DISSERTATION

HORMONAL CONTRACEPTION AND EATING PATHOLOGY: A STUDY AMONG UNDERGRADUATE WOMEN

Submitted by

Mallory Almengual

Department of Psychology

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2024

Doctoral Committee:

Advisor: Kathryn Rickard

Mark Prince
Kimberly Cox-York
Dan Graham

ABSTRACT

HORMONAL CONTRACEPTION AND EATING PATHOLOGY: A STUDY AMONG UNDERGRADUATE WOMEN

Objective: To investigate the relationship between hormonal contraceptive (HC) use and eating pathology, and to assess the moderating effects of cognitive restraint and other demographic features on this relationship among undergraduate women at Colorado State University. Method: A correlational study design was used to collect data from 458 female undergraduate participants through self-report assessments capturing demographic information, reproductive health history, and constructs associated with eating pathology. Specific measures included the Three-Factor Eating Questionnaire (TFEQ-R18), the Eating Disorder Inventory-3 (EDI-3), and the Beck's Depression Inventory-II (BDI-II). Participants were categorized based on their HC use—especially focusing on Long-Acting Reversible Contraceptives (LARC) and Short-Acting Reversible Contraceptives (SARC)—to establish the connection between the type of HC and symptoms of eating pathology. Multiple linear regression analyses identified relationships, with a consideration of potential mediating effects of cognitive restraint and demographic variables. Results: Findings revealed a significant relationship between long-acting reversible contraception (LARC) use and specific psychological outcomes, such as reduced interpersonal insecurity and increased emotional dysregulation, suggesting a multidimensional impact of HC types on psychological and behavioral patterns in this population. Although cognitive restraint was anticipated to be a moderating factor, the study did not find evidence to support a significant moderating effect on the relationship between HC use and eating pathology.

Age of menstrual regularity emerged as a noteworthy covariate affecting psychological outcomes. Conclusion: The study offers important insights into the variant effects of different types of HCs on psychological health and eating behaviors among college-aged women. These findings indicate that different types of hormonal contraceptives may have unique effects on psychological outcomes and eating behaviors. The differential outcomes with LARC and SARC underscore the need for comprehensive, individualized reproductive health counseling that both addresses the potential psychological impacts of contraceptive methods and is sensitive to the evident disparities. Further research is recommended to decipher the complex interactions between HC use, cognitive restraint, and eating pathology. These findings have critical implications for refining clinical practices and reproductive health education to promote the wellbeing and bodily autonomy of menstruating individuals, and to better address the mental health needs related to contraceptive choices.

Keywords: hormonal contraception, contraception, eating pathology, eating disorders, cognitive restraint, undergraduate women, women's health, health disparities, mental health, contraceptive counseling, reproductive health, reproductive justice, SARC, LARC

ACKNOWLEDGEMENTS

I would like to extend my deepest gratitude to the following people and institutions, without whom this dissertation would not have been possible:

- **Kathryn Rickard, Ph.D.**, my advisor, for recognizing, appreciating, and nurturing my spark; for encouraging my authenticity and curiosity; for permission to stay open, to soften, to be. Your guidance, patience, and unconditional positive regard were invaluable throughout my graduate journey. Thank you for believing in this research project. Thank you for believing in me.
- **Mark Prince, Ph.D.**, for your mentorship and invaluable guidance, and for providing critical reviews that significantly improved my dissertation. Thank you for your patience and kindness. Thank you for being a friend.
- **The members of my dissertation committee**, for their time, thoughtful feedback, and constructive criticisms during the defense.
- **Colorado State University's Graduate Program in Counseling Psychology** for providing the necessary resources, a stimulating academic environment, and lifelong friendships.
- **My family**, for their unwavering love, support, and belief in me. To my parents, Kathryn Cown and Alan Almengual, for instilling in me the value of education; to my partner, Ryan Schlachter, for being my rock during this challenging yet rewarding journey; and to Sierra and Erik Anderson, for providing shelter in the storm.

- **Joseph McNamara, Ph.D.**, my first PI and a cherished mentor since 2012, for being a constant source of guidance and support throughout my academic and professional journey.
- **My friends**, for their understanding, moral support, and for always being there to lift my spirits.
- Lastly, I would like to thank the **participants of my study**, who generously shared their time and insights, making this research possible.

This dissertation stands as a testament to the collective support, encouragement, and contribution of each individual and institution listed above.

DEDICATION

To my grandmother, Stella Cown née Dalby, whose bravery, resilience, and determination have inspired me to pursue my passions with the same fervor and dedication. For instilling in me the courage to chase my dreams beyond familiar horizons, I am eternally grateful. Thank you for your unwavering love and steadfast faith in my potential.

TABLE OF CONTENTS

INTRODUCTION

Millions of women worldwide use hormonal contraception (HC) as part of their reproductive health practices. The implementation of such reproductive technology has resulted in a myriad of benefits, most notably a marked decrease in unplanned pregnancies. Despite the prevalence of HC prescriptions, associations between the use of HC and psychopathology in women of reproductive age remain inadequately addressed. There is a growing body of evidence supporting a negative influence of HC on mental health (Freeman et al., 2001; Hall, White, Rickert, Reame, & Westhoff, 2012, 2013; Skovlund, Mørch, Kessing, & Lidegaard, 2016; Svendal, Berk, Pasco, Jacka, Lund, & Williams, 2012; Toffol, Heikinheimo, Koponen, Luoto, & Partonen, 2011). Research has produced mixed evidence for the positive association between HC use and adverse mood symptoms (Hall, Moreau, Trussell, & Barber, 2013; Joffe & Cohen, 1998; Pagano, Zapata, Berry-Bibee, Nanda, & Curtis, 2016; Svendal et al., 2012; Toffol et al., 2011). There is a paucity of research examining the relationship between HC use and eating disorders (ED; Hall et al., 2013). The existing research in this area is limited and inconsistent, with competing findings that define HC use as either a risk or protective factor for pathological eating behavior. Further, many women who discontinue HC cite adverse side effects as their reason for cessation (Abma, Dawson, Martinez, & Mosher, 2004; Mosher & Jones, 2010). Two commonly implicated side effects are mood disturbance and weight gain, which may indicate that the mechanisms involved in HC treatment may also regulate mood, self-image and weight management (Jimerson, 1990; Joffe & Cohen, 1998; McEwen, 2001; Schmidt, Nieman, Danaceau, Adams, & Rubinow, 1998). A greater understanding of the relationship between HC use, eating behavior, and mental health is necessary.

Menstruation

The menstrual cycle is one of the most important biological rhythms in many women's lives. Menstruation is governed by oscillating concentrations of the endogenous sex steroid hormones: estrogen, progestins, and androgens. A typical eumenorrheic menstrual cycle lasts between 26-35 days, with a median duration of 28 days (Reed & Carr, 2018). The menstrual cycle is divided into two parts: the follicular phase and the luteal phase. These two phases are separated by ovulation, which signals the end of follicular phase and beginning of the luteal phase.

The hypothalamic-pituitary-ovarian (HPO) axis refers to the constant interaction between these three bodily systems through the cyclic production of gonadotropic and steroid hormones (Mikhael et al., 2019). These hormones include gonadotropin-releasing hormone (GnRH), luteinizing hormone (LH) and follicle-stimulating hormone (FSH), estrogen and progesterone (Ferin, 2000; Kong et al., 2014; Mikhael et al., 2019).

Key pituitary hormones in menstruation include LH and FSH. The main function of LH and FSH is to stimulation the production of ovarian hormones (estrogen and progesterone). Futher, they have individual ovulatory functions throughout the menstrual cycle. LH triggers ovulation and is involved in the development and secretory function of the corpus luteum (an endocrine structure in the ovaries). FSH plays an integral role in follicle maturation before ovulation (Lofberg, 2020). The HPO-axis can be characterized by differing hormonal levels based on the cycle phase (Messinis et al., 2014). The follicular phase refers to the time period between the first day of menstruation and ovulation. This phase starts with menstruation, which is defined as the discharge of the bloody mucosal tissue of the uterine lining, and ends with ovulation. Ovulation refers to the release of an ovum, and occurs approximately mid-cycle. The

luteal phase refers to the remainder of the menstrual cycle that occurs following ovulation until either pregnancy or, in the event that the ovum remains unfertilized, the cessation of the cycle.

Estrogen refers to a group of steroid hormones that are produced primarily by the ovaries. Estradiol-17β (estradiol) is considered the most important estrogen in women of reproductive age (Lofberg, 2020). Estrogens have established effects on both metabolism and body composition, and have regulatory functions in several physiological processes in humans (Jia et al., 2015). Another key steroid ovarian hormone is progesterone. In addition to the menstrual cycle, progesterone has extensive influence on the skeletal system, central nervous system, and cardiovascular functioning (Taraborrelli, 2015). For example, a growing body of evidence has suggested that food cravings and caloric intake increase during the progesterone-dominant luteal phase of the menstrual cycle (Hirschberg, 2012).

Hormonal Contraception

Hormonal contraceptives (HC) refer to any exogenous hormone(s) introduced to the body that changes endogenous endocrine functioning and prevents pregnancy (Rivera et al., 1999). According to a 2008 survey, 62% of adult women in the United States reported using some type of contraception (Mosher & Jones, 2010). The leading method was the oral contraceptive pill, followed by female sterilization. In contrast, a 2011 study reported that adolescent females most commonly used the condom (96%), followed by withdrawal (57%) and the oral contraceptive pill (56%; Martinez, Copen, & Abma, 2011). Additionally, the study reported an increase in adolescent use of "other hormonal methods" from 2% to 6% from 2002-2008, indicating that HC injectables, emergency contraception, the contraceptive patch, and the contraceptive ring are becoming increasingly popular choices among teenaged women. The main purpose of HC is to prevent an unwanted pregnancy. However, they are frequently prescribed for various secondary

health outcomes, such as cycle regulation, the treatment of menstrual disorders, and even to protect bone density in populations vulnerable to osteoporosis (Prior, 2018; Scholes et al., 2010).

Oral contraceptive pills have been identified as the most commonly prescribed HC among American women. Formulations largely fall into two main categories: 1) combined methods containing both synthetic estrogen and progesterone, and 2) progestogen-only methods (Davis & Hackney, 2017). Combined methods typically contain synthetic estrogen (Ethinyl Estradiol) and synthetic progesterone (progestin or progestogen) in doses that mimic ovarian hormonal levels during the follicular phase (Dawson & Reilly, 2008). Combined oral contraceptive pills can be differentiated further into monophasic and phasic preparations, depending on the hormonal composition of the HC. Combined HC methods contain an active and inactive phase. During the active phase, individuals ingest exogenous hormones daily from day one through 21 of the menstrual cycle. After the active phase, either a placebo pill or no pill is taken for 7 days. In this absence of exogenous hormones, endogenous estrogen gradually increases while progesterone remains suppressed, resulting in a light menstruation referred to as "withdrawal bleeding." This approach is designed to mimic the natural menstrual cycle and minimize adverse side effects of HC use. Monophasic preparations deliver a consistent dosage of EE and progestin throughout the 21-day active phase, whereas phasic preparations can have either constant or varying concentrations of these hormones throughout the active phase. Finally, progestogen-only HC pills are administered daily without a withdrawal (inactive) phase. While these pills may seem appealing to those wishing to skip withdrawal bleeding, they are considered to be less effective than their combined counterparts (Davis & Hackney, 2017).

Eating Pathology

Feeding and eating disorders are characterized by chronic, maladaptive eating behaviors and attitudes that lead to disturbance in the consumption and/or absorption of food. Those affected by these disorders experience impairment in psychosocial functioning and physical health. A common functional mechanism of these disorders is the alteration of eating behaviors in order to achieve or maintain a desired body size/weight. Pathological eating behaviors vary by individual and across diagnostic categories. Behaviors commonly reported by ED sufferers include starvation (i.e., excessive dietary restriction), purging, excessive exercise, and misuse of laxatives. They typical age of onset for ED is 17 years of age, with most cases developing between age 13 and 19. There is substantial evidence that the core psychopathology of ED can be related to pubertal changes in body shape (Theander, 1996). The DSM-V identifies five mutually exclusive diagnostic categories of eating disorders (ED): rumination disorder, avoidant/restrictive food intake disorder, anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED; American Psychiatric Association, 2013).

There are few nationally representative population-based studies on the prevalence of eating disorders, and estimates vary greatly depending on the study location, sample demographics, case finding, and diagnostic inclusions and approaches (Galmiche et al., 2019; Santomauro et al., 2021; Wu et al., 2020). The global prevalence of EDs varies by region, with rates of 4.6% in the United States, 3.5% in Asia, and 2.2% in Europe (Galmiche et al., 2019). The overall lifetime prevalence of ED in the United States is estimated to be 8.60% among females and 4.07% among males (Udo & Grilo, 2018). The most recent nationally representative estimates of ED prevalence rates in the United States were published in 2019 by Ward et al. The estimated one-year prevalence rate of eating disorders across all age groups was 1.66%, affecting approximately 5.5 million Americans, including 4.4 million women and 1.1 million men.

Women had a notably higher prevalence rate at 2.6% compared to men at 0.7%. (Ward et al., 2019). The highest rates of EDs were observed among the 20-29 year age group for both genders, at 7.4% for men and 10.3% for women. The lifetime prevalence of EDs in the United States is approximately 0.8% for anorexia nervosa (AN), 0.28% for bulimia nervosa (BN), and 0.85% for binge-eating disorder (BED; Udo & Grilo, 2018). From 2013 to 2020/2021, the prevalence of ED risk among a large, representative sample U.S. college students increased from 15% to 28%, with the most substantial increases observed among young, female, and Hispanic students (Daly & Costigan, 2022). Further, recent data indicate an increasing incidence of EDs, particularly AN, during the COVID-19 pandemic (Agostino et al. 2021; Asch et al. 2021; Otto et al. 2021; Taquet et al. 2021; Tavolacci et al. 2021).

Many eating disorders share common psychological and behavioral features, such as preoccupation with body size and low self-esteem. However, these disorders have been classified separately due to the highly variable clinical course, prognoses, and treatment needs. For example, the mortality rate for AN far exceeds that of any other ED (Keel, Mitchell, Davis, & Crow, 2002; Nielsen, 2003; Theander, 2004). From a clinical perspective, it is more useful to assess the underlying psychological dimensions involved in the etiology and maintenance of ED rather than rather than focusing on diagnostic categories. The reasoning for this approach is twofold: 1) Many individuals do not conform to a single symptom profile, 2) Individuals diagnosed with ED commonly move between diagnostic groups across their lifetime (Eddy et al., 2002; Steiger, Israel, Gauvin, Ng Ying Kin, & Young, 2003). This within-and-across group heterogeneity has contributed to the misdiagnoses of many who don't quite "fit" the traditional mold of ED, such as sufferers of AN whose weight remains above the clinical threshold BMI required for an AN diagnosis. Taken together, these findings indicate that research in this area

and diagnostic efforts are maximized by focus on common mechanisms of pathological eating. behavior (Garner, 2004).

The multideterminant model of AN accounts for the contribution of societal, individual, and familial history risk factors; their interaction with precipitating factors (e.g., diet culture); and the psychological, emotional, and physical effects of starvation on the individual. Though this model was published in 1993, it continues to serve as an appropriate framework for ED development and maintenance in an increasingly thin-idealizing and diet-oriented Western society. Consideration of cultural factors in the expression of ED has gradually increased in the psychological community over the last 30 years. There is evidence that ED manifest differently based on the cultural emphasis placed on dieting at a given point in time. Consistent with these findings, a historical shift in motivation for ED symptoms has been well documented among American populations. Casper (1983) noted a change from earlier AN accounts citing "ascetic motives" to more modern motivational themes such as "drive for thinness." During this same period, BN was gaining attention and increasing in prevalence, which Russell (1985) attributed to growing pressure on women to meet unrealistically thin beauty standards portrayed by the media.

Further support for the "evolution" of ED comes from studies of ED prevalence in Westernized nations outside of the US. A Chinese study identified a clinical subgroup of "non-fat phobic" patients with AN in 1993 (Lee, Ho, & Hsu, 1993). These individuals were distinguished by low scores on subscales measuring drive for thinness and bulimic symptoms while reporting significant pathology on other clinically relevant psychological scales. Diet culture also seems to have an influence on treatment outcomes, as the aforementioned subgroup was associated with better response to treatment than were individuals reporting fat-phobic

beliefs. More recently, longitudinal research tracking global prevalence of ED suggests that ED pathology tends to increase as countries adopt Western cultural values. These findings suggest that the presence and importance of dieting to achieve a culturally constructed thin ideal influences the prevalence of ED and associated treatment outcomes. Thus, women in fat-phobic Western cultures that emphasize dietary restriction are at increased risk of ED development.

