779) of women reported positive attitudes toward a potential MHC method. Of the men in the sample, 57.41% (n=447) expressed "high" to "extreme" interest in using a potential MHC method, if one were available. The majority of male participants (n=502; 64.43%) reported intention to use MHC, while 49.10% of women (n=598) reported intention to encourage a male partner to use MHC, upon release.

MHC Attitudes and Interest

Multivariate linear regression analyses of MHC attitudes among men and women are presented in Table 7. In the model assessing male attitudes, being sexually active (p=0.001) and having previous knowledge of a potential MHC method (p=0.031) were associated with positive attitudes toward MHC, while holding a conservative political view (p=0.002) and believing that current male birth control offerings were sufficient (p=0.000) were associated with a decrease in positive attitude. A male-specific item assessing interest in MHC use was also modeled (Table 8). Being sexually active was associated with interest in using a potential MHC method, while holding a conservative political view was negatively associated with MHC interest (both at p=0.000). In the model assessing female attitudes (Table 7), identifying as bisexual (p=0.001) was associated with positive attitudes toward MHC, which differed from male participants. Factors associated with a decrease in positive attitude among women were similar to those among men, including holding a conservative (p=0.000) or moderate (p=0.040) political view and believing that current male birth control offerings were sufficient (p=0.000).

Table 7. Multivariate Linear Regression Model Predicting Attitudes

Independent Variable		Coef.	*p*-value	95% Conf. Interval
Male	**Age**	-0.057	0.529	-0.236, 0.121
	Sexual Orientation			
	Bisexual	1.006	0.164	-0.409, 2.423
	Sexually Active	1.024	0.010	0.241, 1.808
	Political View			
	Moderate	-0.316	0.423	-1.092, 0.458
	Conservative	-0.650	0.202	-1.650, 0.349
	Male BC Enough	-3.318	0.000	-4.148, -2.488
	Male BC Knowledge	0.799	0.031	0.073, 1.525
Female	**Age**	-0.055	0.447	-0.197, 0.087
	Sexual Orientation			
	Bisexual	1.198	0.001	0.494, 1.901
	Sexually Active	-0.654	0.061	-1.340, 0.031
	Political View			
	Moderate	-0.623	0.040	-1.219, -0.027
	Conservative	-1.805	0.000	-2.671, -0.939
	Male BC Enough	-3.911	0.000	-4.826, -2.998
	Male BC Knowledge	0.613	0.064	-0.034, 1.263

Table 8. Multivariate Linear Regression Model Predicting Male Interest in MHC

Independent Variable	Coef.	*p*-value	95% Conf. Interval
Age	0.013	0.752	-0.071, 0.098
Sexual Orientation			
Bisexual	0.451	0.134	-0.139, 1.041
Sexually Active	0.715	0.000	0.334, 1.097
Political View			
Moderate	-0.342	0.061	-0.700, 0.016
Conservative	-0.945	0.000	-1.434, -0.455
Male BC Enough	-3.212	0.000	-3.653, -2.772
Male BC Knowledge	0.303	0.122	-0.081, 0.689

Intention to Use/Encourage MHC Use

Men's intention to use and women's intention to encourage MHC use was analyzed (Table 9). Intention to use a potential MHC method among men was associated with being bisexual

(p=0.004) and sexually active (p=0.000), while a decrease in intention to use was associated with holding conservative political views (p=0.000). Among women, intention to encourage a male partner to use MHC was associated with being sexually active (p=0.004) and holding a moderate (p=0.000) or conservative (p=0.000) political view was negatively associated with intention to encourage MHC use.

Table 9. Multivariate Linear Regression Model Predicting MHC Intention

	Independent Variable	Coef.	*p*-value	95% Conf. Interval
Male	**Age**	-0.078	0.194	-0.195, 0.039
	Sexual Orientation			
	Bisexual	1.200	0.004	0.396, 2.005
	Sexually Active	1.252	0.000	0.769, 1.736
	Political View			
	Moderate	-0.235	0.355	-0.732, 0.263
	Conservative	-1.651	0.000	-2.306, -0.996
Female	**Age**	-0.033	0.645	-0.174, 0.108
	Sexual Orientation			
	Bisexual	0.949	0.006	0.269, 1.629
	Sexually Active	-0.703	0.004	0.319, 1.669
	Political View			
	Moderate	-1.093	0.000	-1.660, 0.525
	Conservative	-2.046	0.000	-3.005, 1.087

Ad Effectiveness

A conjoint analysis procedure identified the ad attribute utility values and importance scores (Table 10). An ad displaying an informational message was the most important attribute with a relative importance of 56.62% and a positive utility value of 7.23. The credible ad followed as the next important attribute with a relative importance of 18.8% and a negative utility value of -9.35, indicating the non-credible ad was more well-received by participants. The ads displaying a doctor image had the next highest relative importance score (13.42%) and a negative utility value of -6.66, suggesting the "regular guy" may have been more effective among participants. Lastly, the aspirational message had a relative importance value of 10.48% and a positive utility value of 5.21. To further understand effective ad attribute combinations, multivariate linear regression analyses were conducted on the combinations (e.g., aspirational message/doctor image, humorous message/"regular guy," etc.), controlling for relevant demographic variables, (i.e., sex, age, race,

sexually active status, political view) (Table 11). The model indicated the informational message/"regular guy" ad and aspirational message/"regular guy" ad were associated with higher effectiveness scores (p=0.000 and p=0.003, respectively). Conversely, the worst performing ads were the non-informational message/doctor (p=0.000) and non-informational message/"regular guy" (p=0.000) combinations.

Table 10. Conjoint Analysis Utility Values and Relative Importance Scores

Attribute Levels	Utility Value	Std. Error	Relative Importance (%)
Aspirational Msg	5.21	1.42	10.48%
Relatable Msg	0.00	0.00	
Credible Msg	-9.35	1.79	18.83%
Non-Credible Msg	-4.08	1.79	
Humorous Msg	0.09	1.42	0.65%
Serious Msg	-0.23	1.43	
Informational Msg	7.23	1.42	56.62%
Non-Informational Msg	-20.88	1.42	
Doctor Image	-6.66	0.82	13.42%
Regular Guy Image	0.00	0.00	

Table 11. Multivariate Linear Regression Model Predicting Attribute Combination Effectiveness

Ad Combinations	Coef.	*p*-value	95% Conf. Interval
Relatable/Dr Image	-6.703	0.002	-10.992, -2.414
Credible Msg	-9.086	0.000	-13.492, -4.681
Non-Credible Msg	-1.714	0.435	-6.016, 2.588
Humorous Msg/Dr Image	-3.285	0.154	-7.804, 1.234
Serious Msg/Dr Image	-6.122	0.007	-10.573, -1.671
Informational Msg/Dr Image	2.507	0.266	-1.910, 6.924
Non-Informational Msg/Dr Image*	-24.895	0.000	-29.005, -20.784
Aspirational Msg/Reg Guy*	7.041	0.003	2.322, 11.761
Relatable Msg/Reg Guy	2.412	0.315	-2.298, 7.122
Humorous Msg/Reg Guy	-0.519	0.828	-5.219, 4.179
Serious Msg/Reg Guy	1.711	0.468	-2.914, 6.225
Informational Msg/Reg Guy	8.999	0.000	4.262, 13.738
Non-Informational Msg/Reg Guy	-18.939	0.000	-23.383, -14.496

*Red text indicates negative, significant effects

*Green text indicates positive, significant effects

Discussion

Study results indicate most college-aged men and women in this sample were not satisfied with the currently available male contraceptive options (i.e., condom, vasectomy) and had never heard of novel MHC methods. Despite this, college-aged men expressed overwhelming interest in using a potential MHC method, if one were available, which is consistent with existing MHC acceptability studies (Glasier, 2010; Heinemann et al., 2005; Peterson et al., 2019; Sax et al., 2019; Walker, 2011). Approximately two-thirds of male participants also reported they intended to use an MHC method when one becomes available, demonstrating an additional layer of MHC interest. Further, the majority of women surveyed reported highly positive attitudes toward a current or potential male partner using an MHC method, with almost half specifying an intention to encourage a male partner to use MHC upon release. This supports previous research (Eberhardt et al., 2009; Glasier, 2010; Glasier et al., 2000; Lloyd & Waterfield, 2016) suggesting that because women are familiar with hormonal contraception, their expectations of MHC uptake and ease of use may be more realistic. This may result in skepticism toward MHC and a male partner's ability to accurately use it.

The current study explored myriad variables (e.g., demographics, knowledge) to better understand predictors of MHC attitudes, interest, and intention; however, few were significant.

Being sexually active aligned with positive MHC attitudes, interest, and intention among both men and women, providing one opportunity to leverage sexual activity for future MHC promotion.Currently, the only known benefit of a potential MHC method is pregnancy prevention, which differs from FHC, as many FHC methods offer ancillary benefits unrelated to pregnancy prevention (Bahamondes et al., 2015; Schindler, 2013). Thus, being sexually active is important among those considering MHC as an option. Including sex as a key selling point in marketing can positively affect attitudes and behaviors (Wyllie et al., 2014), suggesting applying this in the case of MHC may contribute to positive MHC attitudes, interest, and intention. Additionally, prior MHC knowledge was related to positive attitudes among men, suggesting widespread informational messaging and marketing strategy to foster MHC normalization, acceptance, and eventual uptake may be crucial for the male target market. Negative attitudes toward MHC were related to the belief that current male birth control offerings were sufficient, presenting an additional opportunity for messaging and marketing strategy to play a role in informing the target market of all available male birth control options. Conservative political views were consistently associated with negative MHC attitudes and decreased interest and intention, which may suggest conservative individuals may view MHC as less of a critical health product need, similar to conservative views toward FHC (Anderson, 2015).

Conjoint analysis revealed the relative importance of the attributes present in ad prototypes for an example MHC gel. The informational message attribute was most important among participants, indicating this type of message may be more effective when advertising a novel contraceptive product, like MHC. As informational marketing messages reduce the cognitive effort of information-seeking (Bagwell, 2007; Zhang et al., 2012), displaying relevant, informational content may confirm MHC as a viable option among interested consumers, while also addressing uncertainty and concerns among hesitant consumers. The negative utility values for the credibility and background image attributes demonstrated participants in this sample preferred characters who appeared normal and relatable, as opposed to a doctor. This was supported by the ads that showcased the informational message/"regular guy" and aspirational message/"regular guy," which were the most highly preferred among participants, regardless of demographic differences. Thus, these message strategies may be well-positioned to successfully promote a novel contraceptive product, like MHC, among the college-aged demographic. Non-informational

messages, irrespective of the background image, received the lowest effectiveness scores, further confirming informational message use to increase comfort and positive attitudes toward MHC.

Translating these insights into marketing may be especially relevant for novel health products. In particular, messages that provide straightforward information and highlight that people like those within the target audience can benefit from MHC may be effective. Overcoming information gaps and demonstrating that this product is normatively acceptable among various target audiences may facilitate uptake. Further, imagery that enhances the message, in this case, informational and aspirational messages, can reinforce that MHC is a good option and will fit into the audience's current and future lifestyle goals, as it shows men and women "like them" choosing MHC. Additionally, products representing consumer values play a role in supporting interest and use intention (Nichols & Schumann, 2012), indicating an opportunity for aspirational messages to leverage men and women's goals for pregnancy prevention. Aspirational messages in the context of MHC should emphasize these values and goals, like the aspirational message attributes included in the current study. Additional aspirational message attributes could incorporate language such as, "choose the life you want with [hypothetical MHC]," or "have fun, feel secure; choose [hypothetical MHC]," which may further enhance aspirational ad effectiveness. Thus, identifying effective messaging and incorporating those valuable attributes, as demonstrated by the preferred and effective ad attributes presented in this study, offers one way to address consumer concerns and influence future uptake.

Limitations and Future Research

A web-based survey, informed by qualitative phases as part of a larger study, provided insight into MHC attitudes, interest, intention, and effective ad attributes across a broader sample. Findings contribute to the MHC acceptability literature, representing a diverse university sample, along with a means to identify effective message attributes for the promotion of novel contraceptive products, such as MHC. However, study limitations exist. The homogenous university sample limits the generalizability of results to demographically and geographically dissimilar populations. Convenience sampling and participant self-selection may have contributed to biases affecting results. Additionally, participants may not have reported truthful responses, or rushed through the survey, resulting in response bias. While in-class recruitment was a secondary recruitment tactic, distributing the survey in classrooms may have also introduced response bias,

due to the sensitive nature of some survey items. Despite these limitations, this study offers novel contributions to MHC acceptability research body serving as the first empirical study incorporating consumer insights to test effective ad attributes for a novel male contraceptive product before its release. The example of MHC as a novel contraceptive product was well-suited for the current study as it is unavailable, providing a baseline for past behavior or use of zero, which eliminates bias from prior perceptions and experiences. Future research should design and test different combinations of informational and aspirational messages along with relatable characters for similar novel contraceptive products to assess whether these attribute combinations improve effectiveness. Other studies should apply a similar methodology outside of a university setting to better understand ad attributes and preferences among varied consumer segments.

Conclusions

This study sought to evaluate the acceptability of a potential MHC method and identify effective message attributes for the example MHC gel among college-aged men and women. Findings demonstrated general acceptability of a potential MHC method, with most reporting positive attitudes, interest, and intention. In the context of MHC ads, informational messages paired with trustworthy, relatable characters were most preferred among participants. Results contribute to the MHC acceptability literature and provide practical implications for the future promotion of novel contraceptive products, such as MHC.

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CHAPTER 5: CONCLUSION

As approximately half of all pregnancies in the United States are reported as unintended (Guttmacher Institute, 2019), contraceptive barriers and potential improvements must continue to be examined, including novel developments and male-specific options, like MHC. Foundational knowledge surrounding MHC among the target market has been studied in the context of acceptability (Dismore et al., 2016; Glasier, 2010; Heinemann et al., 2005; Lloyd & Waterfield, 2016; Wilson, 2018), suggesting the importance of exploring the target market's existing perspectives. Investigating the perspectives and interest surrounding a novel health product like MHC, (Truong & Dang, 2017), coupled with formative market research methodologies (Truong & Dang, 2017), may be well-positioned to inform effective promotion and uptake of MHC, upon release. The current research employed a mixed-methods design to examine knowledge, attitudes, behaviors, and interest surrounding existing and potential MHC methods among college-aged (18-26 years old) men and women attending Purdue University. Additionally, the study assessed perceptions of effective marketing strategies and influential ad attributes for an example MHC method, the transdermal gel.

Qualitative findings revealed college-aged men and women express a general interest in the idea of MHC, with hesitance stemming from social acceptance of a novel contraceptive product, resistance to changing current contraceptive routines, and fear of potential side effects and long-term health consequences, consistent with past work (Glasier, 2010; Heinemann et al., 2005; Mullin, 2018). Promotional strategy for MHC, or similar novel health products, must focus on stratifying consumers based on their readiness to accept a potential innovation and use tactics like aspirational marketing (Nichols & Schumann, 2012), social norms marketing (Berkowitz, 2003), and informational marketing (Bagwell, 2007; Zhang et al., 2012) to confirm benefits and address concerns. Qualitative formative research also illuminated salient concepts for MHC message development and marketing, including humor, relatability, information, and credibility—supporting past research in contraceptive advertising (Campo et al., 2013; Colarossi et al., 2010; DeMaria et al., 2017; Sundstrom, DeMaria, et al., 2015; Sundstrom et al., 2016). Message testing in interviews yielded an understanding of elements participants responded most strongly to, revealing ads representing genuine experiences, trustworthy characters, and informational messaging as most useful for MHC promotion. Findings extend gaps identified in extant literature

indicating the need for preemptive consumer behavior research that can anticipate what prospective consumers may be most drawn to when marketing a novel health product (Chandrasekaran & Tellis, 2007; Cooper, 2000; Moreau et al., 2001). Further, results provided clear guidance for messaging content through the formative research process (Belk et al., 2012; Denehy et al., 2016; Martinez et al., 2012; Sundstrom et al., 2015) to counteract potential barriers to adoption when MHC becomes available. Taken together, both qualitative phases bridge the gap in understanding how to move from consumer opinions to actual messages that can enhance interest and uptake.

The quantitative survey further supported the qualitative findings among a broader, university audience. Regression analyses revealed being sexually active ($p=0.001$) and having prior knowledge of potential MHC methods ($p=0.031$) aligned with positive MHC attitudes, interest, and intention. Conservative political views ($p=0.002$) and being satisfied with current male birth control offerings ($p=0.000$) were associated with negative MHC attitudes. Conjoint analysis identified informational messages as most important (56.62%). Informational ($p=0.000$) and aspirational messages ($p=0.003$) paired with relatable characters were the most highly preferred ads, indicating these as the most effective ad attributes to incorporate into marketing strategy when promoting a novel contraceptive product (DeMaria et al., 2017; Sundstrom, DeMaria, et al., 2015; Sundstrom et al., 2016), like MHC. Results from the quantitative phase contribute to and extend the MHC acceptability literature and provide implications for future promotion of novel contraceptive products, such as MHC. As available research surrounding potential MHC ad design is limited and dated (Curtis, 1997), findings provide a contemporary look into the practical, effective design and evaluation of ad messages from a consumer behavior perspective, specifically focused on promoting MHC acceptability and future adoption.

Strengths and Limitations

Combining qualitative and quantitative methodologies allowed for the collection of robust consumer insights related to the potential introduction of MHC, including attitudes, perceptions, and marketing considerations, and triangulation across focus groups, interviews, and surveys. Findings contributed practical and applicable solutions for marketers to prepare consumers for the introduction of a novel health product. However, study limitations exist.

Due to the nature of qualitative research, generalizability is limited, specifically outside of a university setting. While focus group participants were encouraged to keep others' responses confidential, complete confidentiality cannot be guaranteed, potentially limiting open sharing within the group and introducing social desirability bias. Additionally, individual insights may not have been captured in focus group conversations, as groupthink and attempts to fit in with the group may influence participant responses (Boateng, 2012). While the moderators implemented strategies to facilitate a successful group conversation, the presence of outspoken participants is an additional limitation, as their domination over the discussion may have limited the participation of others (Leung & Savithiri, 2009).

During the message testing component of interviews, the order participants were exposed to the ad prototypes may have influenced their opinions, as participants may have compared ads to those previously shown, as opposed to evaluating them independently. Additionally, participants were recruited in a university setting via email and in-person recruitment, resulting in a convenience sample. The university sample also resulted in a participant pool with little variability in educational attainment, geographic location, and socioeconomic status. Participants self-selected into all study phases which may have resulted in a sample with particular interest in the study topic. The overall sample for the qualitative phases consisted of more male than female participants, indicating male perspectives may be more amply represented in the qualitative results. All qualitative results were coded by one coder, the first author, and confirmed by the Primary Investigator, posing a limitation to intercoder reliability (ICR). However, as ICR is not necessarily a universally accepted method, one coder may have enhanced the interpretive agenda of qualitative research (Braun & Clark, 2013; Hollway & Jefferson, 2012; O'Connor & Joffe, 2020; Vidich & Lyman, 1994). Qualitative research allowed for deep and robust exploration into an untapped research question, uncovering consumer experiences with and perceptions of contraception, including MHC, to better position MHC as a viable and appealing option upon release.

For the quantitative component, the homogenous university sample limited the generalizability of results to demographically and geographically dissimilar populations. Convenience sampling and participant self-selection may have also contributed to biases affecting results. Additionally, participants may not have reported truthful responses, or rushed through the survey, resulting in response bias. While in-class recruitment was a secondary recruitment tactic, distributing the survey in classrooms may have also introduced response bias, due to the sensitive

nature of some survey items. More female than male participants took part in the web-based survey, indicating potential overrepresentation of female perspectives in the data. Survey measures included in the quantitative component were informed by extant literature, the previous qualitative phases, and theoretical frameworks (i.e., DOI, TPB), which enhanced research quality, reliability, and trustworthiness (Belk et al., 2012; Groves et al., 2009; Harrison & Reilly, 2011).

Despite its limitations, this study offers novel contributions to MHC acceptability research and serves as the first empirical study applying consumer insights, the DOI framework, and a conjoint experiment to a novel male contraceptive product before its release. It is the first of its kind to explore MHC advertisement design and testing, informed by qualitative data and feedback. Methodologies and results from this project can be used to develop messaging ahead of forthcoming medical innovations, such as family planning drug discoveries and tools, and beyond. The consumer behavior insights gleaned provide a step-by-step guide to craft effective messaging, and a framework to successfully translate novel MHC research to marketing practice, and subsequent marketability to enhance contraceptive offerings and choice. To date, no studies have been conducted on consumer acceptability of the MHC gel method outside of clinical trial participants; therefore, this study offers novel insight into real-life consumer insights and needs at baseline and mimics how introduction of this product may be perceived among individuals with little to no prior knowledge. As more MHC innovations enter clinical trials and approach commercial availability, the design and methodologies employed in this study offer an in-depth look into MHC interest and desire among a critical demographic, affirming the need for continued development and strategic marketability of MHC.

Implications and Future Research

Studies demonstrating the utility of employing formative research to inform messaging strategy and ad development are valuable, yet limited (Martinez et al., 2012; Noar, 2012; Sundstrom, DeMaria, et al., 2015), indicating a vital, underexplored area for consumer researchers and marketers. Despite the commercial unavailability of MHC, findings from this study provide practical implications for marketing practice within the context of novel health products. Informing marketing strategy with formative research can aid in uncovering the intricacies of consumer perspectives, allowing for the infusion of representative consumer insights into marketing efforts. This strategy fosters the creation of relatable messages and instilled product trust (Belk et al., 2012),

which is especially imperative when promoting novel health products. This may also provide opportunities for rebranding existing products, suggesting use of this strategy at all stages of marketing and messaging. The example of MHC as a novel health product was ideal for the current study because, as it is not yet available, the baseline for past behavior or use is zero, which eliminates bias from prior experience or preconceived notions. This resulted in data reflecting the raw, true perspectives of the target audience. Thus, conducting formative research among consumers with little to no knowledge about a product preceding its release may be a valuable first step to take in marketing practice.

Quantitative methodologies, like surveys, are a mainstay in marketing research. However, a survey's effectiveness is only as good as its design (Brace, 2018); thus, informing surveys with qualitative formative research allows for key participant language and experiences to be incorporated as survey items, which can enrich research quality, complement analyses, and improve face validity (Harrison & Reilly, 2011). Thus, by employing mixed methodologies (Creswell, 2011), this integration was made possible (O'Cathain et al., 2010), which offered confirmation of the value of informing survey items with focus group and semi-structured interview data. The perceived value of using the additional resources, expertise, and time, required to successfully execute a mixed-methods study is often questioned (McKim, 2017); however, the current study provided a framework for achieving this efficiently. The study's consistent results across phases identified the value of applying this in the context of consumer-informed market research, increasing reliability and trustworthiness (Belk et al., 2012; Groves et al., 2009) of the study findings and interpretation.

Future research should design and test combinations of informational and aspirational messages along with relatable characters for similar novel contraceptive products to assess whether these attribute combinations improve effectiveness. Other studies should also test the utility of employing the current mixed methodology and its application to a novel health product other than MHC. Additionally, future work should gather consumer insights surrounding preferred marketing strategy for a novel contraceptive product, like MHC, outside of a university setting, to better understand necessary consumer segmentation in marketing efforts. Advancements in this arena must continue to focus on providing potential investors and stakeholders with assurance that MHC is a necessary and desired innovation by the general public, and men in particular. As outlined throughout, it is evident that both men and women feel they would benefit from a male-specific

contraceptive method. Not only would MHC provide a more effective option than male condoms for unintended pregnancy prevention, but it would also give men an active role in contraception and reduce the burden primarily placed on women. As women are faced with the direct effects of unintended pregnancy outcomes, men may not have previously seen the importance of playing a role in prevention. However, making this apparent in marketing strategy that highlights the availability and visibility of a male-specific contraceptive method, these dynamics may shift, with consumer-informed messaging serving as one facilitator in unintended pregnancy reduction.

Reflection

A vivid memory I reflect upon often involves sitting in my undergraduate advisor's office, discussing graduate school applications and deciding where I would spend the next few critical years of my life. I had applied to Johns Hopkins University, Canisius College, University at Buffalo, and Purdue University. Johns Hopkins was the goal: it is a prestigious university, their business school has a great Consumer Behavior program, and Baltimore is a lively city by the sea—this is where I envisioned myself. I remember speaking with my advisor, daydreaming about living in a large seaside city. Mid-daydream, I abruptly said to her "just watch, with my luck, I'll end up in middle-of-nowhere Indiana." And that is precisely what happened.

Though Baltimore's hot crab dip and Old Bay-rimmed Bloody Mary's were tempting, they couldn't outweigh the opportunities I knew I would have at Purdue. So, I ventured to the cornfields, fulfilling my own sarcastic prophecy. My Master's degree experience at Purdue was…eventful. Despite many obstacles, I grew as a scholar, teacher, and researcher. I never had the opportunity to study abroad as an undergraduate, but within the two years of my Master's program, I was able to "study abroad" twice. Working as a teaching assistant and guiding students through cultural competency, immersion, and team building in Germany and Australia comprise some of my favorite and unforgettable memories of this time. By the end of my second year, I truly started to appreciate taking the leap and moving to a state I had never heard of. Dr. Andrea DeMaria's arrival at Purdue also greatly contributed to this. I met her during her interview and was intrigued by the work she discussed during her job talk. I had been searching for a way to apply my passion for consumer science in a program that had, unbeknownst to me at the time, begun a shift toward a public health program. Her work conducting formative research among consumers to inform health campaigns provided an example of a way I could apply my interests while contributing to

worthwhile health outcomes. Learning about her unique blend of research interests led me to a definitive "lightbulb" moment, marking the beginning of what would be the most intense and rewarding three years of my life.

I had never pictured myself in a PhD program, especially not at Purdue. But, once I decided this was the trajectory I wanted to pursue, I applied to several schools, only to be beckoned by Purdue, once again. The incredible opportunities offered to me during my Master's program, the friendships built, and the mentors available drew me back in. However, transitioning from the culture of my disjointed Master's experience to being part of a collaborative lab was a learning curve. Not only was I finally in an environment where my research and academic interests would be nurtured, but as a doctoral student, I was also required to take on my own students, to mentor, teach, and support. This seemed intimidating at first, as I felt ill-equipped to guide others, when I had come into the program feeling so lost. But over time, my students became like my children—I realized I had much more wisdom and guidance to offer than I thought. I fondly look back on my time mentoring students on campus, and especially, abroad. Bringing students to national (San Diego) and international (Vienna, Austria) conferences and seeing their growth as they presented our research filled me with pride. I know I made the right choice staying at Purdue and joining Andrea's research lab because this environment demonstrated I was capable of so much more than I initially thought, including playing an influential role in the personal and professional success of others.

Along with mentoring and research duties, in the first two years of the program, I enrolled in courses that would introduce me to invaluable instruction and memorable professors, some of which became committee members. In fact, shortly after taking Dr. Cleveland Shields' course, my dissertation topic was born. His course taught me the rigor of intervention design and grant writing, the importance of considering research from the audience's standpoint, and how to embrace the title, "condom queen," (my course project was a condom packaging intervention, utilizing consumer insights to inform novel condom packaging and improve uptake and use, hence the moniker). Attempting to rebrand such a common product in this course led me to consider the amount of consumer research that would comprise effective marketing for a novel health product—something like male hormonal contraception? Dr. Spencer Headworth's qualitative methods course further solidified my interest in pursuing this topic, both through his in-depth methodological instruction and his support in the idea's novelty and importance. His course also

allowed me to pilot my research, as I completed the male focus group component and wrote up the results for my final course paper.

After officially deciding on my dissertation topic in the spring of 2019, the rest of my time in this program felt like a whirlwind. Before the end of that summer, I had flown to Dublin to participate in my first international conference, delivered an oral presentation, returned for preliminary exams, traveled to Italy to work as a study abroad teaching assistant, returned for a summer graduate internship at Eli Lilly and Company, and completed my dissertation proposal. Upon entering my last year of the program, I found myself experiencing mixed feelings about the dissertation phase. Leading the research process on a project I felt passionate about was a liberating, yet terrifying, experience. The male focus groups I had conducted in the spring allowed me to get my feet wet in independent research, as I learned the do's and don'ts. One particularly memorable don't was using the subject line, "tired of condoms being the only male birth control option?" in emails recruiting college men to participate in a male contraception study. Once I began to receive hate mail, I knew this recruitment method would not be repeated. Luckily, I was eventually able to recruit a fine group of men to participate in the focus groups.

My success with the male focus groups and with the valuable (and hilarious) insights gleaned from the conversations reinforced my interest in continuing with the remaining phases, opening the door to include women's perceptions. The remainder of the qualitative phases ran relatively smoothly, despite looming thoughts of the impending quantitative phase. Designing, recruiting for, and analyzing the web-based survey was the most intimidating component of my entire dissertation process. I had minimal experience with survey design and elaborate statistical analyses prior to this, but this did not stop me from deciding to incorporate a conjoint experiment within the survey. As this is a complex, yet applicable and relevant market research tactic, I sought the additional resources and education to carry it out. Dr. Richard Feinberg was the first to introduce me to conjoint analysis and how to accurately analyze and interpret the results. From there, I consulted with several professors, articles, and statistics experts in order to make this a reality. It proved to be just as difficult, if not more, than I had originally thought.

The day the conjoint analysis procedure finally yielded the correct output, I celebrated with an excited squeal and a socially distant drink, alone in my apartment. Unfortunately for my neighbors, going through the tail-end of my dissertation phase while quarantined due to the COVID-19 pandemic resulted in many of these loud celebrations for big (or little) wins. Beginning

in mid-March 2020, nationwide closures and "stay home" orders shook the US, resulting in forced isolation for many, including myself. The forced isolation turned out to be a blessing in disguise for me, allowing me to focus on the dissertation, the whole dissertation, and nothing but the dissertation, so help me God. However, with nothing to break up the monotony of data analysis and writing, I would often daydream of the light at the end of the tunnel, and what would it look like to move on to the next step in my life. I never knew "senioritis" could recur after senior year of undergrad, but I am living proof that it can.

Despite frequent interruption by my quarantine musings, I finally tackled the beast. It was 200 pages of blood, sweat, and tears. It was my baby. This document had taken over my life, and it was absolutely worth it. However, the relief of being done was tainted by the news that all May 2020 graduation ceremonies would be canceled—COVID-19 had not finished wreaking havoc in our lives. While I would not be able to walk across the stage and be publicly recognized for my accomplishments, I took solace in the fact that I was able to complete a degree representing the highest level of academic mastery during one of the most devastating health events in global history. I did that.

Moving forward, I am eager to apply everything I have learned throughout this program in the "real world." Meeting Andrea and receiving her valuable mentorship led me to where I am now—and will continue to inspire me in the future. Her guidance toward contextualizing my interest in consumer science within a worthwhile field, health, was truly life changing. Accepting a job at Eli Lilly and Company is just the beginning of the impact I know I will make in promoting and encouraging novel health products among consumers who need them most. From specialty sales, I intend to move into more of a marketing executive direction, either at Lilly, or another company with a health and patient-first focus. I strive to continue this work in a practice setting, where my work is reflected directly into products and messages that consumers see and interact with.

In the end, my experience at Purdue helped me understand that spending time in unlikely places can have a metamorphic effect. I have experienced a range of emotions throughout this process: extreme excitement, deep disappointment, utter joy, crippling heartbreak, outright exasperation—all leading to the ultimate takeaway—complete confidence. Before Purdue, I was incredibly doubtful of myself, my intellect, and capabilities. Now I am *confident.* My new title is only one small representation of that. While I am not sure exactly where I will end up, my time

at Purdue has taught me to embrace whatever location and opportunity that may come my way. You never know when living in a state you have never heard of will change your life. Maybe now it is time to see how I would fare in a city by the sea.