The adolescent onset of ED, association with pubertal changes in body composition, and the disproportionate rate at which women are affected have led to speculation about the role played by the female reproductive system in these disorders. Menstrual irregularity is a common symptom experienced by ED sufferers. Amenorrhea refers to the absence of menstruation that persists longer than the duration of three 28-day menstrual cycles. Amenorrhea has also been well documented in women using HC, as well as in otherwise healthy individuals with extremely low levels of body fat (e.g., professional athletes). Menstrual irregularity has also been strongly associated with higher levels of stress. Further, it is known that HC use acts upon the same system that moderates appetite (Hall et al., 2012), and that weight gain is a common side effect of HC use (Gallo, Lopez, Grimes, Schulz, & Helmerhorst, 2011). Existing research has established a link between female sex hormones, appetite, and eating behaviors (Hirschberg, 2012). Though there is growing evidence for an association between HC use and eating behavior, the directionality of such a relationship remains poorly understood. Some findings posit that the suppression of the natural endogenous hormones caused by HC could increase risk for the development of ED (Naessén, Carlström, Byström, Pierre, & Hirschberg, 2007; Resch, Szendei, & Haasz, 2004). Conversely, other findings indicate that, rather than disrupting the natural cycle of hormones, HC regulates eating behaviors by decreasing hormonal variation across the menstrual cycle. This regulation has been associated with decreased hormonally-influenced

eating behaviors, including overall caloric intake and cravings. Beyond appetite, HC use has also been identified as a protective factor against several key psychological constructs implicated in the etiology and maintenance of ED, including cognitive restraint and body dissatisfaction (Almengual 2020; Plessow, Singhal, Toth, Micali, Eddy, & Misra, 2019).

Cognitive Restraint

Cognitive restraint (CR), also referred to as cognitive dietary restraint or dietary restraint, refers to the conscious limitation of food intake. Generally, individuals exhibiting above average CR are motivated to achieve or maintain a desired body weight. CR differs from simple "will power" in that it represents a shift in the locus of control of eating behaviors such that they are governed by cognitive processes rather than physiological sensations (e.g., hunger and satiety; McLean & Barr, 2003). CR is a nuanced construct that is associated with different behaviors at different levels. High levels of CR have been associated with ED characterized by restriction, such as AN and the developing diagnosis of Orthorexia. Conversely, low levels of CR are correlated with behaviors characteristic of the opposite side of the ED spectrum, including binge-eating and uncontrolled eating.

Individuals diagnosed with AN tend to exhibit high levels of CR (Lowe et al., 2007; Richards & Specker, 2020). Cognitive control over eating is often rigid and may involve meticulous meal planning, calorie counting, and deliberate avoidance of certain foods or food groups deemed to be fattening. Afflicted individuals engage in significant and sustained efforts to limit food intake driven by an intense phobia of weight gain and a distorted body image. This high level of CR is a core component of the disorder and is typically associated with extreme weight loss and malnutrition (Brytek-Matera, 2020). Pendulating levels of CR have been observed among individuals diagnosed with BN, ranging from average to high CR (Schulte et

al., 2016). Such individuals may have intentions to restrict food intake similarly to those with AN, but these intentions are often undermined by recurrent episodes of binge eating. CR is thus punctuated by periods where control is lost, and large amounts of food are consumed. This intermittent restraint can be characterized by a pattern of dietary restriction during the day followed by evening binges, or planned restriction after a binge as a form of compensatory behavior. Similarly, CR may vary for those diagnosed with BED, but it often swings from average to low levels during binge episodes (Racine et al., 2018). Individuals may demonstrate attempts at dietary restraint in between binges, which might be initiated by concerns over body weight and shape. However, these attempts can be inconsistent, leading to periods where restraint is diminished, resulting in episodes of binge eating without subsequent compensatory behaviors. The level of CR in binge-eating disorder is thus less stable and can fluctuate significantly, contributing to the cyclical nature of the disorder (Schulte et al., 2016).

Numerous studies have linked CR level to eating behaviors, lifestyle practices, and demographic characteristics. McLean and Barr found that women exhibiting high levels of CR were associated with increased menstrual irregularity, vegetarianism, history of ED diagnosis, low self-esteem, and body dissatisfaction compared to medium or low CR controls. These differences remained significant even after controlling for height and weight (via Body Mass Index; BMI), which have traditionally been utilized to identify those at risk for ED. Further, self-esteem and CR were independently associated. It has been hypothesized that low self-esteem is a prerequisite for the development of ED, and research supports that it often predates ED diagnosis. CR at high levels has also been associated with increased cortisol secretion in women. Cortisol interferes with menstrual functioning and may inhibit bone formation. Both menstrual irregularity (e.g., amenorrhea) and decreased bone mineral density (e.g., osteoporosis) are

recognized as symptoms of severe restrictive ED. Taken together, these findings suggest that CR has a potentially moderating effect on the development ED symptomology.

This inconsistent body of knowledge, combined with the growing prevalence of both HC use and ED among American women, necessitates further exploration of the role of HC in eating behavior. The present study examined these relationships in a population of American undergraduate women. Though directionality and causality cannot be definitively determined, the present study explored correlations identified between HC use and ED symptoms. The goal was to add to the larger body of research examining the impact of contraceptive choice on psychological health.

Theoretical Framework

Another cultural factor at play in this field is the misogynistic history of medicine in general and, more specifically, regarding the female body. Women's healthcare has suffered from institutional oppression by political policy, objectification and othering of women's bodies, and the pathologizing of natural physiological processes (e.g., hysteria). Similar to other groups holding marginalized identities, women have experienced myriad health discrepancies as a result of the male-centric medical model. While all aspects of women's healthcare have been negatively affected, women's reproductive health has been especially fraught with discriminatory practices. The Women's Health Movement (WHM, also feminist women's health movement) refers to the aspect of the American feminist movement that aims to improve all aspects of women's healthcare. This campaign emerged in the 1960s during the second wave of feminism as a sub-movement of the women's liberation movement. Despite setbacks in the 1980s related to reproductive rights, the movement led to significant gains at federal policy level during the 1980s and 1990s (Nichols, 1999). Though significant advancements have been made, women

are still fighting for agency over their own bodies. Basic human rights to govern one's own body have been repackaged as political campaign strategies and rallying cries among religious groups.

The Minority Stress Model (MSM) refers to the greater levels of stress experienced by individuals holding one or more marginalized identities. Meyer identified three key factors differentiating normal stress from Minority Stress: Minority Stress is unique, chronic, and socially-based (2003). It is unique in that it is not experienced at the same level by those holding dominant identities. Chronicity refers to a relatively stable presence of stress in someone's life due to underlying social and cultural structures. Further, Minority Stress stems from social processes, institutions, and structures rather than from individual events or conditions that precede more general stressors. Intersectionality is central to MSM, which takes into consideration the compounding effect of holding multiple marginalized identities (e.g., Identifying as a Black woman is associated with greater Minority stress than identifying as a White woman). Though it was initially developed with focus on sexual and gender minorities, this model enhances our understanding of issues faced by the WHM by conceptualizing women as a marginalized population due to social conditions characterized by prejudice and stigmatization. Through this lens we are better able to understand the unique challenges faced by women in Western societies, especially those holding additional nondominant identities.

Our understanding of the WHM and MSM shine light on the importance of conducting research in the area of women's reproductive health. Contraceptive responsibility has long been a woman's burden. The biological, psychological, and emotional consequences of pregnancy are more pronounced for women than they are for men. This idea has historically been a motivating force for engagement in contraceptive practices, especially considering the stigmatization and health disparities faced by single mothers. Apart from vasectomy and condoms, no

contraceptives are available for men. This fact is concerning and surprising, as the lack of advancements persist despite over 40 years of research and clinical trials (Nieschlag, 2011). The need for such technology is paramount, and was formally recognized at first Summit Meeting for Male Contraception in 1997. This meeting took place in Germany and included leading researchers from around the globe, and included representatives from prestigious organizations such as the Population Council of New York and the World Health Organization. Much like many methods of female HC, the principle of male HC is based on the suppression of LH and FSH in order to maintain androgenicity (Thirumalai & Page, 2020). Multinational studies indicate that many men (44-83%) would be open to utilizing effective male HC (Heinemann, Saad, & Wiesemes et al., 2005).

The currently available technology lags behind social progress, and increased openness to sharing the burden of contraception and child rearing over the last decade highlights the necessity for science and clinical development to supply products that will meet this demand. Recently, a promising phase II clinical trial commissioned by the WHO for a novel male HC injectable formulated with progestogen was halted when participants reported identical side effects to those experienced by many women using HC. The reasoning that this was a deterrent in male, but not female, HC development? The adverse health effects were considered to outweigh the benefits for men. This apparent double-standard has created controversy within the field. Many researchers have defended the decision to halt the trial, saying that pregnancy is a "considerable health risk" for women (not men), so trading the health risks of HC for pregnancy prevention is merited (Tulsiani & Abou-haila, 2017). Pathologizing pregnancy as a health risk follows a long history of conceptualizing natural female reproduction processes as infirmities simply on the basis that they do not occur in men. In the past, menstruation and the female

orgasm have faced similar prejudice. Others say that the psychological effects of HC in men are "more severe" than those seen in women, often citing that 1 of the 320 participants in the trial attempted suicide. This is in contrast with recent findings from a nationwide study on the increased rate of suicide attempts and completion observed among women using HC compared to matched controls (Skovlund, Mørch, Kessing, Lange, & Lidegaard, 2018). Additionally, a 2020 review of research in male HC noted that a lack of pharmaceutical industry funding remains a considerable barrier to further advancements in this field. Aversive side effects and the potential stigma related to the "emasculating" effect of male HC are seen as factors undermining efforts to increase funding at an institutional level. If these side effects, including alterations in appetite, eating behaviors, and weight, were deemed too dangerous for men, it is critical that current research reevaluates the safety of HC for women.

METHOD

Participants

Individuals eligible to participate were undergraduate students at an American university who were assigned female at birth (AFAB) and at least 18 years of age. The participants were recruited from a public university located Colorado. A power analysis was conducted using G*Power to determine sample size. A sample of 81 participants was necessary to detect a small effect size ($\alpha = 0.05$; $1-\beta = 0.80$; $f2 = 0.10$; Faul, Erdfelder, Buchner, & Lang, 2009). The present study aimed to recruit a sample of 400 to allow for loss of participants due to attrition and exclusionary criteria. To ensure that incident events of depression and eating disorders were identified, data collected from women with a depression and/or eating disorder diagnosis which preceded their placement on a hormonal contraception were excluded.

Data were collected from 458 participants in total. Data from participants who did not complete the entire testing battery were not included in analysis (N = 44). Data recorded from participants who met exclusionary criteria were not included in analysis (N = 36). Statistical analyses were conducted for 378 participants that both met inclusion criteria and completed the entire testing battery. Demographic data for the sample is presented in two tables below. Table 1 provides reported racial and ethnic identities.

Table 2 contains the mean and standard deviation of continuous demographic variables. The Biracial/Mixed Race category included any combination of 2 or more of the provided options. The survey included several racial/ethnic identities that were not endorsed as stand-alone identities (not reported in combination with any other identity) by any participants in this

sample, including Chinese, Japanese, Korean, Vietnamese, Guamanian or Chamorro, Samoan, Other Pacific Islander, and Other Asian.

Table 1
Participant Race/Ethnicity Demographics (N=378)

Measure	*n*	%
Hispanic/Latino/Spanish origin		
Nonhispanic	321	84.9
Mexican, Mexican American, Chicano/a	32	8.5
Puerto Rican	2	0.5
Cuban	0	0.0
Other Hispanic, Latino, or Spanish origin	19	5.0
Prefer not to answer	4	1.1
Racial Identity		
White	319	84.4
Black or African American	5	1.3
American Indian or Alaska Native	2	0.5
Asian	6	1.6
Native Hawaiian or Pacific Islander	2	0.5
Asian Indian	1	0.3
Biracial/Mixed Race	29	7.7
Prefer not to answer	14	3.7

Table 2
Means and Standard Deviations of Participant Demographics

Measure	*n*	*M*	*SD*	α	*Range*
Age	378	18.77	1.86	.50	18-28
Age of Menarche	377	12.47	1.33	.50	8-17.50
Age of first HC prescription	268	16.27	1.57	.50	11-22
Body Mass Index	377	23.47	4.86	.50	15.92-48.25

Procedure

Recruitment

Participants for the present study were recruited from the university research pool. The research pool is a student sample comprised of undergraduates enrolled scientific coursework. Students are given the option to serve as a participant in 6 hours of research conducted by the university, or to complete an alternative written assignment in order to fulfill course research requirements. Recruitment began in the Fall 2019 academic semester and was completed at the

assigned due date for research credits. Each participant was assigned to a group based upon her indicated current contraceptive methods so as to enable subsequent within and between-group comparisons. Current contraception method was defined in the present study as any means by which a participant is preventing pregnancy, including prescription birth control methods that have been in place for a minimum of 28 days at the time of consent.

Design

The present study is best conceptualized as correlational because it seeks to explore potential relationships between HC and symptoms of eating pathology. Following recruitment and consenting, participants were categorized based on their current contraceptive method. Participants then completed a brief survey and two self-report assessments online via Qualtrics. This questionnaire collected demographic information as well as relevant reproductive and mental health history. Following completion of the survey, participants were immediately asked to complete three self-report measures on Qualtrics: The Three Factor Eating Questionnaire-R18 (Karlsson et al., 2000), the Eating Disorder Inventory-3 (EDI-3; Garner, 2004), and the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996). Participants completed the entire battery once during the Fall 2019 academic semester, and received course credit only after all parts of the battery were completed.

Research Questions

The present study aimed to address the following research questions:

1. How is HC use associated with symptoms of pathological eating?
2. What variables emerge as moderators of this relationship?

Aim 1: Explore the relationship between different HC methods and eating behaviors implicated in the etiology and maintenance of ED.

Aim 2: Examine potential moderating effects of demographic features and/or CR level in eating behavior across HC types.

Measures

Demographics

Age, racial/ethnic identity and gender identity were collected.

Reproductive Health History

Participants were asked to report which (if any) method(s) of contraception they were currently using. They were also asked to report relevant history concerning reproductive health, including age of menarche, age of first HC prescription, duration of HC use, and reason for HC prescription.

Three-Factor Eating Questionnaire - R18

The Three Factor Eating Questionnaire was originally developed by Stunkard and Messick in 1985 as a 51-item self-report scale that measures three dimensions of human eating behavior: Disinhibition, caloric intake related to emotional distress, and cognitive restraint of eating. It was later modified into a more parsimonious 18-item self-report (Karlsson et al., 2000). Analyses of this revised version indicate strong psychometric properties comparable to the original scale, and items loaded onto the same three factors (Anglé et al., 2009; Brytek-Matera, Rogoza, & Czepczor-Bernat, 2017; FLVS, 2004). The dimensions were renamed as Uncontrolled Eating (UE), Emotional Eating (EE), and Cognitive Restraint (CR) subscales:

- Uncontrolled Eating (UE): This subscale assesses the tendency to eat more than usual due to a loss of control over intake, often described as eating binges. It captures the propensity to eat large quantities of food without regard to physiological hunger cues and

the difficulty in stopping food consumption. This construct is important for identifying individuals who may be at risk for overeating or binge-eating.

- Emotional Eating (EE): This subscale evaluates the degree to which emotions influence eating behavior, specifically the tendency to eat in response to a range of negative emotions such as anxiety, depression, or loneliness. Emotional Eating reflects the use of food as a coping mechanism to self-soothe during emotional distress. It is a critical construct for understanding how psychological factors may contribute to atypical eating behaviors and the development of eating disorders like BN and BED.
- Cognitive Restraint (CR): This subscale measures the extent to which individuals consciously restrict their food intake to control body weight or to promote weight loss. It encompasses control over eating behaviors, the avoidance of certain types of food or amounts, and the tendency to restrict caloric intake. Cognitive Restraint is considered a key factor in understanding eating patterns that may contribute to or mitigate against the development of eating-related disorders.