APPENDIX A. MALE FOCUS GROUP RECRUITMENT EMAIL

EMAIL FOR MALE PARTICIPANTS

Tired of condoms being the only male birth control option?

Soon, men will have access to alternative birth control options and researchers at Purdue University want to know what you think!

Data is being collected via focus group discussions from Purdue University students. We want to hear about your experiences and knowledge of existing male birth control methods, interest in alternative methods, and how you would prefer to learn about these birth control methods, once released.

The focus group will take approximately two hours of your time. Pizza and beverages will be provided.

The focus groups dates/times are:

Thursday, April 18th, 2019 at 5:00PM
Friday, April 19th, 2019 at 3:00PM
Friday April 19th, 2019 at 5:00PM

If interested, please email Jaziel Ramos-Ortiz at jramosor@purdue.edu stating your name and preferred focus group time.

Primary Investigator: Andrea DeMaria
Study Title: Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

[Note: This study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.]

APPENDIX B. MALE FOCUS GROUP CONSENT FORM

RESEARCH PARTICIPANT CONSENT FORM

Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

PI: Andrea DeMaria, PhD, MS
Co-I: Jaziel Ramos-Ortiz, MS
College of Health and Human Sciences
Purdue University

What is the purpose of this study?

You are invited to participate in a research study conducted by Jaziel Ramos-Ortiz, a doctoral student at Purdue University. This research is designed to explore the perceptions of college-aged men surrounding existing male contraceptive methods, prospective MHC options, and potential messaging strategy. You are being asked to participate in this study because you are a college-aged (age 18+) male, attending Purdue University. We anticipate recruiting 30 participants for this study.

What will I do if I choose to be in this study?

As a participant in this research, you will be asked to participate in a focus group, consisting of eight to ten people, total. This focus group will be audio recorded. You will be asked to share your insights and perspectives related to existing and future male birth control methods, potential barriers or facilitators to future male birth control use, and recommendations about how you'd like to receive information about future male birth control methods.

How long will I be in the study?

Participation in this study will require approximately two hours, depending on the group.

What are the possible risks or discomforts?

Risks from participating in this study are no greater than you would encounter in daily life.

Are there any potential benefits?

Although it is not anticipated that you will benefit directly through your involvement in this study, this research is expected to benefit male contraception developers, consumer researchers, and marketers by providing a better understanding of the needs of the college-aged male demographic related to male hormonal contraception.

Will information about me and my participation be kept confidential?

The project's research records may be reviewed by departments at Purdue University responsible for regulatory and research oversight. The audio recording from today's focus will be kept in a locked location at Purdue University. The recording will be destroyed when the research is complete. For research purposes, we will quote information offered during focus group conversations in professional presentations and publications. However, at no time will you be identified by name or job title in any reports or publications resulting from this research.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled. Please be sure to let your research representative know if you wish to discontinue your participation at any time throughout the focus group process.

Who can I contact if I have questions about the study?
If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact Jaziel Ramos-Ortiz at jramosor@purdue.edu.

If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at +1 (765) 494-5942, email (irb@purdue.edu) or write to:

Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1032
155 S. Grant St.
West Lafayette, IN 47907-2114

Documentation of Informed Consent
I have had the opportunity to read this consent form and have the research study explained. I have had the opportunity to ask questions about the research study, and my questions have been answered. I am prepared to participate in the research study described above, and I agree to having my responses audio recorded. I will be offered a copy of this consent form after I sign it.

_____ _____
Participant's Signature Date

_____
Participant's Name

_____ _____
Researcher's Signature Date

APPENDIX C. MALE FOCUS GROUP PROTOCOL

Male Focus Group Protocol

Welcome! I want to start by saying how thankful I am that you are here today to help us with this research project we are conducting about male birth control methods.

Let me say just a few words about the process for this focus group. First, the goal today is for me to hear your thoughts and opinions about existing and future male birth control methods—there are no right or wrong answers, everyone can have an opinion that I hope you are willing to share with each other. Everyone's confidentiality is very important. Nothing you discuss here should be discussed outside of the focus group. You are welcome to share stories about people in your life, without sharing their names. You are also welcome to skip any questions, not everyone has to answer every question. If you feel uncomfortable at any time during the discussion, you are welcomed to leave the conversation, and may return as you feel comfortable.

We're audio recording the session because we do not want to miss any of your comments. But, your names will always remain confidential, so anything we discuss in this room will not be tied to your name in any final reports that we write.

My name is Jaziel Ramos-Ortiz and I will be moderating the focus group. This is our co-moderator, _____. Our role today is to ask questions and listen. We will be moving the discussion from one question to the next. During our talk, I may sometimes have to interrupt you if I feel we are running out of time and there are several more questions to get to; please do not feel this has to do with what you are saying, it is just a matter of me keeping my word about getting you all out of here in no more than two hours.

So, let's go around and introduce ourselves, if you could please share your first name, your major, and where you are from.

Okay! I would like to begin by exploring your perceptions on some important issues. The first few questions deal with what you know and how you feel about birth control options.

1. Please use the paper and pen you were provided, and take a moment to write down what comes to mind when you hear the words <u>birth control.</u> I am going to give you 30 seconds. Try to write down at least five things.

(pause at least 30 seconds)

What were some things you wrote down?
Probe: Explain why these were your first thoughts.
Probe: What are some of the different kinds of birth control you know about? Can you share some of the positive and negatives of these kinds of birth control?
Probe: Does birth control have more of a female or male connotation? Why do you think this?

2. Can you share some of your experiences with birth control?
   Probe: What forms have you or your partner used in the past? (Does not have to be male-specific) Why did you choose to use these?
   Probe: Do you or your friends typically use condoms? Why or why not?
   Probe: What do you like about the options available? What do you dislike?
   Probe: Have you ever discussed condoms with people in your life? Walk me through one of these discussions. Who was it with? How did you bring up the topic?

Now, we are going to switch gears and I'd like to ask some questions that deal with what you know and how you feel about potential new birth control options that could soon become available for men.

3. As you may know, men only have two male-specific birth control options available to them, condoms and vasectomy (blocking or cutting the vas deferens tubes, which keeps sperm out of your semen–often a permanent procedure).
   Probe: Do you think these options are enough for men? Why or why not?
   Probe: If not, what other options would benefit men?
   Probe: Who is primarily responsible for pregnancy prevention? Women? Men? Both? Why?
   Probe: How do you think you would feel if there were more options available for you?

4. Please use the paper and pen you were provided, and take a moment to write down what comes to your mind when you think about the ideal male birth control method. What would an ideal male birth control method look like to you? How would it feel? What would it do? (Think dosage, the way its administered, etc.). I am going to give you 60 seconds. Please try to write down at least five things.

   (pause at least 60 sec)

   Tell me about some things you wrote down.
   Probe: Can you share with me what features you included? Why did you highlight these?
   Probe: What are some of the most important things your ideal male birth control method could provide for men (e.g., pregnancy prevention, stable mood, other things)?
   Probe: What would you definitely not want in a male birth control option? Why not?
   Probe: How much would you be willing to pay for something like this, if it was released and it did meet your expectations? (e.g., $100 per tube that lasts a month; $100 per tube that last 3 months, etc.) Why?
   Probe: Would something like this be of interest to you and your friends? Why or why not?
   Probe: IF NO, what would you suggest would be an adequate pregnancy prevention option for you and/or your friends?

5. Tell me about what you have heard about new hormonal male birth control options, if anything? (There is currently a transdermal gel undergoing clinical trials, you may have seen articles for it on Facebook, Twitter, etc. Other clinical trials that have occurred in the past included possibilities of an injection and a pill.) I am going to pass out the article about

the current method being tested and a sheet of paper with questions. I'll allow you about 5 minutes to look it over and answer the questions.

(Allow them at least 5 minutes)

QUESTIONS ON HANDOUT

What do you think about this? What are your immediate thoughts?
Would you consider using such a product? Why or why not?
What would prevent you from using such a product?
What would encourage you to use it?

Take some time to think about this and write down your responses and we will share our insights with everyone after about 5 minutes. (After 5 minutes, ask the questions that were on the handout to the larger group, use whiteboard/chart paper to record insights as participants share)

6. How does this male birth control gel compare to condoms? Vasectomy?
   Probe: How does male birth control gel compare to options currently available that women typically use?
   Probe: Do you think it would offer significant improvements compared to existing options (including female and male)? Why or why not?

7. How well would the male birth control gel fit into your lifestyle?
   Probe: IF WELL, what are some benefits? What are some limitations?
   Probe: IF NOT WELL, if the gel doesn't seem to be a viable option for your lifestyle, what would fit best? Why?

8. Given that it's been tested, approved, and safe, if you were offered to try a free sample of a new male birth control method for 30 days, would you trial the product? Why or why not?
   Probe: What would excite you about this?
   Probe: What are some hesitations you might have?
   Probe: Would you talk about this with anyone? Partner? Friend? Family member? Healthcare provider?

The last few things I'd like to discuss with you all have to do with social media and advertising. These questions deal with how you prefer to receive information about new products, and what strategies are most successful at getting your attention.

9. With the presence of social media and other instant forms of communication, we are constantly bombarded with advertisements, all fighting for our attention. What kinds of advertisements are usually successful at getting your attention?
   Probe: What makes you notice a specific advertisement among the thousands you encounter every day?
   Probe: Does where the information is coming from matter to you (i.e., social media ads, TV commercials, billboards, etc.)?

10. Now, I am going to handout a question sheet and ask you to get into pairs and discuss the questions with your partner. Please use the pen and paper provided to write down what you discuss. I will give you about 5 minutes to do this.

    (Allow them at least 5 minutes)

    QUESTIONS ON HANDOUT
    What would you like to see in an advertisement about a new male birth control method?
    What would an advertisement have to include in order to get your attention about the product?
    What messages would interest you?
    What about imagery?

Take some time to discuss this and we will share our insights with everyone after about 5 mins.

Probe: What did you discuss?

Probe: What messaging/images would have to be included on an advertisement to get your attention and cause you to purchase? (Use whiteboard/chart paper to record insights as participants share)

Those are all the questions I have prepared for today. Is there anything you wish to add, either related to the topic or this focus group experience?

Are there any questions you wish I would have asked? Thank you very much for your time!

APPENDIX D. MALE FOCUS GROUP DEMOGRAPHICS FORM

Male Focus Group Demographic Questionnaire
Paving the Way for Male Contraception: A Consumer Behavior Approach
PI: Andrea DeMaria, PhD, MS
College of Health and Human Sciences
Purdue University

To help ensure we are gathering insights from a diverse group of participants, we would like to conclude the interview by having you complete the following questionnaire.

1. What is your age? _____ years

2. What is your marital status?
☐ Single
☐ In a relationship and not living with partner
☐ Living with partner
☐ Married/Civil Union
☐ Divorced
☐ Widowed
☐ I prefer not to answer

3. Which of the following commonly used terms best describes your sexual orientation?
☐ Heterosexual/straight
☐ Homosexual/gay or lesbian
☐ Bisexual
☐ Asexual (I have never been sexually attracted to others)
☐ I prefer not to answer

4. Which of the following best describes your current sexual relationship status?
☐ I am in an exclusive/monogamous sexual relationship (that is, you and your partner are having sexual activity only with each other)
☐ I am having sexual relationships with several different people
☐ I am sexually active, but do not consider myself to be in a sexual relationship
☐ I am not currently sexually active with another person
☐ I have never been sexually active with another person

5. If you are in an exclusive/monogamous sexual relationship, how long have you been with your current sexual partner?
☐ _____years
☐ _____months

6. Has your partner ever been pregnant?

☐ Yes
   - How many times has your partner been pregnant? _____
   - How many of these pregnancies were unintended or unexpected? _____

☐ No

7. Do you have any children?

☐ Yes
   - How many? _____

☐ No

8. How many sexual partners have you had over the past 4 weeks?

☐ Vaginal sex: _____
☐ Anal sex: _____
☐ Give oral sex: _____
☐ Receive oral sex: _____

9. What is your employment status?

☐ Employed full time
☐ Employed part time
☐ Self-employed
☐ Homemaker
☐ Not employed
☐ Student
☐ Retired
☐ Currently seeking employment
☐ Not Listed (Specify) _____
☐ I prefer not to answer

10. What is the highest level of education you have attained?

_____

11. In what city and region do you live?

_____

12. What was the total combined income of those living in your house during the past 12 months? This includes money made by you, your partner, your parents (if you live at home), alimony, child support, and housing allowances.

_____

Thank you for taking the time to talk with me today. Do you know anyone who we should invite to participate in our study?

If Yes, Name: _____

Email: _____

Thank you very much for your time!

APPENDIX E. FEMALE FOCUS GROUP RECRUITMENT EMAIL

EMAIL FOR FEMALE PARTICIPANTS

Tired of condoms being the only male birth control option?

Soon, men will have access to alternative birth control options and researchers at Purdue University want to know what you think!

Data is being collected via focus group discussions from Purdue University students. We want to hear about your experiences and knowledge of existing male birth control methods, interest in alternative methods, and how you would prefer to learn about these birth control methods, once released.

The focus group will take approximately two hours of your time. Pizza and beverages will be provided.

The focus groups dates/times are:

Thursday, November 7th, 2019 at 5:00PM
Friday, November 8th, 2019 at 3:00PM
Friday November 8th, 2019 at 5:00PM

If interested, please email Jaziel Ramos-Ortiz at jramosor@purdue.edu stating your name and preferred focus group time.

Primary Investigator: Andrea DeMaria
Study Title: Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

[Note: This study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.]

APPENDIX F. FEMALE FOCUS GROUP VERBAL RECRUITMENT SCRIPT

Hello, my name is Jaziel Ramos-Ortiz, a 3rd year PhD candidate in the Division of Consumer Science. As part of my dissertation study, I will be conducting focus groups among college-aged women attending Purdue University to come and talk about your experiences and knowledge of existing male-specific birth control methods, interest in alternative male birth control methods, and how you would prefer to learn about these male birth control methods, once released. The focus group will take approximately an hour and a half to two hours of your time. Pizza and beverages will be provided.

The focus groups dates/times are:

Thursday, November 7th, 2019 at 5:00PM
Friday, November 8th, 2019 at 3:00PM
Friday November 8th, 2019 at 5:00PM

If you are interested, please email me at Jaziel Ramos-Ortiz at jramosor@purdue.edu stating your name and preferred focus group time.

The primary investigator on this study is Dr. Andrea DeMaria, an assistant professor in the College of Health and Human Sciences and this study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.

APPENDIX G. FEMALE FOCUS GROUP CONSENT FORM

RESEARCH PARTICIPANT CONSENT FORM

Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

PI: Andrea DeMaria, PhD, MS
College of Health and Human Sciences
Purdue University

Key Information

Please take time to review this information carefully. This is a research study. Your participation in this study is voluntary which means that you may choose not to participate at any time without penalty or loss of benefits to which you are otherwise entitled. You may ask questions to the researchers about the study whenever you would like. If you decide to take part in the study, you will be asked to sign this form, be sure you understand what you will do and any possible risks or benefits.

This research is designed to explore the perceptions of college-aged women surrounding existing male contraceptive methods, prospective MHC options, and potential messaging strategy. This research project will be carried out in multiple phases, the first phase began in March 2019 and the final phase will end in April 2020. This particular study is part of Phase 1, which will take place in October 2019. Additional explanations may be more detailed in the sections below.

What is the purpose of this study?

The purpose of this study is to explore the perceptions of college-aged women surrounding existing male contraceptive methods, prospective male contraceptive options, and potential messaging strategy. These perceptions are being gathered to better understand what effective messaging and marketing strategy for a novel health product, specifically male contraception, would consist of and what it would have to include to encourage future product uptake. You are being asked to participate in this study because you are a female college student, attending Purdue University, between the ages of 18 and 26 years. We anticipate recruiting a total of 49 participants for this study.

What will I do if I choose to be in this study?

As a participant in this research, you will be asked to participate in a focus group, consisting of four to eight people, total. This focus group will be audio recorded. You will meet with two researchers, at a predetermined time and location, and you will be asked to share your insights and perspectives related to existing and future male birth control methods, potential barriers or facilitators to future male birth control use, and recommendations about how you'd like to receive information about future male birth control methods.

How long will I be in the study?

Participation in this study will require one focus group session, lasting approximately two hours, depending on the group.

What are the possible risks or discomforts?
Risks from participating in this study are no greater than you would encounter in daily life.

Are there any potential benefits?
Though direct or immediate benefits for participants are not anticipated, this research may contribute to benefitting male contraception developers, consumer researchers, and marketers by providing a better understanding of the needs of the college-aged female demographic related to male hormonal contraception.

Will information about me and my participation be kept confidential?
Confidentiality cannot be guaranteed when collecting data via focus groups, due to multiple participants being involved. Additionally, federal regulations require consent forms must be kept for a minimum of three years after the closure of a study, as the project's research records may be reviewed by departments at Purdue University responsible for regulatory and research oversight. Despite these potential circumstances, the researchers will still take certain precautions to protect confidentiality such as asking participants to use pseudonyms instead of actual names, password-protecting the focus group audio-recordings, storing consent forms in a locked location at Purdue University, and destroying files when the research is complete. For research purposes, we may quote information offered during focus group conversations in professional presentations and publications. However, at no time will you be identified by name or job title in any reports or publications resulting from this research.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled. Please be sure to let your research representative know if you wish to discontinue your participation at any time throughout the focus group process.

Who can I contact if I have questions about the study?
If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact Jaziel Ramos-Ortiz at jramosor@purdue.edu.

If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at +1 (765) 494-5942, email (irb@purdue.edu) or write to:

Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1032
155 S. Grant St.
West Lafayette, IN 47907-2114

To report anonymously via Purdue's Hotline, see www.purdue.edu/hotline.

Documentation of Informed Consent

I have had the opportunity to read this consent form and have the research study explained. I have had the opportunity to ask questions about the research study, and my questions have been answered. I am prepared to participate in the research study described above, and I agree to having my responses audio recorded. I will be offered a copy of this consent form after I sign it.

_____ _____

Participant's Signature Date

_____

Participant's Name

_____ _____

Researcher's Signature Date

APPENDIX H. FEMALE FOCUS GROUP PROTOCOL

Female Focus Group Protocol

Welcome! I want to start by saying how thankful I am that you are here today to help us with this research project we are conducting about male birth control methods.

Let me say just a few words about the process for this focus group. First, the goal today is for me to hear your thoughts and opinions about existing and future male birth control methods—there are no right or wrong answers, everyone can have an opinion that I hope you are willing to share with each other. Everyone's confidentiality is very important. Nothing you discuss here should be discussed outside of the focus group. You are welcome to share stories about people in your life, without sharing their names. You are also welcome to skip any questions, not everyone has to answer every question. If you feel uncomfortable at any time during the discussion, you are welcomed to leave the conversation, and may return as you feel comfortable.

We're audio recording the session because we do not want to miss any of your comments. But, your names will always remain confidential, so anything we discuss in this room will not be tied to your name in any final reports that we write.

My name is Jaziel Ramos-Ortiz and I will be moderating the focus group. This is our co-moderator, _____. Our role today is to ask questions and listen. We will be moving the discussion from one question to the next. During our talk, I may sometimes have to interrupt you if I feel we are running out of time and there are several more questions to get to; please do not feel this has to do with what you are saying, it is just a matter of me keeping my word about getting you all out of here in no more than two hours.

So, let's go around and introduce ourselves, if you could please share your first name, your major, and where you are from.

Okay! I would like to begin by exploring your perceptions on some important issues. The first few questions deal with what you know and how you feel about birth control options.

1. Please use the paper and pen you were provided and take a moment to write down what comes to mind when you hear the words <u>birth control.</u> I am going to give you 30 seconds. Try to write down at least five things. *(pause at least 30 seconds)*

   What were some things you wrote down?
   Probe: Explain why these were your first thoughts.
   Probe: What are some of the different kinds of birth control you know about? Can you share some of the positive and negatives of these kinds of birth control?
   Probe: Does birth control have more of a female or male connotation? Why do you think this?

2. Can you share some of your experiences with birth control?
   Probe: What forms have you or your partner used in the past? Why did you choose to use these?
   Probe: Do you or your friends typically use condoms with your partners? Why or why not?
   Probe: What do you like about the options available? What do you dislike?
   Probe: Have you ever discussed contraception with any partners you've had? Walk me through one of these discussions.

Now, we are going to switch gears and I'd like to ask some questions that deal with what you know and how you feel about potential new birth control options that could soon become available for men.

3. As you may know, men only have two male-specific birth control options available to them, condoms and vasectomy (blocking or cutting the vas deferens tubes, which keeps sperm out of your semen–often a permanent procedure).
   Probe: Do you think these options are enough for men? Why or why not?
   Probe: If not, what other options would benefit men?
   Probe: Who is primarily responsible for pregnancy prevention? Women? Men? Both? Why?
   Probe: How do you think you would feel if there were more options available for men?

4. What do you think an ideal male birth control method for men would look like to you? How would it feel? What would it do? (Think dosage, the way its administered, etc.).
   Probe: Can you share with me what features you included? Why did you highlight these?
   Probe: What are some of the most important things your ideal male birth control method could provide for men (e.g., pregnancy prevention, stable mood, other things)?
   Probe: What would you definitely not want in a male birth control option? Why not?
   Probe: Would something like this be of interest to the men in your life? Why or why not?
   Probe: IF NO, what would you suggest would be an adequate pregnancy prevention option for men in your life?

5. Tell me about what you have heard about new hormonal male birth control options, if anything? (There is currently a transdermal gel undergoing clinical trials, you may have seen articles for it on Facebook, Twitter, etc. Other clinical trials that have occurred in the past included possibilities of an injection and a pill.) I am going to pass out the article about the current method being tested and a sheet of paper with questions. I'll allow you about 5 minutes to look it over and answer the questions. *(Allow them at least 5 minutes)*

   QUESTIONS ON HANDOUT
   What do you think about this? What are your immediate thoughts?
   Do you know anyone who might consider using such a product? Why or why not?
   What might prevent someone from using such a product?
   What might encourage someone to use it?

Take some time to think about this and write down your responses and we will share our insights with everyone after about 5 minutes. (After 5 minutes, ask the questions that were on the handout to the larger group, use whiteboard/chart paper to record insights as participants share)

6. How does this male birth control gel compare to condoms? Vasectomy?
   Probe: How does male birth control gel compare to options currently available that women typically use?
   Probe: Do you think it would offer significant improvements compared to existing options (including female and male)? Why or why not?

7. How well do you think the male birth control gel would fit into the lifestyle of your partner/men in your life?
   Probe: IF WELL, what are some benefits? What are some limitations?
   Probe: IF NOT WELL, if the gel doesn't seem to be a viable option, what would fit best? Why?

The last few things I'd like to discuss with you all have to do with social media and advertising. These questions deal with how you prefer to receive information about new products, and what strategies are most successful at getting your attention.

8. With the presence of social media and other instant forms of communication, we are constantly bombarded with advertisements, all fighting for our attention. What kinds of advertisements are usually successful at getting your attention?
   Probe: What makes you notice a specific advertisement among the thousands you encounter every day?
   Probe: Does where the information is coming from matter to you (i.e., social media ads, TV commercials, billboards, etc.)?

9. What would you like to see in an advertisement about a new male birth control method?
   Probe: What do you think your partner/men in your life would like to see in an advertisement about a new male birth control method?
   Probe: What would an advertisement have to include in order to get your attention about the product?
   Probe: What would an advertisement have to include in order to get your partner's/men in your life's attention about the product?

10. What messaging/images would have to be included on an advertisement to get your attention and cause you to purchase? (Use whiteboard/chart paper to record insights as participants share)
    Probe: What messages would interest you?
    Probe: What about imagery?

Those are all the questions I have prepared for today. Is there anything you wish to add, either related to the topic or this focus group experience?

Are there any questions you wish I would have asked? Thank you very much for your time!

APPENDIX I. FEMALE FOCUS GROUP DEMOGRAPHICS FORM

Female Focus Group Demographic Questionnaire
Paving the Way for Male Contraception: A Consumer Behavior Approach
PI: Andrea DeMaria, PhD, MS
College of Health and Human Sciences
Purdue University

To help ensure we are gathering insights from a diverse group of participants, we would like to conclude the interview by having you complete the following questionnaire.

1. What is your age? _____ years

2. What is your marital status?

☐ Single
☐ In a relationship and not living with partner
☐ Living with partner
☐ Married/Civil Union
☐ Divorced
☐ Widowed
☐ I prefer not to answer

3. Which of the following commonly used terms best describes your sexual orientation?

☐ Heterosexual/straight
☐ Homosexual/gay or lesbian
☐ Bisexual
☐ Asexual (I have never been sexually attracted to others)
☐ I prefer not to answer

4. What contraceptive methods have you used in the past? (Mark all that apply)

☐ Male condom
☐ Female condom
☐ Female hormonal (i.e., IUD, Nuvaring, oral contraceptive pills, etc.) or nonhormonal contraception (i.e., copper IUD)
☐ Withdrawal ("pull out" method)
☐ Other _____ (specify)
☐ None

5. Which method would you say is your primary mode of contraception when engaging in sex with a partner?

☐ Male condom
☐ Female hormonal contraception (i.e., IUD, Nuvaring, the pill, the patch, the shot etc.)

☐ Female nonhormonal contraception (i.e., copper IUD, female condom)
☐ Withdrawal ("pull out" method)
☐ None
☐ Other _____ (specify)

6. Which of the following best describes your current sexual relationship status?
☐ I am in an exclusive/monogamous sexual relationship (that is, you and your partner are having sexual activity only with each other)
☐ I am having sexual relationships with several different people
☐ I am sexually active, but do not consider myself to be in a sexual relationship
☐ I am not currently sexually active with another person
☐ I have never been sexually active with another person

7. If you are in an exclusive/monogamous sexual relationship, how long have you been with your current sexual partner?
☐ _____years
☐ _____months

8. Have you ever been pregnant?
☐ Yes
   - How many times has your partner been pregnant? _____
   - How many of these pregnancies were unintended or unexpected? _____
☐ No

9. Do you have any children?
☐ Yes
   - How many? _____
☐ No

10. How many sexual partners have you had over the past 4 weeks?
☐ Vaginal sex: _____
☐ Anal sex: _____
☐ Give oral sex: _____
☐ Receive oral sex: _____

11. What is your employment status?
☐ Employed full time
☐ Employed part time
☐ Self-employed
☐ Homemaker
☐ Not employed
☐ Student

- ☐ Retired
- ☐ Currently seeking employment
- ☐ Not Listed (Specify) _____
- ☐ I prefer not to answer

12. What year in school are you currently in?
- ☐ Freshman
- ☐ Sophomore
- ☐ Junior
- ☐ Senior
- ☐ 5th year or higher

13. In what city and region do you live?
    _____

14. What was the total combined income of those living in your house during the past 12 months? This includes money made by you, your partner, your parents (if you live at home), alimony, child support, and housing allowances.
    _____

Thank you for taking the time to talk with me today. Do you know anyone who we should invite to participate in our study?

If Yes, Name: _____

Email: _____

Thank you very much for your time!

APPENDIX J. INTERVIEW RECRUITMENT EMAIL

Tired of condoms being the only male birth control option?
Soon, men will have access to alternative birth control options and researchers at Purdue University want to know what you think!

Interviews are being held with both male and female Purdue University students. We want to hear about your experiences and knowledge of existing male birth control methods, interest in and perceptions of potential alternative methods, and how you would prefer to learn about these birth control methods, once released.

The interview will take approximately 45-60 minutes of your time. We will be offering a $25 Amazon gift card as compensation for those who participate.

If interested, please email Jaziel Ramos-Ortiz at jramosor@purdue.edu stating your name and list 3 preferred interview times and locations.

Primary Investigator: Andrea DeMaria
Study Title: Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

[Note: This study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.]

APPENDIX K. INTERVIEW VERBAL RECRUITMENT SCRIPT

Hello, my name is Jaziel Ramos-Ortiz, a 3rd year PhD candidate in the Division of Consumer Science. As part of my dissertation study, I will be conducting interviews among college-aged men and women attending Purdue University to come and talk about your experiences and knowledge of existing male-specific birth control methods, interest in alternative male birth control methods, and how you would prefer to learn about these male birth control methods, once released. The interview will take approximately 45 to 60 minutes of your time. A $25.00 Amazon gift card will be offered as compensation to thank those who participate for their valuable time and insights.

If you are interested, please email Jaziel Ramos-Ortiz at jramosor@purdue.edu stating your name and list 3 preferred interview times and locations.

The primary investigator on this study is Dr. Andrea DeMaria, an assistant professor in the College of Health and Human Sciences and this study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.

APPENDIX L. INTERVIEW CONSENT FORM

RESEARCH PARTICIPANT CONSENT FORM

Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

PI: Andrea DeMaria, PhD, MS
College of Health and Human Sciences
Purdue University

Key Information

Please take time to review this information carefully. This is a research study. Your participation in this study is voluntary which means that you may choose not to participate at any time without penalty or loss of benefits to which you are otherwise entitled. You may ask questions to the researchers about the study whenever you would like. If you decide to take part in the study, you will be asked to sign this form, be sure you understand what you will do and any possible risks or benefits.

This research is designed to explore the perceptions of college-aged men and women surrounding existing male contraceptive methods, prospective male contraceptive options, and potential messaging strategy. This research project will be carried out in multiple phases, the first phase began in March 2019 and the final phase will end in April 2020. This particular study is part of Phase 2, which will take place from October 2019 to December 2019. Additional explanations may be more detailed in the sections below.

What is the purpose of this study?

The purpose of this study is to explore the perceptions of college-aged men and women surrounding existing male contraceptive methods, prospective male contraceptive options, and potential messaging strategy. These perceptions are being gathered to better understand what effective messaging and marketing strategy for a novel health product, specifically male contraception, would consist of and what it would have to include to encourage future product uptake. You are being asked to participate in this study because you are a college-aged (age 18+) male or female, attending Purdue University. We anticipate recruiting a total of 49 participants for this study.

What will I do if I choose to be in this study?

As a participant in this research, you will be asked to participate in an interview, which will be audio recorded. You will meet with a researcher, at a time and place convenient to you, and you will be asked to share your insights and perspectives related to existing and future male birth control methods, potential barriers or facilitators to future male birth control use, and recommendations about how you'd like to receive information about future male birth control methods. You will also be shown example male birth control advertisements and asked to provide feedback on each.

How long will I be in the study?
Participation in this study will require one interview session, lasting approximately 45 to 60 minutes.

What are the possible risks or discomforts?
Risks from participating in this study are no greater than you would encounter in daily life.
Are there any potential benefits?
Though direct or immediate benefits for participants are not anticipated, this research may contribute to benefitting male contraception developers, consumer researchers, and marketers by providing a better understanding of the needs of the college-aged demographic related to male hormonal contraception.

Will information about me and my participation be kept confidential?
Federal regulations require consent forms must be kept for a minimum of three years after the closure of a study, as the project's research records may be reviewed by departments at Purdue University responsible for regulatory and research oversight. Despite this potential circumstance, the researchers will still take certain precautions to protect confidentiality, such as password-protecting the interview audio-recordings, storing consent forms in a locked location at Purdue University, and destroying files when the research is complete. For research purposes, we may quote information offered during interview conversations in professional presentations and publications. However, at no time will you be identified by name or job title in any reports or publications resulting from this research.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty. Please be sure to let your research representative know if you wish to discontinue your participation at any time throughout the interview process.