The questionnaire provides a measure of maladaptive eating patterns that do not meet clinical diagnostic threshold for ED. Previous research suggests that the prevalence of full threshold ED is less represented in community samples than clinical samples. Research with community samples indicate a greater incidence of subthreshold and atypical ED presentations observed in the general population (Favaro, Ferrara, & Santonastaso, 2003). The TFEQ-R18 is included in the present battery to assess ED symptom endorsement across the entire spectrum of symptom severity, rather than only including those individuals who meet full diagnostic criteria. This may also serve as a means to detect subclinical individuals who may be at risk for ED development.

The wording of item 1 was slightly modified from "When I smell a sizzling steak or a juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.", into "When I smell a delicious food, I find it very difficult to keep from eating, even if I have just finished a meal." This change was first made by Anglé et al. in order to accommodate the growing prevalence of vegetarian and vegan diets, and to allow respondents to respond more accurately regardless whether meat was part of their diet (2009; Kosonen et al., 2005).

Eating Disorder Inventory - 3

The Eating Disorder Inventory-3 (EDI-3; Garner, 2004) is a 91-item self-report measure frequently used by researchers and clinicians to assess symptoms relevant to the development and maintenance of AN, BN, and EDNOS. This comprehensive scale measures the psychological traits and symptoms implicated in the development and maintenance of ED. The EDI-3 is considered the gold standard in ED assessment among the international healthcare community. This measure has demonstrated strong validity and reliability in both clinical and community samples (Cumella, 2006). The current study utilized participant scores from the 12 clinical subscales of the EDI-3:

- Drive for Thinness (DT): This subscale measures an excessive concern with dieting, preoccupation with weight, and the fear of weight gain. It reflects the degree to which individuals are driven to achieve and maintain a lower body weight. The Drive for Thinness subscale is pivotal in identifying individuals at risk for AN and BN, where the fear of gaining weight is a central feature.
- Bulimia (B): This subscale assesses episodes of binge eating followed by feelings of guilt and loss of control. It captures behaviors such as compulsive eating and the recurrent use

of inappropriate compensatory mechanisms to prevent weight gain. This subscale is crucial for identifying behaviors characteristic of BN and BED.

- Body Dissatisfaction (BD): This subscale evaluates dissatisfaction with the overall shape and size of one's body, including specific parts of the body. It reflects the degree of concern and distress related to body image. Body Dissatisfaction is a core component of body image disturbance, which is a common feature across different types of eating disorders.
- Low Self-Esteem (LSE): This subscale measures feelings of inadequacy, insecurity, and worthlessness. It assesses an individual's overall negative self-evaluation. This construct is critical as low self-esteem is often both a contributing factor to and a consequence of eating disorders.
- Personal Alienation (PA): This subscale measures feelings of estrangement, social isolation, and an inability to fit in. It captures a sense of disconnection from oneself and others. Personal Alienation is important for understanding the interpersonal difficulties and identity concerns that individuals with eating disorders may experience.
- Interpersonal Insecurity (II): This subscale assesses feelings of discomfort and apprehension in social interactions. It reflects difficulties in forming close relationships and a fear of being negatively evaluated by others. This construct is relevant for identifying the social anxiety and avoidance behaviors often observed in individuals with eating disorders.
- Interpersonal Alienation (IA): This subscale measures feelings of isolation, dissatisfaction with social relationships, and a lack of perceived support from others. It captures a sense of being misunderstood and alienated from one's social environment.

Interpersonal Alienation is crucial for understanding the social withdrawal and loneliness that can accompany eating disorders.

- Interoceptive Deficits (ID): This subscale assesses the inability to accurately perceive and interpret bodily signals, such as hunger and satiety. It reflects difficulties in recognizing and responding to internal states. This construct is key in understanding the disconnection from bodily needs that characterizes many eating disorders.
- Emotional Dysregulation (ED): This subscale measures the inability to modulate emotional responses, leading to impulsive or maladaptive behavior. It captures difficulties in managing emotions, which can contribute to the development and maintenance of eating disorder behaviors. Emotional Dysregulation is important for understanding the role of affective instability in eating disorders.
- Perfectionism (P): This subscale assesses the setting of excessively high standards for oneself and a tendency toward overly critical self-evaluation. It reflects the pursuit of flawlessness and the avoidance of failure. Perfectionism is a significant risk factor for the development of eating disorders, particularly AN.
- Asceticism (A): This subscale measures the extent to which individuals deny themselves pleasure and comfort, often in the pursuit of spiritual or intellectual goals. It captures a preference for simplicity and self-discipline. Asceticism is relevant for understanding the self-imposed restrictions and denial of basic needs seen in some individuals with eating disorders.
- Maturity Fears (MF): This subscale assesses the fear of facing the demands of adult life and the desire to return to the safety of childhood. It captures anxieties related to independence, sexual relationships, and taking on adult responsibilities. Maturity Fears

are important for understanding the developmental aspects and transition-related stressors that can influence eating disorder pathology.

Beck's Depression Inventory - II

The Beck's Depression Inventory - II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure adapted to measure DSM-IV criteria for Major Depression Disorder. The outcome variable measured by the BDI-II is the severity of depression, which is quantified based on the total score obtained from the sum of the individual item scores. The current item content includes: sadness, pessimism, past failure, anhedonia, guilty feelings, punishment feelings, self-dislike, self-criticalness, suicidal ideation, crying, agitation, loss of interest, indecisiveness, feelings of worthlessness, loss of energy, disturbance in sleeping pattern, irritability, changes in appetite, concentration difficulty, tiredness or fatigue, and loss of interest in sex. The BDI-II's structure reflects the diagnostic criteria for depressive disorder as outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM), ensuring its relevance and utility in clinical settings.

Data Analysis

Participants were grouped according to HC type. HC methods were categorized according to exogenous hormonal composition and route of administration. To examine the present research questions, multiple linear regression was conducted to assess if there was a correlation between HC type and ED symptomatology as assessed by 9 EDI-3 subscales, TFEQ-R18 and BDI-II scores. MLR models included both main effects and interaction terms. The method of ordinary least squares regression assesses the relationship among dichotomous, ordinal, or interval/ratio predictor variables on an interval/ratio criterion variable. In this

instance, the independent variable of interest is current method of HC (or no HC for the control group). The dependent variables are reported symptomatology of ED.

Standard multiple linear regression allows the inclusion of covariates within the model. Other variables that have been identified as potential covariates include age at time of assessment, age at menarche, age when menstruation became regular, past/current HC side effects, duration of HC use, reason for HC prescription, and family history of MDD and/or ED. CR was conceptualized as a potential mediator between HC type and ED symptoms. Categorical variables were dummy coded. Categorical variables that have 3 or more levels were examined with pairwise comparisons. A series of interaction terms was generated by multiplying the predictor by the moderator to examine potential moderation effects. Significant interaction terms were further assessed using post-hoc simple slopes analyses. Effect sizes and confidence intervals were reported in the results in order to give an indication of the magnitude, direction, and precision of the effects. Table 3 lists the variables of interest, as well as indicating how they are conceptualized in the present study ("TYPE") and how they are coded within the dataset ("CODE").

The standard method enters all predictors simultaneously into the model and is appropriate unless theory sufficiently supports a different method. R-squared, the multiple correlation coefficient of determination, will be reported and used to determine how much variance in the dependent variable can be accounted for by the set of predictors. The assumptions of multiple regression (linearity, homoscedasticity and multicollinearity) will be assessed. Linearity assumes that a straight line relationship between the predictor variables and the criterion variable, and homoscedasticity assumes that scores are normally distributed about the regression line. Linearity and homoscedasticity will be assessed via examination of a scatter plot.

The absence of multicollinearity assumes that predictor variables are not too related and will be assessed using Variance Inflation Factors (VIF). VIF values over 10 will suggest the presence of multicollinearity (Statistics Solutions, 2013). All analyses were conducted using R Studio data analysis software (Team, 2015).

Table 3
List of variables to be included in analyses, variable type, and coding within the dataset.

Variable	Type	Code
Age	Covariate	Continuous
Ethnicity	Covariate	Categorical
Racial identity	Covariate	Categorical
Gender identity	Covariate	Categorical
Age of menarche	Covariate	Continuous
Age regularity reached	Covariate	Continuous
Age first HC	Covariate	Continuous
Reason prescribed (past)	Covariate	Categorical
Side effects (past)	Covariate	Categorical
Duration	Covariate	Categorical
Reason prescribed	Covariate	Categorical
Side effects	Covariate	Categorical
Current HC type	Predictor	Categorical
Cognitive Restraint	Moderator	Continuous
Uncontrolled Eating	Outcome	Continuous
Emotional Eating	Outcome	Continuous
Drive for Thinness	Outcome	Continuous
Bulimia	Outcome	Continuous
Body Dissatisfaction	Outcome	Continuous
Low Self-Esteem	Outcome	Continuous
Personal Alienation	Outcome	Continuous
Interpersonal Alienation	Outcome	Continuous
Interpersonal Insecurity	Outcome	Continuous
Interoceptive Deficits	Outcome	Continuous
Emotional Dysregulation	Outcome	Continuous
Perfectionism	Outcome	Continuous
Asceticism	Outcome	Continuous
Maturity Fears	Outcome	Continuous
Depression	Outcome	Continuous

RESULTS

Prediction and Moderation Analyses

Multiple regression analysis was used to test the if contraceptive type significantly predicted participants' ratings on psychological variables of interest, identify potential covariates, and test the moderating effect of CR on the proposed relationships. A four-step model building procedure was used. The four steps of the procedure are represented by the four columns of the resulting tables. Step 1 included the independent variable and potential demographic covariates. Step 2 included the independent variable, potential moderating variable, and covariates identified as significant in the previous step. Step 3 included pairwise comparisons between the 3 factor levels of the independent variable. Step 4 included the two 2-way interaction terms. All predictor and moderator variables were mean-centered prior to creating the interaction terms. This procedure was repeated for each of the 15 dependent variables of interest.

In Step 1, MLR analyses were conducted to identify potential covariance among the demographic variables and each dependent variable. Potential covariates included in Step 1 were age at time of testing, age of menarche, age of cyclic regularity established, and age of first HC prescription. Only significant covariates identified in Step 1 were carried forward into Step 2. In Step 2, Main Effects models were evaluated by conducting MLR analyses including HC type, CR, and any covariates identified in Step 1. The key predictor variable was hormonal contraceptive type, a 3-level categorical variable including No HC, SARC, and LARC, with No HC as the referent group. In Step 3, the key predictor (HC type) was releveled to allow for all pairwise comparisons (SARC vs LARC), models were run a second time, and significant

differences between models were identified. If no significant differences were detected, the ME model was interpreted with the original factor levels. In Step 4, two-way interaction terms were added to the model to test the potential moderating effect of Cognitive Restraint on the relationship between key predictor variables and dependent variables. If interactions were not found to be significant, the ME models from Step 2 were interpreted.

Research Question 1

The first research question aimed to explore the association between HC use and eating pathology symptoms. The strength and direction of relationships varied across constructs. Contraceptive type was predictive of certain psychological outcomes, though these relationships were only observable at lower significance levels ($p < .05$). LARC use significantly predicted Interpersonal Insecurity (II) scores ($\beta = -0.29$, $p < .046$) and Emotional Dysregulation (ED) scores ($\beta = 0.30$, $p < .037$). SARC use significantly predicted Maturity Fears (MF) scores ($\beta = -0.28$, $p < .018$). Tables presenting full results from the 4-step analyses conducted for each outcome variable are presented below.

Interpersonal Insecurity

Cognitive Restraint ($\beta = 0.21$, $p < .001$) and LARC ($\beta = -0.29$, $p < .046$) significantly predicted II scores ($F (3, 365) = 6.53$, $p < .01$). Together, the predictors included in the ME model explained a small to medium amount of the variance (5%) in II scores ($R2 = 0.05$).

Table 4
Interpersonal Insecurity

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.171	0.09	<0.001	-0.20	0.007	0.10	0.001	0.269
Age	-0.05	0.406							
Menarche Age	-0.02	0.719							
Regularity Age	0.09	0.149							
First HC Age	0.05	0.467							
SARC			-0.07	0.574			-0.06	0.161	0.625
LARC			-0.29	0.046			-0.27	0.763	0.061
Cognitive Restraint			0.21	<0.001	0.21	<0.001	0.14	0.149	0.149
SARC vs LARC					0.22	0.113			
SARC*Cognitive Restraint							0.16	0.186	0.186
LARC*Cognitive Restraint							-0.03	0.833	0.833
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.010 / -0.005		0.051 / 0.043		0.051 / 0.043		0.058 / 0.045		

Emotional Dysregulation

Cognitive Restraint ($\beta = 0.13$, $p < .05$) and LARC ($\beta = 0.30$, $p < .037$) use significantly predicted ED scores ($F (3, 365) = 3.63$, $p < .01$). Together, the predictors included in the ME model explained a small to medium amount of the variance (3%) in ED scores ($R2 = 0.03$).

Table 5
Emotional Dysregulation

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.160	-0.11	0.001	0.19	<0.001	-0.11	0.050	0.193
Age	0.06	0.318							
Menarche Age	-0.07	0.284							
Regularity Age	0.04	0.499							
First HC Age	-0.04	0.567							
SARC			0.12	0.308			0.11	0.479	0.357
LARC			0.30	0.037			0.27	0.767	0.064
Cognitive Restraint			0.13	0.015	0.13	0.015	0.13	0.173	0.173
SARC vs LARC					-0.18	0.194			
SARC*Cognitive Restraint							-0.06	0.636	0.636
LARC*Cognitive Restraint							0.13	0.391	0.391
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.012 / -0.004		0.029 / 0.021		0.029 / 0.021		0.034 / 0.020		

Maturity Fears

SARC (β = -0.28, p < .05) use significantly predicted MF scores (F (3, 365) = 2.84, p < .05). Together, the predictors included in the ME model explained a small to medium amount of the variance (2%) in MF scores (R2 = 0.02).

Table 6
Maturity Fears

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.031	0.16	<0.001	0.01	<0.001	0.14	<0.001	0.104
Age	-0.09	0.180							
Menarche Age	0.06	0.363							
Regularity Age	0.10	0.125							
First HC Age	-0.03	0.608							
SARC			-0.28	0.018			-0.27	0.895	0.022
LARC			-0.15	0.308			-0.11	0.315	0.451
Cognitive Restraint			0.07	0.200	0.07	0.200	0.16	0.104	0.104
SARC vs LARC					-0.13	0.343			
SARC*Cognitive Restraint							-0.10	0.429	0.429
LARC*Cognitive Restraint							-0.20	0.189	0.189
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.023 / 0.007		0.023 / 0.015		0.023 / 0.015		0.027 / 0.014		

Research Question 2

Cognitive Restraint

The second research question aimed to identify potential moderators and covariates of the relationship between HC use and psychological variables. Cognitive Restraint was considered as a potential moderator of the relationship between contraceptive type and eating pathology. No significant interaction terms or moderating effects of CR were detected. However, the results revealed significant, positive relationships between cognitive restraint and psychological variables in 14 of 15 models. Cognitive restraint exhibited varying levels of significance in predicting the psychological variables of interest. Among the predictors with the highest levels of significance ($p < .001$), Drive for Thinness (DT) scores had the largest Beta value ($\beta = 0.68$), followed by Body Dissatisfaction (BD) scores ($\beta = 0.58$), Asceticism (A) scores ($\beta = 0.45$), Bulimia (B) scores ($\beta = 0.39$), Low Self Esteem (LSE) scores ($\beta = 0.37$), Personal Alienation (PA) scores ($\beta = 0.30$), Depression (D) scores ($\beta = 0.29$), Interpersonal Alienation (IA) scores ($\beta = 0.27$), Interoceptive Deficits (ID) scores ($\beta = 0.23$), Emotional Eating (EE) scores ($\beta = 0.23$), Interpersonal Insecurity (II) scores ($\beta = 0.21$), and Uncontrolled Eating (UE) scores ($\beta = 0.19$). Among predictors with lower significance levels ($p < .05$ and $p < .01$), Perfectionism (P) scores had a Beta value of $\beta = 0.23$ ($p < .01$), and Emotional Dysregulation (ED) scores had a Beta value of $\beta = 0.13$ ($p < .05$). No significant relationship was detected between CR and Maturity Fears (MF). Across multiple models, cognitive restraint exhibited the largest effect size among predictors, except for Emotional Dysregulation. In the case of Emotional Dysregulation, LARC exhibited the largest effect size ($\beta = 0.30$, $p < .037$), while CR demonstrated a small-medium effect size in this model ($\beta = 0.13$, $p < .05$).