Who can I contact if I have questions about the study?
If you have questions, comments or concerns about this research project, you can talk to one of the researchers. Please contact Jaziel Ramos-Ortiz at jramosor@purdue.edu.

If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at +1 (765) 494-5942, email (irb@purdue.edu) or write to:

Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1032
155 S. Grant St.
West Lafayette, IN 47907-2114

To report anonymously via Purdue's Hotline, see www.purdue.edu/hotline.

Documentation of Informed Consent

I have had the opportunity to read this consent form and have the research study explained. I have had the opportunity to ask questions about the research study, and my questions have been answered. I am prepared to participate in the research study described above, and I agree to having my responses audio recorded. I will be offered a copy of this consent form after I sign it.

_____ _____

Participant's Signature Date

_____

Participant's Name

_____ _____

Researcher's Signature Date

APPENDIX M. INTERVIEW PROTOCOL

Interview Protocol

Welcome! I want to start by saying how thankful I am that you are here today to help me with this research project I am conducting about male birth control methods.

I have a consent form for you to review before we get going, which describes the study's purpose and details for your participation. **[Hand participant consent form.]**

In brief, the goal today is for me to hear your thoughts and opinions about existing and future male birth control methods. Your experiences are very important to this study, there are no right or wrong answers, and your responses will be kept completely anonymous. As an interviewer, I will ask you questions related to your current knowledge of existing birth control methods available. Then, we will discuss your knowledge and interest in alternative male birth control methods. Lastly, we will wrap up the interview with an exercise, where I will display some example advertisements and we will explore your responses and feedback on each.

I am going to give you an additional minute to further review the consent form, and please know that I am willing to answer any questions you may have. **[Allow participant additional minute or two to read.]** Do you understand the what the study is exploring, and what your role will be? Do you have any questions for me about the study before you sign the consent form? **[He/She signs both. You sign both. You keep one copy, and he/she keeps the other copy.]** Please keep this copy of the signed consent form for your records. It contains information about the study, including the contact information for our primary investigator. Do you need anything before we get started?

Okay, I am now turning the audio recorder on. Thank you, again, for agreeing to speak to me today. Just to be sure, are you okay with me audio recording today's conversation? Please say 'yes' or 'no.'

EXPERIENCES & KNOWLEDGE OF EXISTING CONTRACEPTIVE METHODS. I would like to begin by exploring your perceptions on some important issues. The first few questions deal with what you know and how you feel about birth control options.

1. I'd like to hear your thoughts on what immediately comes to mind when you hear the words <u>birth control.</u>
   Probe: Explain why these were your first thoughts.
   Probe: What are some of the different kinds of birth control you know about? Can you share some of the positive and negatives of these kinds of birth control?
   Probe: Does birth control have more of a female or male connotation? Why do you think this?

2. Can you share some of your experiences with birth control?

[IF FEMALE] *Probe:* What forms have you used in the past? Why did you choose to use these?
[IF MALE] *Probe:* What forms have you or your partner used in the past? (Does not have to be male-specific) Why did you choose to use these?
Probe: What do you like about the options available? What do you dislike?
Probe: Have you ever discussed these options with people in your life?

MHC KNOWLEDGE AND INTEREST. Now, we are going to switch gears and I'd like to ask some questions that deal with what you know and how you feel about potential new birth control options that could soon become available for men.

3. As you may know, men only have two male-specific birth control options available to them, condoms and vasectomy (blocking or cutting the vas deferens tubes, which keeps sperm out of your semen–often a permanent procedure).
   Probe: Do you think these options are enough for men? Why or why not?
   Probe: If not, what other options would benefit men?
   Probe: Who is primarily responsible for pregnancy prevention? Women? Men? Both? Why?
   Probe: How do you think you would feel if there were more options available for men?

4. I'd like to hear your thoughts on what immediately comes to mind when you think about the ideal male birth control method. What would an ideal male birth control method look like to you? How would it feel? What would it do? (Think dosage, the way its administered, etc.).
   Probe: What features would you include? Why did you highlight these?
   Probe: What are some of the most important things your ideal male birth control method could provide for men (e.g., pregnancy prevention, stable mood, other things)?
   Probe: What would you definitely not want in a male birth control option? Why not
   [IF FEMALE] *Probe:* Would something like this be of interest to the men in your life? Why or why not?
   Probe: IF NO, what would you suggest would be an adequate pregnancy prevention option for men in your life?
   [IF MALE] *Probe:* Would something like this be of interest to you and your friends? Why or why not?
   Probe: IF NO, what would you suggest would be an adequate pregnancy prevention option for you and/or your friends?

5. Tell me about what you have heard about new hormonal male birth control options, if anything?
   [if heard something] Probe: Where did you hear this from?
   [if not heard anything] Probe: Why do you think you do not hear anything on this topic?

6. There is currently a transdermal gel undergoing clinical trials, you may have seen articles for it on Facebook, Twitter, etc. Other clinical trials that have occurred in the past included possibilities of an injection and a pill.) I am going to let you read an article about the current

method being tested. I'll allow you about 5 minutes to look it over and then I'd like to discuss your immediate thoughts. *(Allow them at least 5 minutes)*
Probe: What do you think about this? What are your immediate thoughts?
[IF FEMALE] *Probe:* Do you know anyone who might consider using such a product? Why or why not?
Probe: What might prevent someone from using such a product?
Probe: What might encourage someone to use it?
[IF MALE] *Probe:* Would you consider using such a product? Why or why not?
Probe: What would prevent you from using such a product?
Probe: What would encourage you to use it?

7. How does this male birth control gel compare to condoms? Vasectomy?
   Probe: How does male birth control gel compare to options currently available that women typically use?
   Probe: Do you think it would offer significant improvements compared to existing options (including female and male)? Why or why not?

8. [IF FEMALE] How well do you think the male birth control gel would fit into the lifestyle of your partner/men in your life?
   [IF MALE] How well would the male birth control gel fit into your lifestyle?

9. [IF FEMALE] Given that it's been tested, approved, and safe, if you your partner was offered to try a free sample of a new male birth control method for 30 days, would you be open to this? Why or why not?
   [IF MALE] Given that it's been tested, approved, and safe, if you were offered to try a free sample of a new male birth control method for 30 days, would you trial the product? Why or why not?

ADVERTISING MESSAGE TESTING. The last few things I'd like to discuss with you relate to social media and advertising. I will be showing you a series of example advertisements, one at a time, for a fictional, new male contraceptive method. I want to understand your perspective on these example ads, how you typically prefer to receive information about new products, and what strategies are most successful at getting your attention. *(Ask questions 10-16 for each example ad)*

10. How well do you feel this advertisement relates to you? Your life? Your friends?
    Probe: What do you think is the core message or one thing that you take away from the concept or design?
    Probe: What audience, do you think, was the target for this message?
    Probe: How did this ad make you feel about male contraception?
    Probe: How, if at all, did viewing this message impact your opinion of male contraceptive methods?

11. On a scale of 1 to 10, how informational do you perceive this advertisement to be?
    Probe: Please share a bit about why you think this.

12. On a scale of 1 to 10, how realistic do you perceive the imagery on this advertisement to be?
    Probe: Please share a bit about why you think this.

13. On a scale of 1 to 10, how serious do you perceive this advertisement to be?
    Probe: Please share a bit about why you think this.

14. On a scale of 1 to 10, how humorous do you perceive this advertisement to be?
    Probe: Please share a bit about why you think this.

15. On a scale of 1 to 10, how credible do you perceive this advertisement to be based on the source (i.e., CDC website, Facebook post, etc.)?
    Probe: Please share a bit about why you think this.

16. What would you change, add, or delete on this particular advertisement?
Probe: What could you change about this message that you think could increase interest and potential use of male contraceptive methods?

Aspirational Ad

Relatable Ad

Serious Ad

Humorous Ad

Non-Informational Ad

Informational Ad

Those are all the questions I have prepared for today. Is there anything you wish to add? Are there any questions you wish I would have asked? Thank you very much for your time!

APPENDIX N. INTERVIEW DEMOGRAPHICS FORM

Interview Demographic Questionnaire
Paving the Way for Male Contraception: A Consumer Behavior Approach
PI: Andrea DeMaria, PhD, MS
College of Health and Human Sciences
Purdue University

To help ensure we are gathering insights from a diverse group of participants, we would like to conclude the interview by having you complete the following questionnaire.

1. What is your age? _____ years

2. What is your marital status?
☐ Single
☐ In a relationship and not living with partner
☐ Living with partner
☐ Married/Civil Union
☐ Divorced
☐ Widowed

3. Which of the following commonly used terms best describes your sexual orientation?
☐ Heterosexual/straight
☐ Homosexual/gay or lesbian
☐ Bisexual
☐ Asexual (I have never been sexually attracted to others)
☐ I prefer not to answer

4. Which of the following best describes your current sexual relationship status?
☐ I am in an exclusive/monogamous sexual relationship (that is, you and your partner are having sexual activity only with each other)
☐ I am having sexual relationships with several different people
☐ I am sexually active, but do not consider myself to be in a sexual relationship
☐ I am not currently sexually active with another person
☐ I have never been sexually active with another person

5. What contraceptive methods have you used in the past? (Mark all that apply)
☐ Male condom
☐ Female condom
☐ Female hormonal (i.e., IUD, Nuvaring, oral contraceptive pills, etc.) or nonhormonal contraception (i.e., copper IUD)
☐ Withdrawal (“pull out” method)

☐ Other _____ (specify)
☐ None

6. Which method would you say is your primary mode of contraception when engaging in sex with a partner?
☐ Male condom
☐ Female hormonal contraception (i.e., IUD, Nuvaring, the pill, the patch, the shot etc.)
☐ Female nonhormonal contraception (i.e., copper IUD, female condom)
☐ Withdrawal ("pull out" method)
☐ None
☐ Other _____ (specify)

7. If you are in an exclusive/monogamous sexual relationship, how long have you been with your current sexual partner?
☐ _____years
☐ _____months

8. Have you or a past/current partner ever been pregnant?
☐ Yes
    - How many times has your partner been pregnant? _____
    - How many of these pregnancies were unintended or unexpected? _____
☐ No

9. Do you have any children?
☐ Yes
    - How many? _____
☐ No

10. How many sexual partners have you had over the past 4 weeks?
☐ Vaginal sex: _____
☐ Anal sex: _____
☐ Give oral sex: _____
☐ Receive oral sex: _____

11. What is your employment status?
☐ Employed full time
☐ Employed part time
☐ Self-employed
☐ Homemaker
☐ Not employed
☐ Student
☐ Retired

☐ Currently seeking employment
☐ Not Listed (Specify) _____

12. What year in school are you currently in?

☐ Freshman
☐ Sophomore
☐ Junior
☐ Senior
☐ 5th year or higher

13. In what city and region do you live?

_____

14. What was the total combined income of those living in your house during the past 12 months? This includes money made by you, your partner, your parents (if you live at home), alimony, child support, and housing allowances.

_____

Thank you for taking the time to talk with me today. Do you know anyone who we should invite to participate in our study?

If Yes, Name: _____

Email: _____

Thank you very much for your time!

APPENDIX O. MHC SUPPLEMENTAL ARTICLE

Birth control for men: researchers test a male contraceptive gel
One question the researchers hope to answer: Will men like it and will they use it?
Nov. 28, 2018, 4:19 PM EST

The National Institutes of Health is looking for a few good men —and a few brave women — to try out a new birth control gel for males.

The gel, rubbed into the shoulders daily, gradually brings down sperm counts so that men cannot make a woman pregnant. The National Institute of Child Health and Human Development (NICHD), part of the NIH, is helping enroll about 400 couples at sites around the world to test how well the gel works to prevent pregnancy, and also check out how well people like it and whether men will use it as directed.

“This is the first time that men are using it as part of a couple to test for effectiveness,” said Diana Blithe, chief of NICHD’s Contraceptive Development Program.

The gel formulation, called NES/T, includes a progestin-containing compound called segesterone acetate, which is made under the brand name Nestorone, along with a dose of testosterone.
“It is applied to the back and shoulders and absorbed through the skin. The progestin blocks natural testosterone production in the testes, reducing sperm production to low or nonexistent levels,” the NICHD said in a statement.

It’s formulated as a gel because Nestorone does not get absorbed by the body when it’s taken orally, and testosterone does not stay in the body for a full day when taken as a pill. Both hormones last longer and work better when dosed through the skin.

There is no commercial male hormonal contraceptive on the U.S. market now. All men have to choose from are condoms or vasectomy.

"Worldwide, 85 million pregnancies (40 percent of all pregnancies) per year are unplanned, contributing to a higher incidence of adverse health outcomes for women and infants," the Population Council, which developed the product and which is helping test it, said in a statement.

Nestorone, combined with the hormone estradiol, is also used as a female contraceptive. A product was approved by the U.S. Food and Drug Administration in August as part of a vaginal ring for women to use as birth control.

How can the same hormone work as a contraceptive in both men and women? It’s because many common hormones have similar chemical structures, Blithe said.

In men, the hormone tricks the body into thinking it can stop making sperm. In women, it mimics pregnancy and tricks the body into thinking it can stop making eggs. “The male has very low levels

of progesterone normally. Now they are exposed to a high amount, and that tells the testes, ‘oh there is a lot of steroid around so I don’t need to make more now’,” Blithe said.

Giving back some testosterone along with the Nestorone stops undesirable side-effects such as low libido and muscle loss, Blithe said.

“The potential of this new gel is huge,” said Dr. William Bremner of the University of Washington School of Medicine, who is helping test the gel. “There is a misperception that men are not interested in, or are even afraid of, tools to control their own fertility. We know that’s not the case.”

One question is how effective the treatment will be. Different birth control methods have different efficacies.

“If we are talking about a daily pill in women, if they use it perfectly, the failure rate is extremely low,” Blithe said. “In typical use the failure rate is 7 percent. With condoms, if they are used perfectly, the failure rate is low but in typical use the failure rate is 12 percent.”

In theory, men could forget to use the gel for a day with no consequences. “If they stop using it for three, four, or five days, then it won’t work the way it is supposed to,” Blithe said.

In the trial, men will use the gel until their sperm count falls low enough, and then their wives or partners will stop using their own birth control.

“Do I think they’ll use it? Certainly, they are capable of using it and they are willing to use it," Blithe said. "But people are human and people forget.”

APPENDIX P. QUALITATIVE CODEBOOKS

Male Focus Group Codebook

- BC Gendered Connotations
  - **Female:** participants share that BC is typically associated with the female gender
  - **Male:** participants share that BC is typically associated with the female gender
- Prior experiences with BC
  - **Positive:** participants share positive or satisfactory experiences with prior BC methods
  - **Negative:** participants share negative or poor experiences with prior BC methods
- BC Responsibility Norms
  - **Male responsibility:** participants share BC responsibility norms as falling on males
  - **Female responsibility:** participants share BC responsibility norms as falling on females
  - **Shared responsibility:** participants share BC responsibility norms as being shared among males and females
- Willingness to Pursue MHC
  - **Provide a range of options/choices for men:** participants believe they/men they know would be willing to pursue MHC as it would provide men a range of choices to participate in pregnancy prevention
  - **Male/female biological differences:** participants believe they/men they know would be willing to pursue MHC as they feel it would make more biological sense to "unload the gun"
  - **Fear of vasectomy:** participants believe they/men they know would be willing to pursue MHC as they do not want children but fear vasectomy, the semi-permanent option available to them
  - **"No downside" to an additional BC option:** participants believe they/men they know would be willing to pursue MHC as they do not see a negative side to it
  - **Share burden with women:** participants believe they/men they know would be willing to pursue MHC as they feel it would allow them to participate in pregnancy prevention
  - **Desire for autonomy:** participants believe they/men they know would be willing to pursue MHC in order to claim their own role in pregnancy prevention, prevent feeling powerless
  - **Increased security, safer sex:** participants believe they/men they know would be willing to pursue MHC as they feel in could be used in combination with other BC methods for increased security and safer sex
  - **Fear of unintended pregnancy:** participants believe they/men they know would be willing to pursue MHC as a result of fear of getting a female partner pregnant
  - **"If it's good to go:"** participants believe they/men they know would be willing to pursue MHC as long as it is effective, has no negative side effects, etc.