Table 7
Cognitive Restraint Effect Size by Outcome Model

Model	CR Effect Size (β)	Significance Level (*p*)
Drive for Thinness (DT)	0.68	< .001
Body Dissatisfaction (BD)	0.58	< .001
Asceticism (A)	0.45	< .001
Bulimia (B)	0.39	< .001
Low Self Esteem (LSE)	0.37	< .001
Personal Alienation (PA)	0.30	< .001
Depression (D)	0.29	< .001
Interpersonal Alienation (IA)	0.27	< .001
Interoceptive Deficits (ID)	0.23	< .001
Emotional Eating (EE)	0.23	< .001
Interpersonal Insecurity (II)	0.21	< .001
Uncontrolled Eating (UE)	0.19	< .001
Perfectionism (P)	0.23	< .01
Emotional Dysregulation (ED)	0.13	< .05

Regularity Age

Patterns of predictor significance and the identification of variables not classified as covariates were achieved. Potential covariates considered were age at time of testing, age of menarche, age of cyclic regularity established, and age of first HC prescription. Only Regularity Age emerged as a covariate. A significant, positive and small to medium sized relationship was detected between Regularity Age and measures of Personal Alienation and Interpersonal Alienation scores in both Covariate ($\beta = 0.13$, $p = 0.055$ and $\beta = 0.16$, $p = 0.014$, respectively) and ME models ($\beta = 0.11$, $p = 0.026$ and $\beta = 0.14$, $p = 0.004$, respectively). Regularity Age significantly predicted Body Dissatisfaction (BD) in the Covariate Model ($\beta = 0.13$, $p = 0.049$), but significance was not maintained in the ME model following the addition of key predictors in Step 2. Conversely, Regularity Age predicted both Alienation subscale scores at greater significance levels in the ME models ($\beta = 0.11$, $p = 0.026$) compared to the Covariate model ($\beta =$

0.13, p = 0.055). No significant associations were detected between Age, Menarche Age, or First HC Age and dependent variables.

Body Dissatisfaction

Regularity Age was included in the ME model. Cognitive Restraint ($\beta = 0.58$, $p < .001$) significantly predicted BD scores ($F(4, 363) = 50.09$, $p < .01$). Together, the predictors included in the ME model explained a large amount of the variance (36%) in BD scores ($R2 = 0.36$).

Table 8
Body Dissatisfaction

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	-0.00	0.317	-0.00	0.002	0.08	0.010	-0.01	0.011	0.904
Age	0.01	0.832							
Menarche Age	-0.02	0.738							
Regularity Age	0.13	0.049	0.04	0.325			0.04	0.329	0.329
First HC Age	-0.01	0.914							
SARC			-0.03	0.790			-0.02	0.835	0.838
LARC			0.08	0.514			0.10	0.339	0.424
Cognitive Restraint			0.58	<0.001	0.59	<0.001	0.62	<0.001	<0.001
SARC vs LARC					-0.11	0.341			
SARC*Cognitive Restraint							-0.03	0.783	0.783
LARC*Cognitive Restraint							-0.10	0.416	0.416
Observations	258		368		369		368		
R^2 / R^2 adjusted	0.017 / 0.001		0.356 / 0.349		0.354 / 0.348		0.357 / 0.346		

Personal Alienation

Regularity Age was included in the ME model. Cognitive Restraint ($\beta = 0.30$, $p < .001$) and Regularity Age ($\beta = 0.11$, $p < .026$) significantly predicted PA scores ($F (4, 363) = 10.95$, p

< .01). Together, the predictors included in the ME model explained a medium to large amount of the variance (11%) in PA scores (R2 = 0.11).

Table 9
Personal Alienation

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	-0.00	0.033	0.02	0.464	-0.07	0.313	0.01	0.699	0.884
Age	0.01	0.905							
Menarche Age	-0.06	0.396							
Regularity Age	0.13	0.055	0.11	0.026	0.11	0.026			
First HC Age	-0.10	0.119							
SARC			-0.01	0.937			0.00	0.883	0.981
LARC			-0.09	0.508			-0.06	0.778	0.666
Cognitive Restraint			0.30	<0.001	0.30	<0.001	0.33	<0.001	<0.001
SARC vs LARC					0.08	0.538			
SARC*Cognitive Restraint							-0.02	0.884	0.884
LARC*Cognitive Restraint							-0.06	0.665	0.665
Observations	258		368		368		369		
R^2 / R^2 adjusted	0.032 / 0.017		0.108 / 0.098		0.108 / 0.098		0.096 / 0.083		

Interpersonal Alienation

Regularity Age was included in the ME model. Cognitive Restraint (β = 0.27, p < .001) and Regularity Age (β = 0.14, p < .01) significantly predicted IA scores (F (4, 363) = 9.82, p < .01). Together, the predictors included in the ME model explained a medium to large amount of the variance (10%) in IA scores (R2 = 0.10).

Table 10
Interpersonal Alienation

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.479	0.01	0.804	-0.07	0.071	-0.00	0.314	0.960
Age	0.02	0.768							
Menarche Age	-0.01	0.897							
Regularity Age	0.16	0.014	0.14	0.004			0.14	0.004	0.004
First HC Age	-0.01	0.872							
SARC			0.02	0.848			0.03	0.354	0.786
LARC			-0.09	0.534			-0.05	0.271	0.712
Cognitive Restraint			0.27	<0.001	0.28	<0.001	0.36	<0.001	<0.001
SARC vs LARC					0.10	0.480			
SARC*Cognitive Restraint							-0.10	0.375	0.375
LARC*Cognitive Restraint							-0.19	0.190	0.190
Observations	258		368		369		368		
R^2 / R^2 adjusted	0.027 / 0.012		0.098 / 0.088		0.077 / 0.069		0.102 / 0.087		

Variance

The regression models collectively explained varying amounts of variance in the psychological variables of interest. The strength of these associations varied from small to large, ranging from 2% in the Maturity Fears model to 48% in the Drive for Thinness model. In order from least to most variance captured: the predictors accounted for 2% of the variance in Maturity Fears (MF) scores (R2 = 0.02); 3% in Emotional Dysregulation (ED) scores (R2 = 0.03); 4% in Uncontrolled Eating (UE); 5% in Interpersonal Insecurity (II) scores (R2 = 0.05); 6% in Interoceptive Deficits (ID) scores (R2 = 0.06) and Emotional Eating (EE) scores (R2 = 0.06); 7% in Perfectionism (P) scores (R2 = 0.07); 9.8% in Interpersonal Alienation (IA) scores (R2 = 0.098); (10%) in Depression (D) scores (R2 = 0.10); 11% of the variance in Personal Alienation (PA) scores (R2 = 0.11); 15% in Low Self Esteem (LSE) scores (R2 = 0.15); 16% in Bulimia (B) scores (R2 = 0.16), 22% of the variance in Asceticism (A) scores (R2 = 0.22); 36% in Body Dissatisfaction (BD) scores (R2 = 0.36); and 48% in Drive for Thinness (DT) scores (R2 = 0.48).

Table 11
Variance Captured by Model

Model	Effect Size (R^2)
Maturity Fears (MF)	0.02
Emotional Dysregulation (ED)	0.03
Uncontrolled Eating (UE)	0.04
Interpersonal Insecurity (II)	0.05
Interoceptive Deficits (ID)	0.06
Emotional Eating (EE)	0.06
Perfectionism (P)	0.07
Interpersonal Alienation (IA)	0.098
Depression (D)	0.10
Personal Alienation (PA)	0.11
Low Self Esteem (LSE)	0.15
Bulimia (B)	0.16
Asceticism (A)	0.22
Body Dissatisfaction (BD)	0.36
Drive for Thinness (DT)	0.48

Model Fitting Procedure

Further analysis explored the change in variance captured by first and second iterations of model building. Main Effects models consistently accounted for greater amounts of variance compared to initial models. The addition of key predictor variables and exclusion of variables not identified as covariates in ME Models constructed in Step 2 improved upon covariate models of Step 1 for all outcome variables except Maturity Fears. Drive for Thinness and Bulimia demonstrated the most substantial increases in R2 from the covariate models (R2 = 0.008 and 0.011, respectively) to the ME models (R2 = 0.48 and 0.155, respectively). Predictors explained the same amount of variance (2%) in both covariate and ME models for MF scores (R2 = 0.02).

Table 12
Comparison of Variance Across Model Iterations

Model	Covariate Model Effect Size (R^2)	ME Model Effect Size (R^2)
Maturity Fears (MF)	0.023	0.023
Emotional Dysregulation (ED)	0.012	0.029
Uncontrolled Eating (UE)	0.016	0.040
Interpersonal Insecurity (II)	0.010	0.051
Interoceptive Deficits (ID)	0.029	0.064
Emotional Eating (EE)	0.007	0.063
Perfectionism (P)	0.009	0.066
Interpersonal Alienation (IA)	0.027	0.098
Depression (D)	0.027	0.100
Personal Alienation (PA)	0.032	0.108
Low Self Esteem (LSE)	0.016	0.147
Bulimia (B)	0.011	0.155
Asceticism (A)	0.017	0.217
Body Dissatisfaction (BD)	0.017	0.356
Drive for Thinness (DT)	0.008	0.479

Uncontrolled Eating

Cognitive Restraint ($\beta = 0.19$, $p < .001$) significantly predicted UE scores ($F(3, 365) = 5.063$, $p < .01$). Together, the predictors included in the ME model explained a small to medium amount of the variance (4%) in UE scores ($R2 = 0.04$).

Table 13
Uncontrolled Eating

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	<0.001	-0.04	<0.001	0.11	<0.001	-0.03	<0.001	0.714
Age	0.07	0.248							
Menarche Age	0.02	0.737							
Regularity Age	-0.03	0.674							
First HC Age	-0.12	0.070							
SARC			0.02	0.851			0.01	0.657	0.922
LARC			0.15	0.281			0.12	0.368	0.412
Cognitive Restraint			0.19	<0.001	0.19	<0.001	0.12	0.207	0.207
SARC vs LARC					-0.13	0.342			
SARC*Cognitive Restraint							0.06	0.623	0.623
LARC*Cognitive Restraint							0.18	0.223	0.223
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.016 / 0.000		0.040 / 0.032		0.040 / 0.032		0.044 / 0.031		

Emotional Eating

Cognitive Restraint (β = 0.23, p < .001) significantly predicted EE scores (F (3, 365) = 8.119, p < .01). Together, the predictors explained a small to medium amount of the variance (6%) in EE scores (R2 = 0.06).

Table 14
Emotional Eating

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.033	0.11	<0.001	-0.03	<0.001	0.12	<0.001	0.172
Age	0.05	0.400							
Menarche Age	0.06	0.402							
Regularity Age	-0.04	0.514							
First HC Age	-0.05	0.489							
SARC			-0.18	0.115			-0.18	0.182	0.124
LARC			-0.14	0.308			-0.14	0.739	0.327
Cognitive Restraint			0.23	<0.001	0.23	<0.001	0.17	0.074	0.074
SARC vs LARC					-0.04	0.786			
SARC*Cognitive Restraint							0.11	0.341	0.341
LARC*Cognitive Restraint							0.01	0.935	0.935
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.007 / -0.009		0.063 / 0.055		0.063 / 0.055		0.065 / 0.053		

Drive for Thinness

Cognitive Restraint (β = 0.68, p < .001) significantly predicted DT scores (F (3, 365) = 111.9, p < .01). Together, the predictors included in the ME model explained a large amount of the variance (48%) in DT scores (R2 = 0.48).

Table 15
Drive for Thinness

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.218	0.00	<0.001	0.10	<0.001	-0.01	<0.001	0.894
Age	0.00	0.948							
Menarche Age	-0.03	0.677							
Regularity Age	0.08	0.219							
First HC Age	-0.03	0.684							
SARC			-0.05	0.582			-0.05	0.247	0.564
LARC			0.10	0.325			0.11	0.587	0.327
Cognitive Restraint			0.68	<0.001	0.68	<0.001	0.75	<0.001	<0.001
SARC vs LARC					-0.15	0.141			
SARC*Cognitive Restraint							-0.12	0.171	0.171
LARC*Cognitive Restraint							-0.03	0.756	0.756
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.008 / -0.008		0.479 / 0.475		0.479 / 0.475		0.482 / 0.475		

Bulimia

Cognitive Restraint ($\beta = 0.39$, $p < .001$) significantly predicted B scores ($F(3, 365) = 22.38$, $p < .01$). Together, the predictors explained a medium to large amount of the variance (16%) in B scores ($R2 = 0.16$).

Table 16
Bulimia

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.196	0.01	0.017	0.06	0.056	0.01	0.195	0.929
Age	0.01	0.834							
Menarche Age	-0.03	0.621							
Regularity Age	0.07	0.274							
First HC Age	-0.06	0.346							
SARC			-0.04	0.716			-0.04	0.957	0.686
LARC			0.06	0.662			0.05	0.743	0.741
Cognitive Restraint			0.39	<0.001	0.39	<0.001	0.38	<0.001	<0.001
SARC vs LARC					-0.10	0.451			
SARC*Cognitive Restraint							-0.01	0.953	0.953
LARC*Cognitive Restraint							0.06	0.650	0.650
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.011 / -0.004		0.155 / 0.148		0.155 / 0.148		0.156 / 0.144		

Low Self Esteem

Cognitive Restraint (β = 0.37, p < .001) significantly predicted LSE scores (F (3, 365) = 20.9, p < .01). Together, the predictors explained a medium to large amount of the variance (15%) in LSE scores (R2 = 0.15).

Table 17
Low Self Esteem

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	-0.00	0.015	0.01	0.569	0.07	0.794	0.01	0.611	0.919
Age	-0.02	0.772							
Menarche Age	-0.05	0.482							
Regularity Age	0.05	0.417							
First HC Age	-0.09	0.164							
SARC			-0.05	0.662			-0.05	0.746	0.626
LARC			0.06	0.684			0.04	0.802	0.759
Cognitive Restraint			0.37	<0.001	0.37	<0.001	0.39	<0.001	<0.001
SARC vs LARC					-0.10	0.432			
SARC*Cognitive Restraint							-0.05	0.634	0.634
LARC*Cognitive Restraint							0.05	0.718	0.718
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.016 / 0.001		0.147 / 0.140		0.147 / 0.140		0.148 / 0.137		

Interoceptive Deficits

Cognitive Restraint ($\beta = 0.23$, $p < .001$) significantly predicted ID scores ($F(3, 365) = 8.38$, $p < .01$). Together, the predictors explained a medium to large amount of the variance (6%) in ID scores ($R2 = 0.06$).

Table 18
Interoceptive Deficits

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	-0.00	0.001	0.02	0.009	0.10	0.005	0.02	0.069	0.792
Age	-0.07	0.260							
Menarche Age	-0.11	0.089							
Regularity Age	0.09	0.166							
First HC Age	-0.05	0.412							
SARC			-0.08	0.482			-0.07	0.317	0.551
LARC			0.09	0.548			0.11	0.352	0.431
Cognitive Restraint			0.23	<0.001	0.23	<0.001	0.21	0.027	0.027
SARC vs LARC					-0.17	0.228			
SARC*Cognitive Restraint							0.10	0.383	0.383
LARC*Cognitive Restraint							-0.12	0.430	0.430
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.029 / 0.013		0.064 / 0.057		0.064 / 0.057		0.072 / 0.059		

Perfectionism

Cognitive Restraint (β = 0.23, p < .01) significantly predicted P scores (F (3, 365) = 8.57, p < .01). Together, the predictors explained a small to medium amount of the variance (7%) in P scores (R2 = 0.07).

Table 19
Perfectionism

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.010	-0.01	<0.001	0.17	<0.001	-0.01	<0.001	0.923
Age	0.05	0.444							
Menarche Age	-0.06	0.325							
Regularity Age	-0.05	0.465							
First HC Age	0.01	0.921							
SARC			-0.06	0.597			-0.06	0.908	0.610
LARC			0.17	0.222			0.18	0.619	0.218
Cognitive Restraint			0.23	<0.001	0.23	<0.001	0.24	0.012	0.012
SARC vs LARC					-0.23	0.090			
SARC*Cognitive Restraint							-0.00	0.979	0.979
LARC*Cognitive Restraint							-0.03	0.852	0.852
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.009 / -0.006		0.066 / 0.058		0.066 / 0.058		0.066 / 0.053		

Asceticism

Cognitive Restraint ($\beta = 0.45$, $p < .001$) significantly predicted A scores ($F(3, 365) = 33.78$, $p < .01$). Together, the predictors explained a medium to large amount of the variance (22%) in A scores ($R2 = 0.22$).

Table 20
Asceticism

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.010	0.07	0.950	0.02	0.867	0.06	0.898	0.414
Age	0.05	0.474							
Menarche Age	-0.06	0.359							
Regularity Age	-0.05	0.469							
First HC Age	-0.09	0.164							
SARC			-0.13	0.223			-0.13	0.976	0.218
LARC			-0.05	0.728			-0.05	0.858	0.711
Cognitive Restraint			0.45	<0.001	0.45	<0.001	0.47	<0.001	<0.001
SARC vs LARC					-0.08	0.507			
SARC*Cognitive Restraint							-0.03	0.749	0.749
LARC*Cognitive Restraint							0.01	0.929	0.929
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.017 / 0.001		0.217 / 0.211		0.217 / 0.211		0.218 / 0.207		

Depression

Cognitive Restraint ($\beta = 0.29$, $p < .001$) significantly predicted D scores ($F(3, 365) = 13.56$, $p < .01$). Together, the predictors explained a small amount of the variance (10%) in D scores ($R2 = 0.10$).

Table 21
Depression

	Covariates		Main Effects		Relevel		Interaction Terms		
Predictors	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. Beta*	*p*	*std. p*
(Intercept)	0.00	0.006	-0.07	0.208	0.18	0.021	-0.08	0.956	0.370
Age	-0.01	0.890							
Menarche Age	-0.07	0.311							
Regularity Age	0.09	0.169							
First HC Age	-0.11	0.104							
SARC			0.04	0.753			0.04	0.294	0.743
LARC			0.25	0.073			0.26	0.294	0.065
Cognitive Restraint			0.29	<0.001	0.29	<0.001	0.37	<0.001	<0.001
SARC vs LARC					-0.21	0.115			
SARC*Cognitive Restraint							-0.12	0.317	0.317
LARC*Cognitive Restraint							-0.09	0.539	0.539
Observations	258		369		369		369		
R^2 / R^2 adjusted	0.027 / 0.012		0.100 / 0.093		0.100 / 0.093		0.103 / 0.090		

DISCUSSION

Summary

The present study explored the relationship between HC use and psychological variables related to eating pathology among a sample of women of reproductive age in an American university. The study aim was to provide foundational information about the relationship between these variables. The association between contraceptive choice and psychological constructs of interest was examined, emergent covariates were identified, and moderation effects were evaluated. Multiple linear regression analyses were conducted to investigate the relationships between contraceptive type, cognitive restraint, and psychological variables implicated in the etiology and maintenance of eating disorders. Patterns of predictor significance and the identification of covariates were achieved.

Our findings did not indicate a consistent relationship between HC use and constructs related to eating disorders. The strength and direction of relationships varied by contraceptive method used and across outcome models. Significant associations were detected between HC type and dependent variables in 3 models. Specifically, LARC predicted subscale scores for Interpersonal Insecurity (II) and Emotional Dysregulation (ED), while SARC use predicted Maturity Fears (MF) scores. The contradictory nature of these findings underscores the complexity of this relationship, necessitating further research to refine our understanding and inform clinical practices.

The results demonstrated significant positive associations between CR and multiple psychological variables, highlighting its relevance to key cognitive, behavioral, and emotional constructs implicated in the etiology and maintenance of eating disorders. The findings also

suggest that contraceptive type may have implications for several of these constructs, though the strength and direction of such relationships varied across constructs. Regularity Age emerged as a covariate in several models. Main Effects models captured greater amounts of variance than earlier Covariate models, suggesting model fit improvements from first to second iterations.

Research Question 1

Our understanding of the effect of HC use on psychiatric disorders is still in its infancy. HCs have played a crucial role in reproductive health, yet their impact on psychopathology remains complex and poorly understood. Research interest in this area has increased in the past decade, evidenced by a rise in interdisciplinary publications addressing this subject. The role of ovarian hormones in psychopathology (Hughes & Majekodunmi, 2018; Johansson et al., 2023; Kheloui et al., 2023; Noachtar et al., 2023; Toffol et al., 2023) and the promotion of reproductive justice have been particularly fruitful areas of recent study (Kaitz et al., 2019; Suarez-Balcazar et al., 2023; Watson & Germain, 2023). Increased suicide risk was observed among HC users in one notable study conducted by Skovlund et al., underscoring the critical need to enhance our understanding of underlying mechanisms implicated in this newly identified dimension of risk (2018; Brent, 2018; Eisenlohr-Moul et al., 2022a; Hughes & Majekodunmi, 2018; Owens et al., 2020).

Several high-visibility psychological publications have issued calls for further works promoting reproductive justice, including a moving call to action published by the Society of Counseling Psychology (Grzanka & Frantell, 2017; Segarra et al., 2023), a special issue of Psychology of Women Quarterly (2023) dedicated to studies advancing reproductive justice, and a review of emerging research in the article “The Menstrual Cycle: The Fifth Vital Sign?” published in the September 2023 issue of the APA’s Monitor on Psychology (Clancy, 2023;

Clay, 2023; Eisenlohr-Moul et al., 2022b; Handy et al., 2022; Hantsoo et al., 2022; Peters et al., 2019; Rieder et al., 2021; Roberts et al., 2018; Schmalenberger et al., 2021; Yang et al., 2021).

The relationship between contraceptive choice and mental health is a contentious subject in translational research, with conflicting and inconclusive findings in the existing literature. Recent research has indicated a potential link between contraceptive use and mental health status, suggesting a need for further investigation into this complex relationship. Moreover, the safety of hormonal contraceptive (HC) use within clinical populations has significant implications for future research, clinical practice, and public policy (Toffol et al., 2022). However, the existing literature is limited by a lack of operational definitions and inconsistencies in methodological approaches, highlighting the need for more rigorous and standardized research in this area. The relationship between contraceptive choice and mental health remains a controversial and fiercely debated area of interdisciplinary research and practice (Beltz, 2022; Bengtsdotter et al., 2018; Bitzer et al., 2018; Bürger et al., 2021; Fowler et al., 2019; Grzanka & Haddad et al., 2021; Hall et al., 2015; Hamstra et al., 2017; Kaunitz, 2000; Keyes et. Al., 2013; Klump & Di Dio, 2022; Leelakanok & Methaneethorn, 2020; Ma et al., 2020; Martell et al., 2023; Moradi, 2021; Nowosielski et al., 2022; Pagano et al., 2016; Sanders et al., 2001; Schaffir et al., 2016; Stevens et al., 2023; Toffol et al., 2022).

Hormonal contraceptive use has been the subject of several systematic reviews that attempted to draw conclusions about its effects on psychological health from the varied and contradictory literature. These reviews have explored various aspects such as cognition, psychopathology, stress, mental health, quality of life, sexual functioning, and brain architecture. The findings from these reviews are mixed, with some studies suggesting potential improvements in quality of life, including mental health outcomes and sexual functioning, with

hormonal contraceptive use (Beltz, 2022; Bürger et al., 2021; Laird et al., 2019; Robakis et al., 2019), while others have raised concerns about adverse effects on mental health, citing findings in which HC use was predictive of increased incidence of emotional disruptions, sexual dysfunction, depression, and suicide (McCloskey et. Al., 2020; Segarra et al., 2023; Martell et al., 2023). The impact of hormonal contraceptives on emotion processing and brain function has been a focus of recent research, revealing differences in emotion recognition and alterations in brain connectivity among hormonal contraceptive users compared to naturally cycling women (Menting-Henry et al., 2022). Additionally, the use of hormonal contraceptives has been associated with increased incidences of anxiety and depression, particularly among adolescents (Doornweerd et al., 2022). These findings underscore the importance of considering the psychological effects of hormonal contraceptives in reproductive counseling and clinical practice (Martell et al., 2023). Furthermore, the effectiveness and safety of different contraceptive methods, including hormonal contraceptives, have been the subject of extensive research, with studies examining their association with adverse health outcomes, such as gestational diabetes mellitus and hypertension (Hedderson et al., 2007). Additionally, the impact of hormonal contraceptive use on bone stress injuries in female athletes has been investigated, highlighting the need to consider the potential physiological implications of contraceptive choices, especially in specific populations such as athletes (Cheng et al., 2021). Le Guen et al. conducted a review examining reasons for HC discontinuation in western countries. Though authors were unable to provide conclusive evidence regarding rate of discontinuation attributable to adverse mental health symptoms, they observed a shift towards self-gynecology, preference for more “natural” (i.e., nonhormonal) contraceptive methods, and greater desire for reproductive autonomy in recent generations of menstruating individuals (2021).

One interpretation of these inconsistencies is that the effects of HCs seem to be most relevant in selected subsets of women, suggesting that certain individuals appear to be more susceptible to hormonally-induced negative mood effects (Le Guen et al., 2021; Pagano et al., 2016). Works investigating HC methods within psychiatric subgroups of menstruators have resulted in recommendations for and against specific formulations, with obvious implications for the evolving practice of reproductive counseling. Peters et al. (2020) Additionally, there is a need for more high-quality research to better understand which demographic features associated with this vulnerability, identify at-risk individuals/groups, and inform recommendations and contraindications for specific contraceptive methods. McCloskey et. Al. reviewed publications on the management of HC for women with mental illness, synthesizing findings to provide specific guidelines of use among clinical populations. Authors recommended prescribers of HC conduct pre- and post-contraceptive measures of psychological symptoms for comparison across time, and especially encourage post-initiation monitoring during the 2 months of HC use when risk of adverse mood effects is most pronounced (2020). Emphasis was placed on the importance of understanding individual differences in the effects of hormonal contraceptives to empower menstruators to make informed choices regarding their contraceptive methods.

Findings from the present study did not support a consistent relationship between HC use and psychological variables measured by the EDI-3, TFEQ-R18, and BDI-II. These inconclusive results reflect the contradictory findings characteristic of the existing literature. The strength and directionality of several relationships observed varied by HC method, as previously discussed. LARC use was predictive of lower scores in Interpersonal Insecurity, indicating a potentially protective effect of use. Contrarily, LARC use was associated with higher scores in Emotional Dysregulation, a core feature of eating disorders. SARC use was predictive of higher scores in

Maturity Fears. The present study is one of few in the existing literature to explicitly investigate the role of contraceptive choice in the specific psychological constructs of Interpersonal Insecurity, Emotional Dysregulation, and Maturity Fears. The finding that HC method was predictive of these outcomes warrants the inclusion of these variables in future works.

Emotional Dysregulation

A positive association emerged between Long-Acting Reversible Contraceptives (LARC) use and Emotional Dysregulation (ED), indicating that LARC users may face a heightened risk of experiencing ED compared to users of SARCs and those not using hormonal contraception. The use of Long-Acting Reversible Contraceptives (LARC) has been associated with Emotional Dysregulation (ED), suggesting a heightened risk of experiencing ED for LARC users compared to users of Short-Acting Reversible Contraceptives (SARC) and non-users of hormonal contraception (Sitruk-Ware et al., 2013). This finding may be attributed to the fact that LARC is not commonly the initial hormonal contraceptive method prescribed, with Combined Oral Contraceptive (COC) pills being the most frequently prescribed method for patients initiating hormonal contraception (Sitruk-Ware et al., 2013). Additionally, LARCs may be recommended for individuals who have previously failed to achieve their reproductive health goals using SARC methods (Kallner, 2018). Mood disturbance is a commonly cited reason for hormonal contraceptive discontinuation, with user-initiated SARC discontinuation being more prevalent than among LARC users, possibly due to the invasive nature of LARC removal (Kavanaugh & Pliskin, 2020). Furthermore, the perception of limited agency to discontinue LARC use has been identified as a source of distress for users, particularly among Black and Latinx populations, potentially contributing to the observed increase in ED (Racine et al., 2011).

Moreover, several studies have indicated that women with a history of experiencing aversive side effects of HC use are among the subset of menstruators at heightened risk for negative mental health outcomes (Toffol et al., 2022). These findings may be explained by the differing mechanisms by which LARC and SARC function within the body to prevent pregnancy. LARC methods do not suppress ovulatory functioning in the majority of users, who continue to experience hormonal fluctuations throughout the menstrual cycle. In contrast, SARC methods effectively suppress ovulation through the stable delivery of endogenous estrogen and progesterone at levels mimicking the midluteal phase of menstruation (Hill & Mengelkoch, 2023). Hormonal fluctuations throughout the ovulatory cycle experienced by LARC users may have contributed to the heightened levels of dysregulation observed in our findings.

Further, many LARC users experience amenorrhea as a result of use. Continued hormonal fluctuation in the absence of external cues of menstrual phase, such as bleeding, may undermine users' ability to accurately predict, prepare for, and effectively address the shifts in emotional functioning that occur across ovulatory phases (DeMaria et al., 2019). Similar concern may arise for transmasculine individuals, as discussed by Taub et al. in a 2020 publication titled "The effect of testosterone on ovulatory function in transmasculine individuals." The study posits that testosterone induces rapid hypothalamic—pituitary—gonadal suppression, leading to anovulation in some users. Long-term testosterone users may experience breakthrough hormonal suppression, raising concerns about contraception needs in transmasculine individuals engaging in sexual activities with sperm-producing partners (Hedderson et al., 2007; Taub et al., 2020).

Few previous studies have investigated the association between LARC methods and Emotional Dysregulation. However, the impact of LARC use on health is an area of growing interest due to the increasing global prevalence of hormonal IUD usage (Beltz et al., 2022;

Glaser et al., 2021; Qureshey et al., 2023; White 2021). Emotional Dysregulation has been associated with depression, such that higher ED is related to increased risk of MDD (Lewis et al., 2019; Timmer-Murillo et al., 2023). Our differential findings in models for ED and Depression support the notion that these two constructs are conceptually distinct from one another, and that ED may be a precursor to development of psychopathology such as depression and PTSD (Forbes & Dahl, 2010; Johansson et al., 2023; Nillni et al., 2015; Timmer-Murillo et al., 2023). These findings provide potentially promising avenues for the early identification of emotional consequences of HC use by detecting subclinical symptoms, enabling early intervention before symptoms manifest at diagnostic threshold. Further research on the implications of ED in the etiology and maintenance of psychiatric conditions is warranted to address the reproductive health needs of individuals with pre-existing mental illness (Martell et al., 2023; Souza Duarte et al., 2017).

Interpersonal Insecurity

Our analyses showed a significant, small-medium strength negative relationship between LARC use and Interpersonal Insecurity (II) scores. LARC use was predictive of lower II scores compared to the Non-HC referent group. Pairwise comparisons did not reveal a significant difference in II scores between LARC and SARC users. The data suggest that LARC use may be a protective factor against II. II scores were measured by the Interpersonal Insecurity scale of the EDI-3, a subscale designed to assess feelings of uncertainty and discomfort in relationships with others.

Higher II scores are indicative of elevated levels of social anxiety and distress in interpersonal situations (Nandrino et al., 2019). Interpersonal situations are any interactions involving two or more individuals. This encompasses a wide breadth of human experiences,

ranging from casual small talk with a stranger in the grocery line to deeply vulnerable discussions about contraception and consent during sexual experiences. People who experience interpersonal insecurity may avoid social interactions altogether or have difficulty forming and maintaining close relationships. Interpersonal insecurity can also be linked to negative body image perceptions; individuals who feel insecure in social situations may be more sensitive to perceived judgments from others. Interpersonal insecurity may have implications for reproductive health choices. II can negatively impact an individual's ability to self-advocate, both in personal and professional environments. A person with high II may experience fear of judgement in the context of an intimate or sexual experience with another person, leading to avoidance of discussions about contraception or contraceptive use altogether. In a treatment setting, individuals with high levels of interpersonal insecurity may find it challenging to disclose their needs and concerns to reproductive healthcare providers.

There are several potential explanations for why LARC users may experience lower levels of interpersonal insecurity (II) than Non-HC users. The discrete nature of LARC methods may shield users from some of the negative relational experiences that contribute to interpersonal insecurity, such as fear of social judgement, rejection, and/or stigmatization (Nielson et al., 2023). Sadly, there are myriad reasons that an individual may experience pressure to conceal their reproductive health choices from others (Boydell et al., 2023). Negative familial beliefs about contraception represent a significant barrier to use for many individuals, and is an especially salient consideration for minors and dependents (Harper et al., 2022). Victims of reproductive coercion may conceal their contraceptive use out of self-protection. Reproductive coercion is a form of intimate partner violence in which one partner exhibits controlling or manipulative behaviors aimed at influencing the other's reproductive choices without their

consent (Rowlands & Walker, 2019). It can involve various tactics, such as pressuring or manipulating an individual into initiating or terminating a pregnancy, controlling birth control methods, or sabotaging contraception.