    - **Distrust of female partners:** participants believe they/men they know would be willing to pursue MHC due to distrusting female partners to remember to use or employ accurate use of their BC methods
- Non-Willingness to Pursue MHC
    - **"It is what it is:"** participants believe the way BC is currently is sufficient, or that BC being mainly on women is the way it should be
    - **Push-back regarding side effects:** participants believe side effect concerns would generate push back from men and an unwillingness to pursue MHC
    - **Effects on masculinity/manhood:** participants believe men would be unwilling to pursue MHC due to the perceived effect taking BC would have on a male's masculinity
    - **Distrust from female partners:** participants believe female partners would not trust a male partner's ability to remember to use or employ accurate use of MHC
    - **"Not the first person to try it:"** participants believe they may try MHC at some point, but would not be among the first few who would try it
- Ideal MHC Method: attributes and features participants want and do not want in their ideal form of male birth control
    - **Non-daily, less frequent:** participants describe an option that would not need to be taken daily, lower frequency of use
    - **Low maintenance:** participants describe an option that would be relatively low maintenance
    - **Reversible:** participants describe a method that would be easily reversible
    - **Painless, non-invasive:** participants describe an option that would not be painful or too invasive for males to use
    - **Does not decrease sexual satisfaction/sensation:** participants describe an option that would not negatively affect sexual satisfaction or sensation
    - **Does not have severe side effects:** participants describe an option that would not result in serious side effects
    - **Does not negatively affect male hormones:** participants describe an option that would not negatively affect male hormonal balance
    - **Not "in the moment":** participants describe an option that could be used not immediately before sexual encounters, a more planned method
    - **Situational use:** participants describe an option that could be used immediately before sexual encounters
    - **Need for a variety of MHC methods:** participants describe there would be a need for multiple different MHC options to better fit men's needs
    - **Route of administration:** participants describe various ways they would prefer MHC to be administered
    - **Affordable:** participants describe that a potential MHC method would have to be an affordable option
    - **Additive benefit:** participants describe that a potential MHC method would preferably include some sort of added benefit (i.e., acne control, regulate hormones, etc.)
    - **Visible/efficacy feedback:** participants describe that a potential MHC method would preferably be a visible method or include some way to test efficacy/that it is working properly

- Pricing for Potential MHC Methods: participants share what they would be willing to pay for a potential MHC methods
- Prior awareness of MHC Methods: participants share what they have heard about MHC methods in progress prior to attending the focus group
- Perceptions of MHC Gel Example: participants shared how they felt about the MHC gel example
    - **Difficulty applying**
    - **Hormonal concerns**
    - **Flexible, wiggle room**
    - **Minimally invasive**
    - **Less side effects**
    - **Questions**
- Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel positively about surrounding MHC gel example
    - **If could test sperm count/effectiveness**
    - **Flexible, wiggle room**
    - **Increase security, safer sex**
    - **Low maintenance**
    - **Ease of use**
    - **If in long-term relationship**
    - **Relieve burden from female partner**
    - **Prevents undesirable side effects**
- Non-Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel negatively about surrounding MHC gel example
    - **Difficulty applying**
    - **Long term health effects**
    - **Skeptical of novelty**
    - **If too expensive**
    - **Forget to take it**
    - **Undesired attributes/features**
    - **If difficult to access**
    - **Difficult to commit to**
- DOI: Characteristics of an Innovation: the extent to which the gel method example fits within the DOI characteristics of an innovation
    - **Relative advantage:** the perceived efficiencies gained by the innovation over a competing option or the previous generation of a product
    - **Compatibility:** how easily innovation fits into current lifestyle
    - **Complexity:** difficulty in learning how to use innovation
    - **Trialability:** opinions on testability, how easily potential adopters can explore the innovation
    - **Observability:** benefits or results of using an innovation that are visible to potential adopters
- Effective Advertising/Marketing Tactics: participants shared perceptions surrounding advertising/marketing tactics that are most effective, successful at getting their attention, and/or interest
    - **Legitimate source**

    - **Brand recognition**
    - **"Not annoying"**
    - **Shock value/catchy**
    - **Sex appeal**
    - **Informational**
- Marketing Perspectives for MHC: participants' ideas on effective ways to market MHC
    - **Straightforward/simple**
    - **Relatable**
    - **Informational/factual**
    - **DOI: Relative advantage to similar products**
    - **DOI: Compatibility**
    - **DOI: Simplicity/ease of use**
    - **DOI: Observability (endorsements)**
        - **Sports/athletes**
        - **Celebrity**
        - **Trusted condom brand**
        - **"Legitimate entity"**
        - **Reviews/word of mouth**
        - **Comedian**
    - **Sex appeal**
    - **Normalizing BC for men**
    - **Shock value/catchy**
    - **Humorous**
    - **Combination of serious and humorous**
    - **Not like typical drug commercial**
- Marketing Imagery Perspectives for MHC: participants' ideas on effective imagery to include in marketing MHC
- Marketing Messaging Perspectives for MHC: participants' ideas on effective messaging to include in marketing MHC
- Advertising/Marketing Sources: participants' perspectives on credible advertising/marketing sources (i.e., billboard, TV commercial, social media ad)
    - **Trusted**
        - TV commercials
        - News
        - Twitter
        - Podcasts
        - Spotify
        - SoundCloud
        - DOI: Observability (word of mouth)
        - Hulu
        - Youtube
    - **Not Trusted**
        - Clickbait-y websites/pop-ups/spam
        - Instagram
        - Facebook
        - TV commercials

Female Focus Group Codebook

- BC Gendered Connotations
  - **Female:** participants share that BC is typically associated with the female gender
  - **Male:** participants share that BC is typically associated with the female gender
- Prior experiences with BC
  - **Positive:** participants share positive or satisfactory experiences with prior BC methods
  - **Negative:** participants share negative or poor experiences with prior BC methods
- BC Responsibility Norms
  - **Male responsibility:** participants share BC responsibility norms as falling on males
  - **Female responsibility:** participants share BC responsibility norms as falling on females
  - **Shared responsibility:** participants share BC responsibility norms as being shared among males and females
- Desires for Shared BC Responsibility
  - **Increased security, safer sex**
  - **Share burden with women**
  - **Increase male accountability**
- Willingness to Pursue MHC
  - **Provide a range of options/choices for men:** participants believe they/men they know would be willing to pursue MHC as it would provide men a range of choices to participate in pregnancy prevention
  - **"No downside" to an additional BC option:** participants believe they/men they know would be willing to pursue MHC as they do not see a negative side to it
  - **Increased common understanding between men and women:** participants believe they/men they know would be willing to pursue MHC as they feel it would create common ground among both men and women surrounding BC experiences, side effects, etc.
  - **Increased security, safer sex:** participants believe they/men they know would be willing to pursue MHC as they feel in could be used in combination with other BC methods for increased security and safer sex
  - **Fear of unintended pregnancy:** participants believe they/men they know would be willing to pursue MHC as a result of fear of getting a female partner pregnant
- Non-Willingness to Pursue MHC
  - **Push-back regarding side effects:** participants believe side effect concerns would generate push back from men and an unwillingness to pursue MHC
  - **Aversion to chemicals in body:** participants believe males aversion to chemicals in their body would result in non-willingness to pursue an MHC option
  - **Effects on masculinity/manhood:** participants believe men would be unwilling to pursue MHC due to the perceived effect taking BC would have on a male's masculinity
  - **Distrust from female partners:** participants believe they would not trust a male partner's ability to remember to use or employ accurate use of MHC
- Ideal MHC Method: attributes and features participants want and do not want in their ideal form of male birth control

    - **Non-daily, less frequent:** participants describe an option that would not need to be taken daily, lower frequency of use
    - **Low maintenance:** participants describe an option that would be relatively low maintenance
    - **Painless:** participants describe an option that would not be painful for males to use
    - **Does not decrease sexual satisfaction/sensation:** participants describe an option that would not negatively affect sexual satisfaction or sensation
    - **Does not have severe side effects:** participants describe an option that would not result in serious side effects
    - **Situational use:** participants describe an option that could be used immediately before sexual encounters
- Prior awareness of MHC Methods: participants share what they have heard about MHC methods in progress prior to attending the focus group
- Perceptions of MHC Gel Example: participants shared how they felt about the MHC gel example
    - **User friendly**
    - **Simple**
    - **Minimally invasive**
    - **Less side effects**
    - **Distrust from female partners**
    - **Difficult to commit to**
    - **Questions**
- Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel positively about surrounding MHC gel example
    - **Ease of use**
    - **Not painful**
    - **If in long-term relationship**
    - **If in casual sexual relationships**
    - **Relieve burden from female partner**
    - **Increase security, safer sex**
    - **Convenient**
    - **Prevents undesirable side effects**
- Non-Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel negatively about surrounding MHC gel example
    - **Skeptical of novelty**
    - **Forget to take it**
    - **Not seeing the need for it**
    - **Potential side effects**
    - **Long term health effects**
    - **Undesired attributes/features**
- DOI: Characteristics of an Innovation: the extent to which the gel method example fits within the DOI characteristics of an innovation
    - **Relative advantage:** the perceived efficiencies gained by the innovation over a competing option or the previous generation of a product
    - **Compatibility:** how easily innovation fits into current lifestyle

    - **Complexity:** difficulty in learning how to use innovation
    - **Trialability:** opinions on testability, how easily potential adopters can explore the innovation
    - **Observability:** benefits or results of using an innovation that are visible to potential adopters
- Effective Advertising/Marketing Tactics: participants shared perceptions surrounding advertising/marketing tactics that are most effective, successful at getting their attention, and/or interest
    - **Intriguing/mysterious**
    - **Jingles**
    - **Videos**
    - **Repetitive**
    - **"Not annoying"**
    - **Sex appeal**
    - **Shock factor**
    - **Relatable**
- Marketing Perspectives for MHC: participants' ideas on effective ways to market MHC
    - **Genuine/honest**
    - **Straightforward/simple**
    - **Informational/factual**
    - **DOI: Relative advantage to similar products**
    - **DOI: Simplicity/ease of use**
    - **Drawing attention to inequality**
    - **Endorsements**
        - **Sports/athletes**
        - **Celebrity**
        - **Influencers**
        - **Trusted condom brand**
    - **Encourage it as a "smart choice"**
    - **Sex appeal**
    - **Normalizing BC for men**
    - **Shock value/catchy**
    - **Humorous**
    - **Serious/sincere**
    - **Combination of serious and humorous**
- Marketing Imagery Perspectives for MHC: participants' ideas on effective imagery to include in marketing MHC
- Marketing Messaging Perspectives for MHC: participants' ideas on effective messaging to include in marketing MHC
- Advertising/Marketing Sources: participants' perspectives on credible advertising/marketing sources (i.e., billboard, TV commercial, social media ad)
    - **Trusted**
        - TV commercials
        - Doctor's office
        - Twitter
    - **Not Trusted**

        - Clickbait-y websites
        - Instagram
        - Snapchat
        - Facebook
        - TV commercials

Male Interview Codebook

- BC Gendered Connotations
    - **Female:** participants share that BC is typically associated with the female gender
    - **Male:** participants share that BC is typically associated with the female gender
- Prior experiences with BC
    - **Positive:** participants share positive or satisfactory experiences with prior BC methods
    - **Negative:** participants share negative or poor experiences with prior BC methods
- BC Responsibility Norms
    - **Male responsibility:** participants share BC responsibility norms as falling on males
    - **Female responsibility:** participants share BC responsibility norms as falling on females
    - **Shared responsibility:** participants share BC responsibility norms as being shared among males and females
- Willingness to Pursue MHC
    - **Provide a range of options/choices for men:** participants believe they/men they know would be willing to pursue MHC as it would provide men a range of choices to participate in pregnancy prevention
    - **Fear of vasectomy:** participants believe they/men they know would be willing to pursue MHC as they do not want children but fear vasectomy, the semi-permanent option available to them
    - **"No downside" to an additional BC option:** participants believe they/men they know would be willing to pursue MHC as they do not see a negative side to it
    - **Share burden with women:** participants believe they/men they know would be willing to pursue MHC as they feel it would allow them to participate in pregnancy prevention
    - **Desire for autonomy:** participants believe they/men they know would be willing to pursue MHC in order to claim their own role in pregnancy prevention, prevent feeling powerless
    - **Increased security, safer sex:** participants believe they/men they know would be willing to pursue MHC as they feel in could be used in combination with other BC methods for increased security and safer sex
    - **"If it's good to go:"** participants believe they/men they know would be willing to pursue MHC as long as it is effective, has no negative side effects, etc.
    - **Distrust of female partners:** participants believe they/men they know would be willing to pursue MHC due to distrusting female partners to remember to use or employ accurate use of their BC methods
- Non-Willingness to Pursue MHC

    - **"It is what it is:"** participants believe the way BC is currently is sufficient, or that BC being mainly on women is the way it should be
    - **Push-back regarding side effects:** participants believe side effect concerns would generate push back from men and an unwillingness to pursue MHC
    - **"Not the first person to try it:"** participants believe they may try MHC at some point, but would not be among the first few who would try it
- Ideal MHC Method: attributes and features participants want and do not want in their ideal form of male birth control
    - **Non-daily, less frequent:** participants describe an option that would not need to be taken daily, lower frequency of use, a long-term option
    - **Low maintenance:** participants describe an option that would be relatively low maintenance
    - **Ease of use/Convenient:** participants describe a method that would convenient and easy to use
    - **Reversible:** participants describe a method that would be easily reversible, a "switch"
    - **Painless, non-invasive:** participants describe an option that would not be painful or too invasive for males to use
    - **Does not decrease sexual satisfaction/sensation:** participants describe an option that would not negatively affect sexual satisfaction or sensation
    - **Does not have severe side effects:** participants describe an option that would not result in serious side effects
    - **Does not negatively affect male hormones:** participants describe an option that would not negatively affect male hormonal balance
    - **Not "in the moment":** participants describe an option that could be used not immediately before sexual encounters, a more planned method
    - **Situational use:** participants describe an option that could be used immediately before sexual encounters
    - **Route of administration:** participants describe various ways they would prefer MHC to be administered
    - **Affordable:** participants describe that a potential MHC method would have to be an affordable option
- Prior awareness of MHC Methods: participants share what they have heard about MHC methods in progress prior to attending the interview
- Questions about MHC Gel Example: participants shared questions they had about the MHC gel example
- Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel positively about surrounding MHC gel example
    - If could test sperm count/effectiveness
    - Flexible, wiggle room
    - Increase security, safer sex
    - Ease of use/low maintenance
    - Reversible
    - If in casual sexual relationships
    - If in long-term relationship
    - Provides additive benefit

    - Relieve burden from female partner
    - Prevents undesirable side effects
- Non-Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel negatively about surrounding MHC gel example
    - Difficulty applying
    - Fear of long-term health effects
    - Skeptical of novelty
    - If too expensive
    - Forget to take it
    - Undesired attributes/features
    - Does not protect against STIs
    - Difficult to commit to
    - Effects on masculinity/manhood
- DOI: Characteristics of an Innovation: the extent to which the gel method example fits within the DOI characteristics of an innovation
    - **Relative advantage:** the perceived efficiencies gained by the innovation over a competing option or the previous generation of a product
    - **Compatibility:** how easily innovation fits into current lifestyle
    - **Complexity:** difficulty in learning how to use innovation
    - **Trialability:** opinions on testability, how easily potential adopters can explore the innovation
    - **Observability:** benefits or results of using an innovation that are visible to potential adopters
- Advertisement Prototypes

Ad 1

    - Relatability
    - Core message
    - Target audience
    - Ratings
        - Informational
        - Realistic
        - Serious
        - Humorous
        - Credible
    - Changes