The high efficacy and minimal daily maintenance of LARC methods may also contribute to lower levels of interpersonal insecurity. LARC are considered to be one of the most effective forms of contraception available. Hormonal IUDs and implants are advertised as being more than 99% effective at preventing pregnancy when used correctly (Kavanaugh & Pliskin, 2020). LARC methods such as hormonal IUDs are inserted through the cervix during an outpatient procedure and, without complications, will remain in place and effective for 5-8 years. This clinical method of insertion and exogenous hormonal delivery also decreases user error that may result in unwanted pregnancy, such as inconsistent contraceptive practice (e.g., cycle tracking; withdrawal) or contraceptive failure (e.g., a male or female condom breaking). This means that fewer than 1 in 100 women who use LARC methods for a year will become pregnant. Compared to other contraceptive methods, the efficacy of LARC relies less on the treated individual and/or partner/partners' self-efficacy to utilize prophylactic methods. Menstruators may choose LARC methods for reliable contraception without the need for daily maintenance (Qureshey et al., 2022). Finally, data from the National Survey of Family Growth suggest that use of LARCs was higher among women aged 20-29 years (13.1%) and 30-39 years (11.7%) compared to women aged 15-19 (8.2%; 2017). It's likely that II scores decrease as women leave adolescence and enter emerging and young adulthood.

The societal stigma surrounding reproductive healthcare has been well documented. Reproductive healthcare has been villainized throughout history by various political platforms, religious ideologies, and cultural groups. Research shows that individuals raised in more

religious households have less access to quality comprehensive sex education, including information about contraception and safe sex practices, is typically discouraged or omitted entirely. This results in decreased menstrual literacy and is predictive of negative health outcomes. Within this culture, sexual abstinence is conflated with morality and value. "Virginity," a social construct referring to a state of perceived innocence preceding initiation into sexual activity, is seen as a highly public form of social capital and a prerequisite for favorable marriage prospects.

LARC methods are relatively discreet and are often undetectable to people other than the user. IUDs are inserted through the cervix and placed within the uterus. Thin, flexible threads made of plastic (polyethylene) are attached to the IUD and extend down through the cervix into the upper part of the vagina. Though it is possible for sexual partners to feel the strings of an IUD during penetrative sexual activity, this is an uncommon occurrence because strings are typically quite soft and flexible. Strings are located at the upper end of the vagina and are trimmed to an appropriate length to prevent protrusion into the vagina. The minimal daily maintenance required by LARC further reduces the risk for unintentional exposure (Qureshey et al., 2022). SARC methods, such as oral contraceptive pills, require daily doses to be taken at the same time each day in order to be most effective. Many pill users report relying on external reminders, such as alarms, to ensure consistent timing. Further, SARC users often must travel with their medication on their person to avoid missing a dose, making it impossible for many to store their medication in a more secure and private location. Reminder alarms, cumbersome pill packs and their packaging detritus, monthly trips to the pharmacy to refill medication, or even the act of taking a pill may reveal contraceptive use. The lower daily maintenance required by

LARC methods may reduce unwanted revelations of contraceptive use, which could contribute to the protective effect observed.

Maturity Fears

A significant, positive association was detected between Maturity Fears (MF) and the use of SARC methods. No such association was observed for participants using LARC and nonhormonal methods. This finding may be explicable through a myriad of bio-psycho-social factors which collectively contribute to the observed pattern of contraceptive method preference.

The MF subscale assesses individuals' apprehensions and anxieties associated with the maturation and aging process, specifically evaluating concerns surrounding the responsibilities and challenges tied to adulthood (Behar Astudillo & Arancibia Meza, 2013). These fears are a normal facet of the developmental process for the majority of people, but they can become debilitating when they persist at clinical severity. They may also serve as indicators of underlying emotional or psychological vulnerabilities. Individuals are believed to be at particularly susceptible to MF during the developmental stages encompassing the transition from adolescence and young adulthood (Fitzgerald et al., 2020). This period is characterized by considerable uncertainty, change, and individuation for many, which may induce anxiety about the impending responsibilities associated with growing up. Feelings of unpreparedness for the challenges of adulthood, such as managing finances and maintaining relationships, constitute another prevalent source of maturity fears. Traumatic experiences from the past, including childhood trauma or abuse, may lead individuals to associate adulthood with pain or difficulty, intensifying fears of growing up and becoming independent (Grasso et al., 2012). Anxiety disorders, such as generalized anxiety disorder or social anxiety disorder, can amplify these fears, particularly concerning the future and the overarching concept of maturity.

Psychological factors intertwined with maturity fears, including anxiety disorders, perfectionism, external locus of control, and negative self-perception, may amplify fears related to maturity, potentially influencing contraceptive choices. The perfectionism and control issues observed in individuals with higher levels of MF may manifest in the choice of SARC methods, which provide users with immediate control over reproductive decisions without the time commitment and physical pain associated with LARC methods. Immediacy and perceived reversibility of SARC methods may align with societal expectations and norms, reflecting a complex interplay of psychological, social, and cultural influences.

The transitional period to adulthood often brings heightened stress and anxiety, contributing to the development of eating disorders as individuals seek to cope with emotional distress. Perfectionism emerges as another notable factor, where individuals, driven by the fear of making mistakes or falling short of high standards, experience pressure that extends to body image and eating behaviors. Control issues become apparent as some individuals employ restrictive eating or other disordered eating behaviors to cope with anxiety and uncertainty surrounding maturity. Lack of preparedness for the challenges and responsibilities of adulthood, a dimension of MF that is experienced most profoundly by adolescents, could potentially influence the choice of SARC methods as a means of maintaining a sense of control over reproductive decisions without committing to long-term contraceptive measures (Luna et al., 2004; Johnson et al., 2013; McDiarmid, 2013).

Adolescents and young adults often experience fear or anxiety about the transition to adulthood. Age is a potential confounding variable; younger HC users are more likely to be prescribed SARC than LARC methods, and are more likely to be in developmental stages associated with heightened when risk of developing MF (e.g., adolescence and emerging

adulthood). MF severity is theorized to peak during adolescence following pubertal onset, and then steadily decrease with more advanced age. Oral contraceptive pills (OCP) were the most reported contraceptive method used by women aged 15-19, the youngest age group surveyed. OCP use among this age group was 19.5%, followed by LARC (13.7%) and male condom (10.4%). This is consistent with previous works reporting higher prevalence of OCP use among younger cohorts (Kavanaugh & Pliskin, 2020). The influence of peer pressure and social comparison may play a role in the choice of SARC methods, aligning with the desire to fit in with peers and adhere to social expectations associated with adulthood.

Moreover, psychological factors, such as anxiety disorders, perfectionism, and negative self-perception, integral components of maturity fears, may contribute to the preference for SARC methods. Anxiety disorders, including generalized anxiety disorder and social anxiety disorder, could amplify fears related to maturity and influence contraceptive choices. Individuals grappling with perfectionistic tendencies or negative self-perception associated with maturity fears may opt for short-acting methods, potentially influenced by the desire for flexibility and adaptability in family planning decisions.

Research Question 2

Cognitive Restraint

Cognitive Restraint (CR) is a construct that captures an individual's conscious effort to restrict food intake for weight control. CR manifests in the establishment of strict dietary rules and vigilant monitoring of food intake, often driven by concerns related to weight, body image, or the desire to control eating behaviors (Richards & Specker, 2020). This conscious effort to restrict food intake contributes to psychological distress, leading to anxiety, guilt, and obsessionality, thereby exacerbating ED symptoms. CR emerged as a highly significant predictor

variable in the majority of models tested, indicating its pivotal role in influencing cognitive, behavioral, and emotional aspects associated with the etiology and maintenance of eating disorders. CR consistently outperformed other variables, such as HC type and demographic factors, making it the most significant predictor in 14 out of 15 outcome models. The relationships observed were consistently positive, with effect sizes ranging from small to large. Importantly, no significant interaction terms were found, suggesting direct effects rather than moderating influences.

CR was predictive of psychological variables relevant to eating disorders in the current study. Further exploration of the intricate relationship between CR and ED etiology and maintenance revealed several key points. Higher levels of CR have been observed among restrictive disorders while lower levels of CR levels were implicated in binge-eating behavior, indicating the role of CR across the spectrum of eating pathology (Lowe et al., 2007). Heightened levels of CR have been identified as a central mechanism of restrictive EDs, such as AN and Orthorexia, which involving strict dieting, calorie counting, and rigid control over food intake (Brytek-Matera, 2020). Lower levels of CR have been linked to uncontrolled and emotional eating present in EDs characterized by binge-eating (Schulte et al., 2016). The interplay between CR and maladaptive eating behavior and attitudes involves complex psychological factors, wherein initial efforts for weight control may evolve into pathological behaviors contributing to the maintenance of the disorder. This complex relationship is further characterized by the role CR plays in reinforcing distorted body image perceptions typical of EDs. Notably, an evidence-based ED treatments, like cognitive-behavioral therapy (CBT), prioritize addressing elevated CR to promote healthier relationships with food and body image (Racine et al., 2018). Individual differences in the manifestation of CR are not clearly

understood, nor is the role CR may play in contraceptive decision-making. The direct effects observed between CR and psychological variables of interest in the present study further emphasize the need for personalized and comprehensive approaches in the treatment of ED.

CR was a significant predictor in all models except for MF. The failure of CR to predict MF scores may reflect underlying conceptual differences between the two constructs. CR is a predominantly behavioral variable, often manifesting in dietary inhibition that is intentional, conscious, and effortful. Moreover, CR and has the explicit goal of controlling weight and body size through dietary choices and caloric restriction. By comparison, MF is dynamic, interpersonal, nebulous, and existential. MF is a multidimensional factor encompassing a wide breadth of cognitions, emotions, and behaviors that may manifest differently across individuals. There is no clear goal or functionality of these fears because the maturation process is a biological inevitability that cannot be prevented. The lack of a significant relationship between these variables is consistent with Grasso et. al's novel finding that, contrary to theoretical underpinnings, MF was not associated weight phobia in a clinical sample of individuals diagnosed with anorexia nervosa and bulimia nervosa (2012). This study revealed that MF was associated with personality traits implicated in interpersonal functioning, such as relational insecurity, incompetence, ineffectiveness, distrust of others, and incapability to ask for and receive help from others. Though this study is limited by a small sample size and lack of replication, its findings were supported by relationships observed in the current study. These results indicate the need for continued exploration of the complex psychosocial dynamics associated with the transition to adulthood.

Regularity Age

Personal and Interpersonal Alienation. In the present study, Regularity Age (RA) was predictive of psychological outcome variables in two models: Personal Alienation (PA) and Interpersonal Alienation (IA). Our analyses detected a significant, positive relationship between RA and both Alienation subscales, suggesting that longer durations of menstrual irregularity (MI) are associated with a greater degree of personal and interpersonal alienation. PA and IA are pivotal constructs implicated in ED etiology and maintenance. These subscales provide valuable insights into an individual's sense of intra- and interpersonal belonging, as well as perception of self in isolation and in relation to others. The PA subscale assesses feelings of personal detachment, estrangement, and dissatisfaction with oneself, including disconnection from one's body and emotions. Higher scores on this subscale indicate a greater level of self-disconnection. Interpersonal relationships are central to IA; this subscale assesses feelings of loneliness, social isolation, and difficulties in forming/maintaining relationships. Higher scores suggest greater difficulties in relating to others.

The attainment of menstrual regularity post-menarche varies widely among individuals. The literature on the average age of menarche is inconsistent, reflecting a trend towards earlier menarche in recent generations. The average age range for menarche is typically between 10 to 16 years old, with numerous factors influencing the time required to achieve menstrual regularity (Cheng et al., 2021). Higher scores on the RA variable indicated a more advanced age at which menstruation became consistent and predictable, adhering to a 28-day ovulatory cycle, among study participants. The well-documented association between menstrual irregularity and adverse health outcomes remains a significant concern for all ovulating individuals, and a matter of particular importance among those suffering from ED.

Menstrual Irregularity. Menstrual irregularity (MI) is commonplace in individuals with eating disorders, presenting as amenorrhea, oligomenorrhea, luteal phase defects, or anovulation (Ramdani et al., 2021). MI, encompassing variations in timing, duration, or flow of menstrual cycles, can significantly impact mental health and well-being. The effects of MI on mental health are diverse and include emotional distress, mood changes, disruptions to quality of life, body image and self-esteem concerns, fertility worries, disrupted sleep, and associations with underlying menstrual disorders. Beyond psychological concerns, MI has been associated with impaired vocational functioning and increased financial burden associated with menstruation.

MI is especially commonplace in individuals with eating disorders, frequently presenting as amenorrhea, oligomenorrhea, luteal phase defects, or anovulation (Treasure, 2008). Amenorrhea, defined as a lack of menstrual cycles for over three months, is the most commonly reported cause of MI. Amenorrhea may result from various etiologies, encompassing medical issues, hormonal imbalances, maladaptive lifestyle factors, or side effects of specific drugs. HCs, as well as certain medications like antidepressants, antipsychotics, blood pressure drugs, and chemotherapy, can induce amenorrhea by suppressing ovulation and related endocrine activity. Contraceptive-induced menstrual bleeding changes (CIMBCs) have been associated with negative impacts on various aspects of women's daily lives, influencing health-related perceptions, experiences, and participation in various activities in a manner similar to MI occurring in the absence of exogenous hormones (Polis et al., 2018). CIMBCs may mask underlying causes of MI, negatively impacting health by postponing accurate diagnosis and treatment delivery. Additional hormonal causes of amenorrhea include hypo- and hypergonadotropic hypogonadism, thyroid disease, polycystic ovarian syndrome (PCOS), and pituitary gland tumors.

Primary amenorrhea occurs when menarche does not happen by age 15 and may result from congenital disorders such as müllerian anomalies and obstructive reproductive tract conditions (Castellini et al., 2019). Secondary amenorrhea, where regular menstrual periods are disrupted, is typically caused by external factors, with pregnancy being a common cause in adolescents and reproductive-age adults. Lifestyle factors, such as low body weight, excessive exercise, stress, and certain medications, can also contribute to amenorrhea. Eating disorders characterized by low body weight and chronic malnourishment often lead to amenorrhea (Castellini et al., 2019).

Paradoxically, HC has been identified as both a potential cause of amenorrhea as well as a first-line treatment for amenorrhea (Plesow et al., 2019; Okawa et al., 2020). HC use may induce unintended primary or secondary amenorrhea in some individuals. In contrast, functional amenorrhea resulting from ovulatory suppression is the intended goal of HC use within certain populations, including transmasculine individuals undergoing gender-affirming medical care, elite athletes, and individuals suffering from severe symptoms PMS. Such individuals may intentionally use HC to postpone or eliminate menstrual bleeding. Extended cycle formulations of SARC, continuous COC use (i.e., skipping the inert pill phase of the cycle), and LARC have been utilized to increase control over menstrual functioning. Conversely, oral contraceptive pills are commonly prescribed to treat secondary amenorrhea by regulating hormonal fluctuations and inducing menstruation during the inert pill phase of the cycle.

HC method was not predictive of PA or IA subscale scores in our analyses, suggesting direct effects of RA on PA and IA. The relationship between RA and two measures of alienation are consistent with existing literature documenting the negative psychological impacts of MI. The positive direction of both relationships suggests that personal and interpersonal alienation

increase as regularity age advances, and increased duration of MI following menarche may be a period of particular risk. Additionally, past findings have documented that regular menstrual bleeding is positively viewed by some menstruators. Monthly menstruation provides reassurance of non-pregnancy and increases perceptions of continued fecundity (Polis, 2018). The absence of anticipated menstrual bleeding, as observed in MI, may be especially distressing to those using HC primarily for pregnancy prevention. Such distress could conceivably lead to heightened PA due to the disruption of menstrual rhythm, as well as heightened IA stemming from uncertainty about how others would respond in the event of unplanned pregnancy.

Implications

Approximately 400 million individuals are estimated to use HC globally (Toffol et al., 2022; United Nations Department of Economic and Social Affairs, 2019). Understanding the effects of hormonal contraceptives on the human brain and behavior is a vital area of research, given their extensive use and poorly understood relationship with psychopathology (Forbes & Dahl, 2010). The current work contributes to the growing body of research investigating the role that contraceptive method plays a in psychological health (Antoniou et al., 2021). Previous works offered perspectives on the influence of hormonal activation on social and motivational tendencies (Hill & Mengelkoch, 2023; Racine et al., 2011), as well as the modulation of brain activity and emotion recognition by oral contraceptives (Menting-Henry et al., 2022). The impact of ovarian hormones, both endogenous and exogenous, on eating behavior has been established (Lim et al., 2021; Nillni et al., 2015; Roberts et al., 2018; Solikhah et al., 2022), but the nature of this relationship remains unclear. Given the prevalence of HC use and eating disorders among ovulating persons, understanding the nuances of this multifaceted relationship is necessary to inform clinical practice and continued empirical investigation (Johansson et al., 2023; Solikhah

et al., 2022). Our findings provide insights into the potential impact of hormonal contraceptive use on psychological symptoms implicated in eating pathology.

The observed associations between LARC use and II score suggest a potentially protective effect against relational anxieties. Conversely, LARC was also associated with higher scores on ED. Emotional dysregulation refers to the inability to manage and respond to emotional experiences in a controlled and adaptive manner (Grzanka & Moradi, 2021). This concept is particularly relevant in the context of hormonal fluctuations, such as those experienced during puberty, the menstrual cycle, and menopause (Forbes & Dahl, 2010; Roberts et al., 2018). While SARC methodologies prevents pregnancy by suppressing ovulation and its accompanying hormonal shifts, LARC users continue to experience fluctuations in estrogen and progestin over the course of the 28-day ovulatory cycle that are comparable to observed in naturally cycling peoples (Kavanaugh & Pliskin, 2020). Hormonal changes can significantly impact emotional regulation, leading to mood disturbances and affective challenges. Similarly, psychopathological symptoms of certain disorders have been observed to vary greatly in severity across menstrual phases. Cycle-related changes in symptom severity have been noted in ADHD, PTSD, schizophrenia, and bipolar disorder, with the mid-luteal phase representing a period of heightened psychological vulnerability (Antoniou et al., 2021). This may be a particularly salient consideration for contraceptive counseling with specific populations of menstruators, such as individuals with pre-existing psychological conditions (Kallner, 2018). LARC was also predictive of higher ED scores in our sample, indicating a greater susceptibility to the aversive psychological side effects of these highly effective formulations.

The findings of our research resonate with a broader call to action for healthcare professionals across all disciplines, and psychologists in particular, to achieve a comprehensive

understanding of the impact of hormonal contraception on mental health Grzanka & Frantell, 2017; Grzanka & Moradi, 2021). Increased awareness and knowledge among professionals would facilitate more informed discussions with patients, enhance the accuracy of mental health assessments, and improve the tailoring of treatment plans to accommodate the unique needs of individuals dealing with reproductive health concerns Kavanaugh & Pliskin, 2020; Soltani et al., 2019). The challenge of closing the gap in reproductive healthcare extends to the inclusion of menstruation and contraception-related mental health considerations within the curriculum of medical and psychological training institutions. Our findings underscore the need for continued works focusing on the development and dissemination of educational resources and training programs that emphasize the importance of reproductive health literacy in clinical practice. There is a pressing need to address the current gap in reproductive healthcare by ensuring that future generations of professionals are well-versed in the complex interplay between reproductive health and psychological well-being (DeMaria et al., 2019; Johansson et al., 2023). These initiatives would empower healthcare providers, including psychologists, to recognize and address the mental health concerns associated with hormonal fluctuations and contraceptive use.

Cognitive Restraint (CR) emerged as a crucial variable in understanding eating pathology in our findings. Though CR did not moderate the relationship between HC use and psychological variables, as hypothesized, it was the strongest predictor in 14 of the 15 models tested. The results indicate that there is a direct effect relationship between CR and psychological factors implicated in the etiology and maintenance of eating disorders, as has been posited by previous works (Arnow et al., 1995; Gomez & Perez, 2022; Lim et al. 2021; Polivy & Herman, 1985; Racine et al., 2011). Greater understanding of CR in the context of eating behavior may provide valuable insights for treatment and research. For example, particularly high or low levels of CR

may be useful in the identification of individuals at risk for eating disorders (Gomez & Perez, 2022; Johnson & Smith, 2011; Lowe et al., 2007; Oliveira & Cordás, 2020). However, not all eating disorder assessments include a measure of CR. Clinicians should consider choosing measures that incorporate CR into eating disorder assessments, such as the TFEQ-R21 and the Eating Pathology Symptoms Inventory (EPSI; Forbush & Smith, 2013; Forbush, 2015; Forbush & Smith, 2022).

Methodological Limitations and Future Research

Considering the complexity of the relationships examined in the current study, future work might aim to address the methodological and demographic limitations while building on the study's findings. Longitudinal or prospective cohort studies could be implemented to observe the progression of eating pathology over time concerning hormonal contraceptive (HC) use. Such designs could help in establishing temporal relationships and potentially causal inferences that the current correlational design fails to provide Research following this design would also allow researchers to observe shifts in psychological symptoms over the course of ovulation. This would allow investigators to conduct within and between group comparisons of symptoms experienced during follicular and luteal phases of menstruation. Qualitative methods might also be employed to gain a deeper understanding of personal experiences with HC use and eating pathology.

A multi-disciplinary collaborative effort is essential to create a healthcare environment where the significance of menstrual health and hormonal contraceptive effects is acknowledged and integrated into mental health care strategies (Haddad et al., 2021). Considering the sensitive nature of reproductive health and mental well-being, interdisciplinary collaboration between psychologists, gynecologists, pharmacologists, and endocrinologists would be beneficial to

achieve a holistic understanding of the issues. The current work is limited by its reliance on survey data, which may be susceptible to reporting biases and inaccuracies. Additionally, the potential diversity of HC formulations and the individual variability in hormonal sensitivity and metabolic response to these contraceptives were not fully accounted for, limiting the generalizability of results. Integrating medical records review, alongside self-reported data, could strengthen the validity of findings and reduce self-report biases. Future research could be further bolstered by the investigation of biological markers or physiological responses that may mediate or moderate the relationship between HC use and eating pathology. Moreover, experimental designs that include placebo-controlled trials could offer more definitive evidence of the HC's effects on eating pathology and mental health.

Generalizability of the current findings is weakened by sampling conducted on a predominantly college-aged population, which could affect their applicability to other age groups and settings. Our study was limited by exclusionary criteria related to pre-existing depression or eating disorders, which might have resulted in an underrepresentation of women who may be more vulnerable to the psychological effects of HC. Expanding future research efforts to include a more diverse demographic, such as menstruators with pre-existing mental health conditions, of different ages, socioeconomic backgrounds, cultural settings, and including transgender and non-binary individuals, could greatly enhance the generalizability and applicability of the findings. These limitations should be carefully considered when interpreting the study's results and designing subsequent research.

As we look to the future, the burgeoning field of technology-based health interventions presents a promising frontier for enhancing reproductive health counseling. The European Society for Sexual Medicine (ESSM) collectively refers to such interventions as “e-sexual

health." E-sexual health is defined by the ESSM as the use of information and communication technologies for sexual health including sexual health care, surveillance, education, knowledge, and research (Kirana et al., 2020). Future research could investigate the integration of technology-driven platforms to provide personalized, empirically-based counseling that could augment traditional healthcare services. E-sexual health tools have the potential to reduce financial and regional barriers to reproductive counseling, especially for rural and low SES populations. They may also reduce the impact of provider bias on reproductive counseling, which can impede patient-centered care. These internet-based systems have the potential to analyze large datasets to detect subtle patterns in the relationship between hormonal contraception use and mental health, thereby offering more nuanced and tailored advice to individuals.

However, integrating e-sexual health into reproductive health counseling brings its array of limitations and challenges that need to be addressed in future research. Privacy concerns, quality control of online resources, the need for accurate and unbiased algorithms, and the importance of personalized human interaction in counseling are significant considerations. Ensuring the ethical use of patient data and maintaining the confidentiality of sensitive health data are paramount for the successful application of such technology in the domain of hormonal contraception and psychological well-being. Much like other technology-based therapeutics, e-sexual health tools should supplement, rather than replace, patient-centered contraceptive counseling with a reproductive healthcare provider.

Furthermore, practitioners are encouraged to advocate for policy changes that support comprehensive reproductive health education and access to mental health resources. Research that explores effective communication strategies between healthcare professionals and patients

regarding these issues is also crucial to address the health disparities faced by all individuals with uteruses. Menstruators with marginalized identities are at the greatest risk for negative health outcomes, including transmasculine folx, People of Color, and those living under governmental regimes that deny and criminalize bodily autonomy (Burke & Potter, 2023). The necessity of access to these vital resources for those most violated by the forces of systemic oppression cannot be understated. This interdisciplinary collaboration and advocacy will ultimately contribute to a healthcare system that holistically supports an individual's reproductive and mental health, leading to better healthcare outcomes and fostering a more inclusive approach to patient care.

Conclusion

The present study offers significant insights into the intricate relationship between hormonal contraceptive use and eating pathology. The findings indicate that the type of hormonal contraception (HC) used can predict specific psychological outcomes related to eating disorders. Notably, the use of long-acting reversible contraceptives (LARC) was associated with lower scores in Interpersonal Insecurity, suggesting a potential protective effect against factors related to social anxiety and negative body image perceptions. Conversely, the preference for short-acting reversible contraceptive (SARC) methods was linked to higher Maturity Fears, indicating an association between anxieties about adulthood and contraceptive choice. Additionally, Emotional Dysregulation was found to be positively associated with LARC use, adding complexity to our understanding of HC impact.

Moreover, Cognitive Restraint—a conscious effort to restrict food intake for weight control—emerged as a significant predictor in influencing psychological aspects related to eating disorders. While demographic variables like regularity age played a role in eating disorder

symptoms, cognitive restraint did not demonstrate a moderating effect on the relationship between HC usage and psychological variables. The findings underscore the importance of considering contraceptive choices' implications on psychological well-being.

This study elucidates the multifaceted connections between HC use and eating disorders, highlighting the importance of informed reproductive health choices. The results advocate for heightened awareness and individualized consultations with health professionals regarding contraceptive options, considering the potential psychological impacts. However, the study's limitations—such as reliance upon self-report measures, a university-based sample, and the need for more comprehensive clinical assessments—point to the necessity for further research. Future investigations should encompass diverse populations, longitudinal data, and an exploration of biological mechanisms to deepen our understanding of the HC-eating pathology nexus.

Ultimately, this research contributes to the historically under researched, cross-disciplinary discussion regarding women's healthcare and the need to integrate psychological considerations into reproductive health practices. The evidence gathered here is a steppingstone toward more nuanced care for women who use hormonal contraceptives, ensuring their mental and physical well-being is at the forefront of healthcare decisions.

REFERENCES

Aalto, A. M., Elovainio, M., Kivimäki, M., Uutela, A., & Pirkola, S. (2012). The Beck Depression Inventory and General Health Questionnaire as measures of depression in the general population: A validation study using the Composite International Diagnostic Interview as the gold standard. Psychiatry Research, 197(1–2), 163–171. https://doi.org/10.1016/j.psychres.2011.09.008

Abbott, D. M., Nguyen, R., Bohmer, C., Myers, M. L., Boyles, J. A., & Mercier, C. M. (2023). The US in Uterus: A Collaborative Autoethnography of Psychologists Advocating for Reproductive Justice. Psychology of Women Quarterly, 47(4), 574–589. https://doi.org/10.1177/03616843231166375

Adab, P., Pallan, M., & Whincup, P. H. (2018). Is BMI the best measure of obesity? BMJ (Online), 360. https://doi.org/10.1136/bmj.k1274

Adams Hillard, P. J. (2018). Menstrual Cycles: Who Cares? We All Should. Journal of Pediatric and Adolescent Gynecology, 31(6), 547–548. https://doi.org/10.1016/j.jpag.2018.10.001

Agostino H, Burstein B, Moubayed D, et al. Trends in the Incidence of New-Onset Anorexia Nervosa and Atypical Anorexia Nervosa Among Youth During the COVID-19 Pandemic in Canada. JAMA Netw Open. 2021;4(12):e2137395. https://doi:10.1001/jamanetworkopen.2021.37395

Akker, O. B. A. van den. (2012). Reproductive Health Psychology. John Wiley & Sons.

Anderl, C., de Wit, A. E., Giltay, E. J., Oldehinkel, A. J., & Chen, F. S. (2022). Association between adolescent oral contraceptive use and future major depressive disorder: A

prospective cohort study. Journal of Child Psychology and Psychiatry and Allied Disciplines, 63(3), 333–341. https://doi.org/10.1111/jcpp.13476

Andini, R. A. K. (2023). The Overview of Menstrual Physiology: A Narrative Literature Review. Sriwijaya Journal of Obstetrics and Gynecology, 1(1), 1–5. https://doi.org/10.59345/sjog.v1i1.21

Asch DA, Buresh J, Allison KC, et al. Trends in US Patients Receiving Care for Eating Disorders and Other Common Behavioral Health Conditions Before and During the COVID-19 Pandemic. JAMA Netw Open. 2021;4(11):e2134913. doi:10.1001/jamanetworkopen.2021.34913

Avery, L. R., & Stanton, A. G. (2020). Subverting the Mandates of Our Methods: Tensions and Considerations for Incorporating Reproductive Justice Frameworks into Psychological Science. Journal of Social Issues, 76(2), 447–455. https://doi.org/10.1111/josi.12386

Babatunde, O., & Forsyth, J. (2014). Effects of lifestyle exercise on premenopausal bone health: A randomised controlled trial. Journal of Bone and Mineral Metabolism, 32(5), 563–572. https://doi.org/10.1007/s00774-013-0527-9

Baird, D. T., Cnattingius, S., Collins, J., Evers, J. L. H., Glasier, A., Heitmann, B. L., Norman, R., Ong, K. K., Sunde, A., Cohen, J., Cometti, B., Crosignan, P. G., Devroey, P., Diczfalusy, E., Diedrich, K., Fraser, L., Gianaroli, L., Liebaers, I., Mautone, G., … Van Steirteghem, A. (2006). Nutrition and reproduction in women. Human Reproduction Update, 12(3), 193–207. https://doi.org/10.1093/humupd/dmk003

Beddoe, L. (2022). Reproductive justice, abortion rights and social work. Critical and Radical Social Work, 10(1), 7–22. https://doi.org/10.1332/204986021X16355170868404

Behar Astudillo, R., & Arancibia Meza, M. (2013). Maturity fears in anorexia nervosa. Revista Mexicana de Trastornos Alimentarios, 4(2), 143–152. https://doi.org/10.1016/S2007-1523(13)72001-9

Beltz, A. M. (2022). Hormonal contraceptive influences on cognition and psychopathology: Past methods, present inferences, and future directions. Frontiers in Neuroendocrinology, 67, 101037. https://doi.org/10.1016/j.yfrne.2022.101037

Beltz, A. M., Demidenko, M. I., Chaku, N., Klump, K. L., & Joseph, J. E. (2022). Intrauterine Device Use: A New Frontier for Behavioral Neuroendocrinology. Frontiers in Endocrinology, 13. https://www.frontiersin.org/articles/10.3389/fendo.2022.853714

Bengtsdotter, H., Lundin, C., Gemzell Danielsson, K., Bixo, M., Baumgart, J., Marions, L., Brynhildsen, J., Malmborg, A., Lindh, I., & Sundström Poromaa, I. (2018). Ongoing or previous mental disorders predispose to adverse mood reporting during combined oral contraceptive use. European Journal of Contraception and Reproductive Health Care, 23(1), 45–51. https://doi.org/10.1080/13625187.2017.1422239

Berga, S. L. (2019). In pursuit of middle ground: Understanding the bone benefits of hormonal contraception in women with anorexia nervosa. Fertility and Sterility, 111(5), 892–893. https://doi.org/10.1016/j.fertnstert.2019.02.016

Bergen, M., & Mollen, D. (2019). Teaching Sizeism: Integrating Size into Multicultural Education and Clinical Training. Women and Therapy, 42(1–2), 164–180. https://doi.org/10.1080/02703149.2018.1524065

Bernacchi, D. L. (2017). Bulimia nervosa: A comprehensive analysis of treatment, policy, and social work ethics. Social Work (United States), 62(2), 174–180. https://doi.org/10.1093/sw/swx006

Biondo, A. P., & Brown, M. J. (2023). Clinical Feature: Premenstrual Dysphoric Disorder. Journal for Nurse Practitioners, 19(3). https://doi.org/10.1016/j.nurpra.2022.07.025

Blue, E. L., & Berkel, L. V. A. (2010). Feminist identity attitudes, negative affect, and eating pathology in African American college women. Journal of Black Psychology, 36(4), 426–445. https://doi.org/10.1177/0095798409353753