Ad 2

    - Relatability
    - Core message
    - Target audience
    - Ratings
        - Informational
        - Realistic
        - Serious
        - Humorous
        - Credible

- Changes

Ad 3

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 4

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 5

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 6

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible

- Changes

Female Interview Codebook

- Prior Experiences with BC
  - **Positive:** participants share positive or satisfactory experiences with prior BC methods
  - **Negative:** participants share negative or poor experiences with prior BC methods
- Prior Knowledge of BC Methods
  - **Positive:** participants share positive or satisfactory aspects of various BC methods
  - **Negative:** participants share negative or poor aspects of various BC methods
- BC Gendered Connotations
  - **Female:** participants share that BC is typically associated with the female gender
  - **Male:** participants share that BC is typically associated with the female gender
- BC Responsibility Norms
  - **Male responsibility:** participants share BC responsibility norms as falling on males
  - **Female responsibility:** participants share BC responsibility norms as falling on females
  - **Shared responsibility:** participants share BC responsibility norms as being shared among males and females
- Desires for Shared BC Responsibility
  - **Increased security, safer sex**
  - **Share burden with women**
  - **Not enough options for men**
- Ideal MHC Method: attributes and features participants want and do not want in their ideal form of male birth control
  - **Affordable:** participants describe that a potential MHC method would have to be an affordable option
  - **Non-daily, less frequent:** participants describe an option that would not need to be taken daily, lower frequency of use
  - **Low maintenance:** participants describe an option that would be relatively low maintenance
  - **Painless:** participants describe an option that would not be painful for males to use
  - **Reversible:** participants describe a method that would be easily reversible
  - **Additive benefit:** participants describe that a potential MHC method would preferably include some sort of added benefit (i.e., acne control, regulate hormones, etc.)
  - **Does not have severe side effects:** participants describe an option that would not result in serious side effects
  - **Situational use:** participants describe an option that could be used immediately before sexual encounters
- Willingness to Pursue MHC

    - **Provide a range of options/choices for men:** participants believe they/men they know would be willing to pursue MHC as it would provide men a range of choices to participate in pregnancy prevention
    - **Increased security, safer sex:** participants believe they/men they know would be willing to pursue MHC as they feel in could be used in combination with other BC methods for increased security and safer sex
    - **Fear of unintended pregnancy:** participants believe they/men they know would be willing to pursue MHC as a result of fear of getting a female partner pregnant
- Non-Willingness to Pursue MHC
    - **"It is what it is:"** participants believe the way BC is currently is sufficient, or that BC being mainly on women is the way it should be
    - **"Not the first person to try it:"** participants believe they may try MHC at some point, but would not be among the first few who would try it
    - **Push-back regarding side effects:** participants believe side effect concerns would generate push back from men and an unwillingness to pursue MHC
    - **Aversion to chemicals in body:** participants believe males aversion to chemicals in their body would result in non-willingness to pursue an MHC option
- Prior awareness of MHC Methods: participants share what they have heard about MHC methods in progress prior to attending the interview
- Questions about MHC Gel Example: participants shared questions they had about the MHC gel example
- Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel positively about surrounding MHC gel example
    - **Ease of use**
    - **Flexible, wiggle room**
    - **Novelty sparking interest**
    - **If in casual sexual relationships**
    - **Prevents undesirable side effects**
    - **If in long-term relationship**
    - **Increase security, safer sex**
    - **Visible/efficacy feedback**
- Non-Willingness to Pursue Gel MHC Method: participants shared what they think men they know would feel negatively about surrounding MHC gel example
    - **Unrealistic**
    - **Difficult to commit to**
    - **Skeptical of novelty**
    - **Forget to take it**
    - **Effects on masculinity/manhood**
    - **If difficult to access**
    - **If too expensive**
    - **Effects on masculinity/manhood**
    - **Difficulty applying**
    - **Not seeing the need for it**
    - **Undesired attributes/features**
    - **Distrust from female partners**

- DOI: Characteristics of an Innovation: the extent to which the gel method example fits within the DOI characteristics of an innovation
    - **Relative advantage:** the perceived efficiencies gained by the innovation over a competing option or the previous generation of a product
    - **Compatibility:** how easily innovation fits into current lifestyle
    - **Complexity:** difficulty in learning how to use innovation
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- Advertisement Prototypes

Ad 1

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    - Humorous
    - Credible
- Changes

Ad 2

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 3

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 4

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 5

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

Ad 6

- Relatability
- Core message
- Target audience
- Ratings
    - Informational
    - Realistic
    - Serious
    - Humorous
    - Credible
- Changes

APPENDIX Q. WEB-BASED SURVEY RECRUITMENT EMAIL

Hello!

Soon, men will have access to alternative birth control options and researchers at Purdue University want to know what you think!

As part of my dissertation research, this study explores men and women's experiences with and knowledge of existing male birth control methods, interest in and perceptions of potential alternative methods, and messaging/advertising preferences that should be applied to help individuals learn about these birth control methods, once released.

Participation is voluntary and your answers will be anonymous. The survey will take approximately 10 minutes of your time. Upon completing the survey, all participants will be eligible to be entered into a drawing to win a $25 Amazon gift card for their time and efforts. If are interested in entering to win, you will be redirected to a separate webpage after the survey is completed to submit your contact information, which will not be attached or associated with your survey responses.

Please click here to access the survey: http://bit.ly/MHCPurdue

If you have any questions, please do not hesitate to contact me, Jaziel Ramos-Ortiz at jramosor@purdue.edu.

Thank you!

[Note: This study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384]

APPENDIX R. WEB-BASED SURVEY VERBAL RECRUITMENT SCRIPT

Hello, my name is Jaziel Ramos-Ortiz, a 3rd year PhD candidate in the Division of Consumer Science. As part of my dissertation study, I am conducting a survey among college-aged men and women attending Purdue University to understand knowledge, attitudes, and interest in existing and alternative male birth control methods, specifically among sexually active Purdue University students currently engaging in heterosexual or bisexual relationships. The purpose of this is also to understand how a novel product like a male birth control method would have to be marketed to this target population in order to generate interest and intention to use it, once released. It should take approximately 10 minutes of your time, and upon completion, you can enter to win a $25 Amazon gift card to thank you for your valuable time and insights.

Participation is completely voluntary, but if you are interested in participating, please visit the study website, http://bit.ly/MHCPurdue, on your personal device, and there you will find the survey link and can begin the survey now.

The primary investigator on this study is Dr. Andrea DeMaria, an assistant professor in the College of Health and Human Sciences and this study has been approved by Purdue University Institutional Review Board. Protocol #: IRB-2019-384.

APPENDIX S. WEB-BASED SURVEY

RESEARCH PARTICIPANT CONSENT FORM

Paving the Way for Male Hormonal Contraception: A Consumer Behavior Approach

PI: Andrea DeMaria, PhD, MS
Co-I: Jaziel Ramos-Ortiz, MS
College of Health and Human Sciences
Purdue University

What is the purpose of this study?
You are invited to participate in a research study conducted by Dr. Andrea DeMaria and her doctoral student, Jaziel Ramos-Ortiz, from Purdue University. This research is designed to understand knowledge, attitudes, and interest in existing and alternative male birth control methods, specifically among Purdue University students who are currently in and/or have previously engaged in heterosexual relationships between the ages of 18 and 26 years.

What will I do if I choose to be in this study?
As a participant in this research, you will be asked to complete a web-based questionnaire. You will be asked questions related to current birth control knowledge, attitudes, and behaviors, and male contraception knowledge and interest. You will also be asked for your opinion on potential male contraception marketing and advertising strategies.
How long will I be in the study?

Participation in this study will require about 10 minutes of your time. Please complete the survey only once.

What are the possible risks or discomforts?
Risks from participating in this study are no greater than what you would encounter in daily life.

Are there any potential benefits?
Although it is not anticipated that you will benefit directly through your involvement in this study, this research is expected to benefit individuals making reproductive health and contraceptive choices through a better understanding of male contraception interest, dissemination strategies, and reproductive health experiences and needs.

Will I receive payment or other incentives?
Upon completion of your questionnaire, you can choose if you want to be entered into a drawing to win an Amazon gift card valued at $25. 15 prizes will be awarded.

Will information about me and my participation be kept confidential?
The project's research records may be reviewed by departments at Purdue University responsible for regulatory and research oversight. All questionnaire data will be kept on a password-protected, secure computer server. At no time will your name be associated with answers you provide.

What are my rights if I take part in this study?
Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time. If you choose to withdraw prior to questionnaire completion, you will not be eligible for a chance to win a gift card.

Who can I contact if I have questions about the study?
If you have questions, comments, or concerns about this research project, you can talk to one of the researchers. Please contact Jaziel Ramos-Ortiz at jramosor@purdue.edu.

If you have questions about your rights while taking part in the study or have concerns about the treatment of research participants, please call the Human Research Protection Program at 1 (765) 494-5942, email (irb@purdue.edu), or write to:
Human Research Protection Program - Purdue University
Ernest C. Young Hall, Room 1032
155 S. Grant St.
West Lafayette, IN 47907-2114

Documentation of Informed Consent
I have read this consent form, and by clicking the arrow below, I agree to participate in this research study and certify that I am at least 18 years old.

Eligibility Criteria Questions

1. How old are you?
   - ☐ _____ years

2. What is your Purdue University student classification?
   - ☐ Undergraduate student
   - ☐ Graduate student
   - ☐ Professional student
   - ☐ I am not a student at Purdue University

3. Have you participated in a focus group or interview related to this study in Spring or Fall 2019?
   - ☐ Yes
   - ☐ No

4. What is your biological sex?
   - ☐ Male
   - ☐ Female
   - ☐ I prefer not to answer

5. Which of the following commonly used terms best describes your sexual orientation?
   - ☐ Heterosexual/straight
   - ☐ Homosexual/gay or lesbian

- ☐ Bisexual
- ☐ Asexual (I have never been sexually attracted to others)
- ☐ I prefer not to answer

6. Which of the following best describes your current sexual relationship status?
   - ☐ I am in an exclusive/monogamous sexual relationship (that is, you and your partner are having sexual activity only with each other).
   - ☐ I am having sexual relationships with more than one person.
   - ☐ I am sexually active, but do not consider myself to be in a relationship.
   - ☐ I am not currently sexually active with another person
   - ☐ I have never been sexually active with another person

In this section you will be asked general questions about existing birth control knowledge, attitudes, and behaviors. By birth control, we mean non-hormonal options (such as male condoms and female condoms) and female hormonal options (such as the birth control pill, IUD, implant, ring, shot, etc.)

7. How often do you typically use birth control when engaging in vaginal sex with a partner? (By vaginal sex, we mean a penis in a vagina)
   - ☐ None of the time 1 2 3 4 5 6 7 8 9 10 All of the time

8. What birth control method did you use the last time you had vaginal sex? (Mark all that apply)
   - ☐ Male condom
   - ☐ Female hormonal birth control (e.g., IUD, Nuvaring, the pill, the patch, the shot etc.)
   - ☐ Female non-hormonal birth control (i.e., copper IUD, female condom)
   - ☐ Withdrawal (“pull out” method)
   - ☐ None
   - ☐ Other (specify)
   - ☐ I prefer not to answer

9. Which method would you say is your primary mode of contraception when engaging in vaginal sex with a partner?
   - ☐ Male condom
   - ☐ Female hormonal birth control (e.g., IUD, Nuvaring, the pill, the patch, the shot etc.)
   - ☐ Female non-hormonal birth control (i.e., copper IUD, female condom)
   - ☐ Withdrawal (“pull out” method)
   - ☐ None
   - ☐ Other (specify)
   - ☐ I prefer not to answer

In this section, you will be asked general questions about what you know and how you feel about potential new birth control options that could soon become available for men. As you may know, men only have two male-specific birth control options available to them, condoms and vasectomy (blocking or cutting the vas deferens tubes, which keeps sperm out of your semen–often a permanent procedure). Please keep this in mind as you answer the following questions.

10. Do you think these options are enough for men?
    - ☐ Yes
    - ☐ No

11. Have you heard of any male-specific birth control methods, other than the male condom or vasectomy?
    - ☐ Yes (specify)
    - ☐ No

12. [IF MALE] How interested would you be in using a male birth control option, other than a condom or vasectomy?
    - ☐ Not at all interested 1 2 3 4 5 6 7 8 9 10 Extremely interested

13. [IF FEMALE] How interested would you be in a current or potential male partner using a male birth control option, other than a condom or vasectomy?
    - ☐ Not at all interested 1 2 3 4 5 6 7 8 9 10 Extremely interested

[IF MALE] In addition to condoms and vasectomy, there are several new male-specific birth control methods being proposed. In this section, you will be asked about various features you would find most important in an ideal male birth control option. Keep in mind: this can be a hypothetical product that does not exist, just think about features you would want included if you could create an ideal male birth control method for you.

14. [IF MALE] Rate the importance of each of the following features in your ideal male birth control method.
    - ☐ Prevent side effects 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Administered non-daily 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Provides an added benefit 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Easy to use, convenient 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Painless, non-invasive 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Provide feedback 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Doesn't decrease sex satisfaction 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Reversible, not permanent 0 10 20 30 40 50 60 70 80 90 100
    - ☐ Other (specify) _____ 0 10 20 30 40 50 60 70 80 90 100

Currently, a male birth control gel is undergoing clinical trials. Please read the following excerpt from a news article about the product.

Birth control for men: researchers test a male contraceptive gel
The National Institutes of Health is looking for a few good men —and a few brave women — to try out a new birth control gel for males. The gel, rubbed into the shoulders daily, gradually brings down sperm counts so that men cannot make a woman pregnant. There is no commercial male hormonal contraceptive on the U.S. market now. All men have to choose from are condoms or vasectomy.

The gel formulation, called NES/T, includes a progestin-containing compound called segesterone acetate, which is made under the brand name Nestorone, along with a dose of testosterone. In men, the hormone tricks the body into thinking it can stop making sperm. Giving back some testosterone along with the Nestorone stops undesirable side-effects such as low libido and muscle loss.

In theory, men could forget to use the gel for a day with no consequences. "If they stop using it for three, four, or five days, then it won't work the way it is supposed to," Blithe said "The potential of this new gel is huge," said Dr. William Bremner of the University of Washington School of Medicine, who is helping test the gel. "There is a misperception that men are not interested in, or are even afraid of, tools to control their own fertility. We know that's not the case."

[Source] Fox, M. (2018, November 28). Birth control for men: researchers test a male contraceptive gel. Retrieved from https://www.nbcnews.com/health/health-news/federal-health-researchers-start-testing-male-contraceptive-gel-n941381

The following questions will assess your interest in the potential new male birth control method you read about in the article. Choose one number from each line.

15. How does this male birth control method compare to the male condom?
    ☐ Worse 1 2 3 4 5 6 7 8 9 10 Better

16. How does this male birth control method compare to vasectomy?
    ☐ Worse 1 2 3 4 5 6 7 8 9 10 Better

17. How does this male birth control method compare to female hormonal birth control (e.g., IUD, the ring, the pill, the patch, the shot, etc.)?
    ☐ Worse 1 2 3 4 5 6 7 8 9 10 Better

18. How does this male birth control method compare to female non-hormonal birth control (e.g., copper IUD, female condom, etc.)?
    ☐ Worse 1 2 3 4 5 6 7 8 9 10 Better

19. [IF MALE] How well would this male birth control method fit into your current daily routine?
    - ☐ Not well 1 2 3 4 5 6 7 8 9 10 Very well

20. [IF FEMALE] How well would this male birth control method fit into a current/potential male partner's daily routine?
    - ☐ Not well 1 2 3 4 5 6 7 8 9 10 Very well

21. [IF MALE] How easy or hard would it be for this male birth control method to fit into your current lifestyle?
    - ☐ Extremely hard 1 2 3 4 5 6 7 8 9 10 Extremely easy

22. [IF FEMALE] How easy or hard would it be for this male birth control method to fit into a current/potential male partner's lifestyle?
    - ☐ Extremely hard 1 2 3 4 5 6 7 8 9 10 Extremely easy

23. [IF MALE] I would consider using this new male birth control method if I could try it out first, cost-free.
    - ☐ Definitely would not 1 2 3 4 5 6 7 8 9 10 Definitely would

24. [IF FEMALE] I would consider using this new male birth control method if a current/potential partner could try it out first, cost-free.
    - ☐ Definitely would not 1 2 3 4 5 6 7 8 9 10 Definitely would

25. [IF MALE] The benefits of this new male birth control method are clear to me.
    - ☐ Not at all clear 1 2 3 4 5 6 7 8 9 10 Extremely clear

26. [IF FEMALE] The benefits of this new male birth control method for me and a current/potential partner are clear to me.
    - ☐ Not at all clear 1 2 3 4 5 6 7 8 9 10 Extremely clear

[IF MALE] The following questions will assess your intention to use a potential new male contraceptive method, once released. Choose one number from each line.

27. [IF MALE] For me, choosing a new male birth control method (i.e., male birth control gel), once released, would be:
    - ☐ Extremely unhealthy 1 2 3 4 5 6 7 Extremely healthy
    - ☐ Extremely harmful 1 2 3 4 5 6 7 Extremely beneficial
    - ☐ Extremely inconvenient 1 2 3 4 5 6 7 Extremely inconvenient
    - ☐ Extremely irresponsible 1 2 3 4 5 6 7 Extremely responsible

28. [IF MALE] A new male birth control method (i.e., male birth control gel), once released, would be a good option for people like me.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

29. [IF MALE] The people in my life whose opinions I value would support my decision to use a new male birth control method (i.e., male birth control gel).
    - ☐ Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

30. [IF MALE] A male birth control method (i.e., male birth control gel), would decrease concerns about female partner birth control use.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

31. [IF MALE] Using a new male birth control method (i.e., male birth control gel) would be:
    - ☐ Not at all up to me 1 2 3 4 5 6 7 Completely up to me
    - ☐ Not at all under my control 1 2 3 4 5 6 7 Completely under my control

32. [IF MALE] I am confident in my ability to use a new male birth control method (i.e., male birth control gel), once released.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

33. [IF MALE] My current or a potential female partner would be confident in my ability to use a new male birth control method (i.e., male birth control gel), once released.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

34. [IF MALE] I intend to seek out more information about potential new male birth control methods.
    - ☐ Extremely untrue 1 2 3 4 5 6 7 Extremely true

35. [IF MALE] I intend to use a new male birth control method, once released.
    - ☐ Extremely untrue 1 2 3 4 5 6 7 Extremely true

[IF FEMALE] The following questions will assess your intention to encourage a current or potential male partner to use a hypothetical new male contraceptive method, once released. Choose one number from each line.

36. [IF FEMALE] For me, a current/potential male partner choosing a new male birth control method (i.e., male birth control gel), once released, would be:
    - ☐ Extremely unhealthy 1 2 3 4 5 6 7 Extremely healthy
    - ☐ Extremely harmful 1 2 3 4 5 6 7 Extremely beneficial
    - ☐ Extremely inconvenient 1 2 3 4 5 6 7 Extremely inconvenient
    - ☐ Extremely irresponsible 1 2 3 4 5 6 7 Extremely responsible

37. [IF FEMALE; IN A RELATIONSHIP] A new male birth control method (i.e., male birth control gel), once released, would be a good birth control method for people like my partner.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

38. [IF FEMALE; NOT IN A RELATIONSHIP] A new male birth control method (i.e., male birth control gel), once released, would be a good birth control method for a potential male partner.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

39. [IF FEMALE] The people in my life whose opinions I value would support my decision to encourage a current or potential male partner to use a new male birth control method (i.e., male birth control gel).
    - ☐ Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

40. [IF FEMALE] I would be confident in a current or potential male partner's ability to use a new male birth control method (i.e., male birth control gel), once released.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

41. [IF FEMALE] I would be open to sharing birth control responsibility with a current or potential male partner if a new male birth control method were released.
    - ☐ Strongly disagree 1 2 3 4 5 6 7 Strongly agree

42. [IF FEMALE] I intend to seek out more information about potential new male birth control methods.
    - ☐ Extremely untrue 1 2 3 4 5 6 7 Extremely true

43. [IF FEMALE] I intend to seek out and share information about potential new male birth control methods with a current or potential partner.
    - ☐ Extremely untrue 1 2 3 4 5 6 7 Extremely true

44. [IF FEMALE] I intend to encourage a current or potential partner to use a new male birth control method, once released.
    - ☐ Extremely untrue 1 2 3 4 5 6 7 Extremely true

In this section, you will be shown two example advertisements for a hypothetical male birth control method. You will be asked two questions about each and then you will choose which advertisement you prefer. Keep in mind the following question as you proceed: Which of these ads would appeal to me more and/or get my attention if I saw it in real-life?

45. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

46.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

47.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

48. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

49.

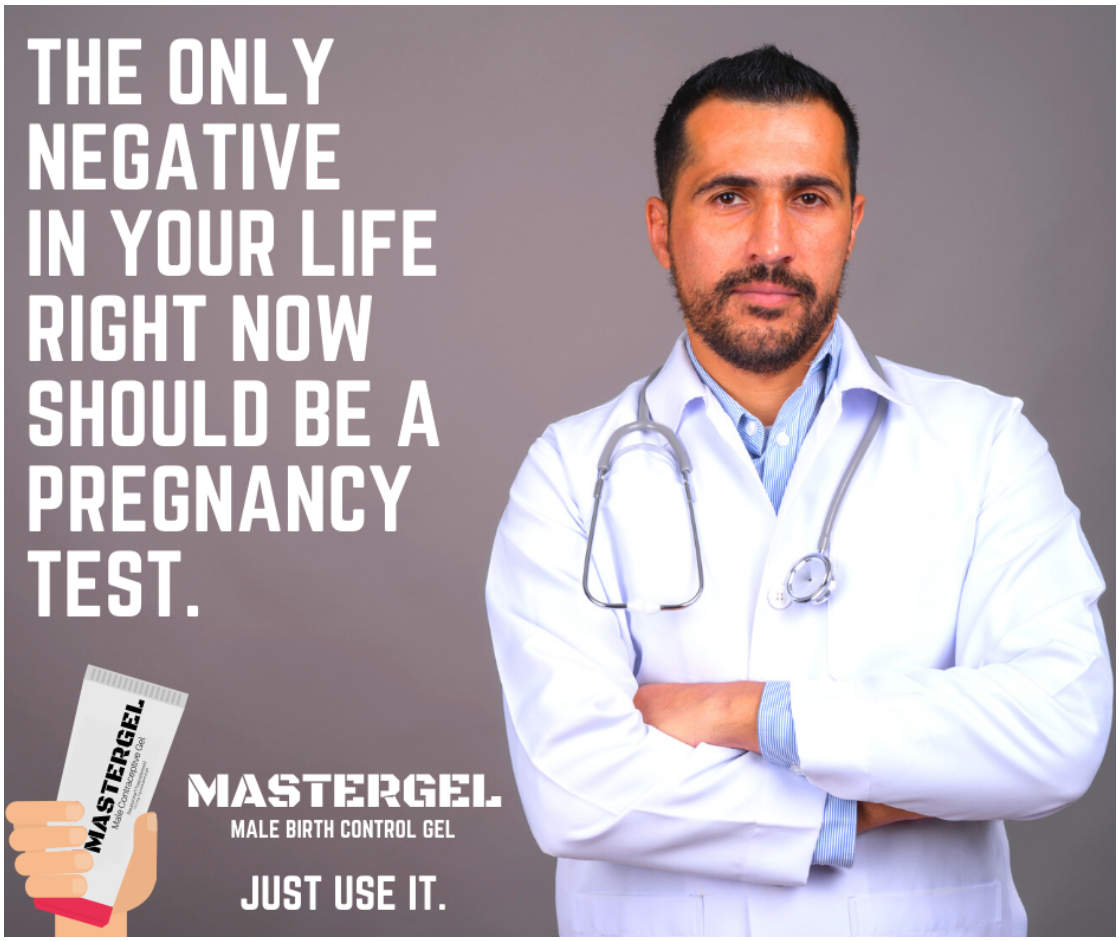
☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

50.



☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

51.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

52.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

53.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

54.

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

55. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

56. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

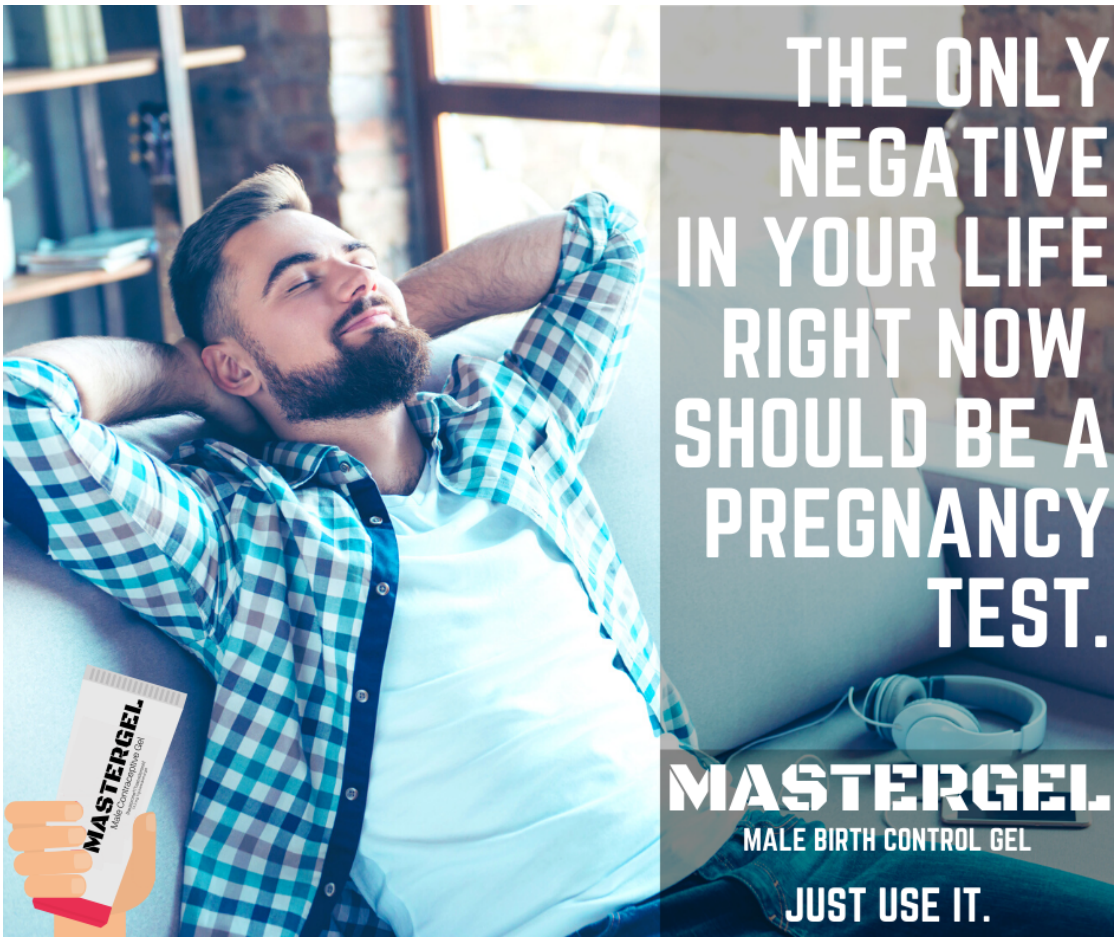
57. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

58. 

☐ How appealing is this ad to you?

Not at all appealing 0 10 20 30 40 50 60 70 80 90 100 Extremely appealing

☐ How effective is this ad in generating your interest in a male birth control method?

Not at all effective 0 10 20 30 40 50 60 70 80 90 100 Extremely effective

59. Which male birth control advertisement do you prefer?
    - ☐ A
    - ☐ B

In this final section we will ask some information about you, including your age, race/ethnicity, pregnancy history, and beyond. These items help us understand who is taking the survey and helps ensure we are gathering insights from a diverse group of participants.

60. Which of the following best describes your race/ethnicity?
    - ☐ White or Caucasian
    - ☐ Black or African American
    - ☐ Biracial (Specify)
    - ☐ Hispanic or Latino
    - ☐ American Indian or Alaskan Native
    - ☐ Asian or Asian American
    - ☐ Native Hawaiian or Other Pacific Islander
    - ☐ Other (specify)
    - ☐ I prefer not to answer

61. How often do you attend church or other religious meetings?
    - ☐ Never
    - ☐ Once a year or less
    - ☐ A few times a year
    - ☐ A few times a month
    - ☐ Once a week
    - ☐ More than once/week

62. How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?
    - ☐ Rarely or never
    - ☐ A few times a month
    - ☐ Once a week
    - ☐ Two or more times/week
    - ☐ Daily
    - ☐ More than once a day

63. In general, would you describe your political views as:
    - ☐ Very Liberal 0 10 20 30 40 50 60 70 80 90 100 Very Conservative

64. Who provides your health insurance?
    - ☐ I have Purdue student insurance
    - ☐ I have my own insurance (not through Purdue)
    - ☐ I am on my parent's insurance
    - ☐ I do not currently have health insurance
    - ☐ Other (Specify)
    - ☐ I prefer not to answer

65. How would you describe your family household income?
    - ☐ Comfortable
    - ☐ Just enough to make ends meet
    - ☐ Not enough to make ends meet
    - ☐ I prefer not to answer

66. [IF IN A RELATIONSHIP] Earlier in the survey you mentioned being in an exclusive/monogamous sexual relationship, how long have you been with your current sexual partner?
    - ☐ Years _____
    - ☐ Months _____

67. [IF FEMALE] Have you ever been pregnant?
    - ☐ Yes
    - ☐ No
    - ☐ I prefer not to answer

68. [IF FEMALE; IF YES TO 67] Please answer the following questions regarding your experiences with pregnancy.
    - ☐ How many times have you been pregnant? _____
    - ☐ How many of these pregnancies were unintended or unexpected? _____
    - ☐ How many children did you deliver? _____

69. [IF MALE] Has a partner of yours ever been pregnant (either a sexual partner or a partner from a current/previous relationship)?
    - ☐ Yes
    - ☐ No
    - ☐ I prefer not to answer

70. [IF MALE; IF YES TO 69] Please answer the following questions regarding your experiences with pregnancy.
    - ☐ How many times has a partner of yours been pregnant? _____
    - ☐ How many of these pregnancies were unintended or unexpected? _____
    - ☐ How many of your children did a partner deliver? _____

71. What year in school are you currently in?
    - ☐ Freshman
    - ☐ Sophomore
    - ☐ Junior
    - ☐ Senior
    - ☐ 5th year or higher
    - ☐ Graduate
    - ☐ Professional
    - ☐ I prefer not to answer

72. What college is your department housed in?
    - ☐ College of Agriculture
    - ☐ College of Education
    - ☐ College of Engineering
    - ☐ Exploratory Studies
    - ☐ College of Health and Human Sciences
    - ☐ College of Liberal Arts
    - ☐ Krannert School of Management
    - ☐ College of Pharmacy
    - ☐ Purdue Polytechnic Institute
    - ☐ College of Science
    - ☐ College of Veterinary Medicine
    - ☐ Honors College
    - ☐ The Graduate School
    - ☐ I prefer not to answer

73. Which of the following best describes the area your hometown (or where you lived during most of high school) is in?
    - ☐ Urban
    - ☐ Suburban
    - ☐ Rural
    - ☐ I prefer not to answer

74. Would you like to be entered into a drawing to win a $25 Amazon gift card? If yes, you will be redirected to a separate survey to enter your contact information, this information will not be tied to your survey responses.
    - ☐ Yes
    - ☐ No

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