Bodell, L. P., & Forney, K. J. (2020). The Neuroendocrinology of Anorexia Nervosa and Bulimia Nervosa. In Handbook of Eating and Drinking: Interdisciplinary Perspectives (pp. 1259–1280). Springer International Publishing. https://doi.org/10.1007/978-3-030-14504-0_178

Böttcher, B., Radenbach, K., Wildt, L., & Hinney, B. (2012). Hormonal contraception and depression: A survey of the present state of knowledge. Archives of Gynecology and Obstetrics, 286(1), 231–236. https://doi.org/10.1007/s00404-012-2298-2

Boydell, V., Smith, R. D., & Collaborative (GLC), G. L. (2023). Hidden in plain sight: A systematic review of coercion and Long-Acting Reversible Contraceptive methods (LARC). PLOS Global Public Health, 3(8), e0002131. https://doi.org/10.1371/journal.pgph.0002131

Brent, D. (2018). Contraceptive conundrum: Use of hormonal contraceptives is associated with an increased risk of suicide attempt and suicide. American Journal of Psychiatry, 175(4), 300–302. https://doi.org/10.1176/appi.ajp.2018.18010039

Brian, J. D., Grzanka, P. R., & Mann, E. S. (2020). The age of LARC: Making sexual citizens on the frontiers of technoscientific healthism. Health Sociology Review, 29(3), 312–328. https://doi.org/10.1080/14461242.2020.1784018

Brønnick, M. K., Økland, I., Graugaard, C., & Brønnick, K. K. (2020). The Effects of Hormonal Contraceptives on the Brain: A Systematic Review of Neuroimaging Studies. Frontiers in Psychology, 11. https://www.frontiersin.org/articles/10.3389/fpsyg.2020.556577

Brott, H., & Townley, G. (2023). Reproductive justice for unhoused women: An integrative review of the literature. Journal of Community Psychology, 51(5), 1935–1960. https://doi.org/10.1002/jcop.22980

Brytek-Matera, A. (2020). Interaction between vegetarian versus omnivorous diet and unhealthy eating patterns (Orthorexia nervosa, cognitive restraint) and body mass index in adults. Nutrients, 12(3). https://doi.org/10.3390/nu12030646

Bürger, Z., Bucher, A. M., Comasco, E., Henes, M., Hübner, S., Kogler, L., & Derntl, B. (2021). Association of levonorgestrel intrauterine devices with stress reactivity, mental health, quality of life and sexual functioning: A systematic review. Frontiers in Neuroendocrinology, 63, 100943. https://doi.org/10.1016/j.yfrne.2021.100943

Burke, K. L., & Potter, J. E. (2023). Meeting Preferences for Specific Contraceptive Methods: An Overdue Indicator. Studies in Family Planning, 54(1), 281–300. https://doi.org/10.1111/sifp.12218

Butryn, M. L., Juarascio, A., & Lowe, M. R. (2011). The relation of weight suppression and BMI to bulimic symptoms. International Journal of Eating Disorders, 44(7), 612–617. https://doi.org/10.1002/eat.20881

Caruso, S., Palermo, G., Caruso, G., & Rapisarda, A. M. C. (2022). How Does Contraceptive Use Affect Women's Sexuality? A Novel Look at Sexual Acceptability. Journal of Clinical Medicine, 11(3), 810. https://doi.org/10.3390/jcm11030810

Castellini, G., Lelli, L., Cassioli, E., & Ricca, V. (2019). Relationships between eating disorder psychopathology, sexual hormones and sexual behaviours. Molecular and Cellular Endocrinology, 497. https://doi.org/10.1016/j.mce.2019.04.009

Casto, K. V., Jordan, T., & Petersen, N. (2022). Hormone-based models for comparing menstrual cycle and hormonal contraceptive effects on human resting-state functional connectivity. Frontiers in Neuroendocrinology, 67. https://doi.org/10.1016/j.yfrne.2022.101036

Centre for Menstrual Cycle and Ovulation Research (CeMCOR) published scientific achievements over 15 Years—2002 to 2017. (n.d.).

Chen, E., Hollowell, A., Truong, T., Bentley-Edwards, K., Myers, E., Erkanli, A., Holt, L., & Swartz, J. J. (2023). Contraceptive Access and Use Among Undergraduate and Graduate Students During COVID-19: Online Survey Study. JMIR Formative Research, 7(1), e38491. https://doi.org/10.2196/38491

Cheng, J., Santiago, K. A., Abutalib, Z., Temme, K. E., Hulme, A., Goolsby, M. A., Esopenko, C. L., & Casey, E. K. (2021). Menstrual Irregularity, Hormonal Contraceptive Use, and Bone Stress Injuries in Collegiate Female Athletes in the United States. PM and R, 13(11), 1207–1215. https://doi.org/10.1002/pmrj.12539

Cicerchia, G., Reid, L. D., & Carvajal, D. N. (2022). Contraceptive Decision-Making and the Importance of Side Effect Information Among a Sample of Latinas. Women's Health Reports, 3(1), 78–84. https://doi.org/10.1089/whr.2021.0115

Clausen, L., Rosenvinge, J. H., Friborg, O., & Rokkedal, K. (2011). Validating the eating disorder inventory-3 (EDI-3): A comparison between 561 female eating disorders patients and 878 females from the general population. Journal of Psychopathology and Behavioral Assessment, 33(1), 101–110. https://doi.org/10.1007/s10862-010-9207-4

Clay. (2023). Monitor on Psychology.

Cobey, K. D., & Buunk, A. P. (2012). Conducting high-quality research on the psychological impact of oral contraceptive use. Contraception, 86(4), 330–331. https://doi.org/10.1016/j.contraception.2012.01.011

Crone, C., Fochtmann, L. J., Attia, E., Boland, R., Escobar, J., Fornari, V., ... & Medicus, J. (2023). The American Psychiatric Association practice guideline for the treatment of patients with eating disorders. American Journal of Psychiatry, 180(2), 167-171. https://doi.org/10.1176/appi.ajp.23180001

Cumella, E. J. (2006). Review of the Eating Disorder Inventory-3. Journal of Personality Assessment, 87(1), 116–117. https://doi.org/10.1207/s15327752jpa8701_11

Dana Krawitz, E. (2011). SUBTYPING DIMENSIONS OF DIETARY RESTRAINT AND NEGATIVE AFFECT IN RELATION TO EATING DISORDER PATHOLOGY IN A COLLEGE SAMPLE: A LONGITUDINAL STUDY [Farleigh Dickinson University]. https://login.lp.hscl.ufl.edu/login?url=https://www.proquest.com/dissertations-theses/subtyping-dimensions-dietary-restraint-negative/docview/909027237/se-2?accountid=10920

Daniels, K. (2018). Current Contraceptive Status Among Women Aged 15–49: United States, 2015–2017. 327.

Daniels, K. (2020). Current Contraceptive Status Among Women Aged 15–49: United States, 2017–2019. 388.

De Souza Duarte, N., De Almeida Corrêa, L. M., Assunção, L. R., De Menezes, A. A., De Castro, O. B., & Teixeira, L. F. (2017). Relation between Depression and Hormonal

Dysregulation. Open Journal of Depression, 06(03), 69–78. https://doi.org/10.4236/ojd.2017.63005

De Wit, L. M., Van Straten, A., Van Herten, M., Penninx, B. W., & Cuijpers, P. (2009). Depression and body mass index, a u-shaped association. BMC Public Health, 9. https://doi.org/10.1186/1471-2458-9-14

Dehlendorf, C., Reed, R., Fitzpatrick, J., Kuppermann, M., Steinauer, J., & Kimport, K. (2019). A mixed-methods study of provider perspectives on My Birth Control: A contraceptive decision support tool designed to facilitate shared decision making. Contraception, 100(5), 420–423. https://doi.org/10.1016/j.contraception.2019.08.001

Dehlendorf, C., Vittinghoff, E., Fitzpatrick, J., Fox, E., Holt, K., Reed, R., Campora, M. P., Sokoloff, A., & Kuppermann, M. (2019). A Decision Aid to Help Women Choose and Use a Method of Birth Control. Patient-Centered Outcomes Research Institute® (PCORI). https://doi.org/10.25302/10.2019.CE.13046874

DeMaria, A. L., Sundstrom, B., Meier, S., & Wiseley, A. (2019). The myth of menstruation: How menstrual regulation and suppression impact contraceptive choice. BMC Women's Health, 19(1), 125. https://doi.org/10.1186/s12905-019-0827-x

Di Giovanni, G., Roy, B. D., Gammage, K. L., Mack, D., & Klentrou, P. (2008). Associations of oral contraceptive use and dietary restraint with bone speed of sound and bone turnover in university-aged women. Applied Physiology, Nutrition and Metabolism, 33(4), 696–705. https://doi.org/10.1139/H08-033

Dietrich, J. E., Millar, D. M., & Quint, E. H. (2014). Obstructive Reproductive Tract Anomalies. Journal of Pediatric and Adolescent Gynecology, 27(6), 396–402. https://doi.org/10.1016/j.jpag.2014.09.001

Ditch, S., Roberts, T. A., & Hansen, S. (2020). The influence of health care utilization on the association between hormonal contraception initiation and subsequent depression diagnosis and antidepressant use. Contraception, 101(4), 237–243. https://doi.org/10.1016/j.contraception.2019.12.011

Donga, G., Roman, N. V., Benjamin, F., Sonn, I. K., & Rich, E. (2022). BARRIERS TO EFFECTIVE PARENTING OF ADOLESCENT CHILDREN IN RESOURCE-CONSTRAINED COMMUNITIES. Social Work/Maatskaplike Werk, 58(4). https://doi.org/10.15270/58-4-1076

Doornweerd, A. M., Branje, S., Nelemans, S. A., Meeus, W. H. J., Montoya, E. R., Engelhard, I. M., Baas, J. M. P., & Gerritsen, L. (2022). Stable Anxiety and Depression Trajectories in Late Adolescence for Oral Contraceptive Users. Frontiers in Psychiatry, 13. https://doi.org/10.3389/fpsyt.2022.799470

Duarte, C., Ferreira, C., Pinto-Gouveia, J., Trindade, I. A., & Martinho, A. (2017). What makes dietary restraint problematic? Development and validation of the Inflexible Eating Questionnaire. Appetite, 114, 146–154. https://doi.org/10.1016/j.appet.2017.03.034

Dudouet, L. (2022). Digitised fertility: The use of fertility awareness apps as a form of contraception in the United Kingdom. Social Sciences & Humanities Open, 5(1), 100261. https://doi.org/10.1016/j.ssaho.2022.100261

Duffy, M. E., Twenge, J. M., & Joiner, T. E. (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among US undergraduates, 2007–2018: Evidence from two national surveys. Journal of Adolescent Health, 65(5), 590-598. https://doi.org/10.1016/j.jadohealth.2019.04.033

Eaton, A. A., & Stephens, D. P. (2020). Reproductive Justice Special Issue Introduction "Reproductive Justice: Moving the Margins to the Center in Social Issues Research." Journal of Social Issues, 76(2), 208–218. https://doi.org/10.1111/josi.12384

Eisenlohr-Moul, T. A., Bowers, S. M., Prinstein, M. J., Schmalenberger, K. M., Walsh, E. C., Young, S. L., Rubinow, D. R., & Girdler, S. S. (2022). Effects of acute estradiol and progesterone on perimenstrual exacerbation of suicidal ideation and related symptoms: A crossover randomized controlled trial. Translational Psychiatry, 12(1), Article 1. https://doi.org/10.1038/s41398-022-02294-1

Eisenlohr-Moul, T., Divine, M., Schmalenberger, K., Murphy, L., Buchert, B., Wagner-Schuman, M., Kania, A., Raja, S., Miller, A. B., Barone, J., & Ross, J. (2022). Prevalence of lifetime self-injurious thoughts and behaviors in a global sample of 599 patients reporting prospectively confirmed diagnosis with premenstrual dysphoric disorder. BMC Psychiatry, 22(1), 199. https://doi.org/10.1186/s12888-022-03851-0

Ezzat Basha, S., & Almeqren, A. (n.d.). Anxiety and Depression Symptoms in Saudi Married Women Using Oral Contraceptives. In International Journal of Innovation, Creativity and Change. Www.ijicc.net (Vol. 14, p. 2020). www.ijicc.net

Favaro, A., Ferrara, S., & Santonastaso, P. (2003). The spectrum of eating disorders in young women: A prevalence study in a general population sample. Psychosomatic Medicine, 65(4), 701–708. https://doi.org/10.1097/01.PSY.0000073871.67679.D8

Fikslin, R. A. (2021). Toward an Intersectional Psychological Science of Reproductive Norms: Generating Research Across the Natalism Spectrum. Psychology of Women Quarterly, 45(3), 308–324. https://doi.org/10.1177/03616843211011716

Filippone, L., Shankland, R., & Hallez, Q. (2022). The relationships between social media exposure, food craving, cognitive impulsivity and cognitive restraint. Journal of Eating Disorders, 10(1). https://doi.org/10.1186/s40337-022-00698-4

Fitzgerald, E. H., Wick, M. R., & Keel, P. K. (2021). Enduring value of perfectionism and maturity fears for predicting eating disorder maintenance over 10-, 20-, and 30-year follow-up. International Journal of Eating Disorders, 54(3), 346–353. https://doi.org/10.1002/eat.23412

Forbes, E. E., & Dahl, R. E. (2010). Pubertal development and behavior: Hormonal activation of social and motivational tendencies. Brain and Cognition, 72(1), 66–72. https://doi.org/10.1016/j.bandc.2009.10.007

Foster, D. G., Grossman, D., Turok, D. K., Peipert, J. F., Prine, L., Schreiber, C. A., Jackson, A. V., Barar, R. E., & Schwarz, E. B. (2014). Interest in and experience with IUD self-removal. Contraception, 90(1), 54–59. https://doi.org/10.1016/j.contraception.2014.01.025

Fowler, N., Keel, P. K., Burt, S. A., Neale, M., Boker, S., Sisk, C. L., & Klump, K. L. (2019). Associations between ovarian hormones and emotional eating across the menstrual cycle: Do ovulatory shifts in hormones matter? International Journal of Eating Disorders, 52(2), 195–199. https://doi.org/10.1002/eat.22985

Frederick, D. A., Saguy, A. C., & Gruys, K. (2016). Culture, health, and bigotry: How exposure to cultural accounts of fatness shape attitudes about health risk, health policies, and weight-based prejudice. Social Science and Medicine, 165, 271–279. https://doi.org/10.1016/j.socscimed.2015.12.031

Freeman, E. W., Kroll, R., Rapkin, A., Pearlstein, T., Brown, C., Parsey, K., Zhang, P., Patel, H., & Foegh, M. (2001). Evaluation of a Unique Oral Contraceptive in the Treatment of Premenstrual Dysphoric Disorder. Journal of Women's Health & Gender-Based Medicine, 10(6), 561–569.

Frost, J. J., Mueller, J., & Pleasure, Z. H. (2021). Trends and Differentials in Receipt of Sexual and Reproductive Health Services in the United States: Services Received and Sources of Care, 2006–2019. Guttmacher Institute. https://doi.org/10.1363/2021.33017

Fruzzetti, F., & Fidecicchi, T. (2020). Hormonal Contraception and Depression: Updated Evidence and Implications in Clinical Practice. Clinical Drug Investigation, 40(12), 1097–1106. https://doi.org/10.1007/s40261-020-00966-8

Gallo, M. F., Lopez, L. M., Grimes, D. A., Carayon, F., Schulz, K. F., & Helmerhorst, F. M. (2014). Combination contraceptives: Effects on weight. Cochrane Database of Systematic Reviews, 2014(1). https://doi.org/10.1002/14651858.CD003987.pub5

Galmiche, M., Déchelotte, P., Lambert, G., & Tavolacci, M. P. (2019). Prevalence of eating disorders over the 2000-2018 period: A systematic literature review. American Journal of Clinical Nutrition, 109(5), 1402–1413. https://doi.org/10.1093/ajcn/nqy342

Glaser, K., Fix, M., Karlin, J., & Schwarz, E. B. (2021). Awareness of the option of IUC self-removal among US adolescents. Contraception, 104(5), 567–570. https://doi.org/10.1016/j.contraception.2021.06.018

Glazer, K. B., Sonneville, K. R., Micali, N., Swanson, S. A., Crosby, R., Horton, N. J., … Field, A. E. (2019). The course of eating disorders involving bingeing and purging among adolescent girls: Prevalence, stability, and transitions. The Journal of Adolescent Health:

Official Publication of the Society for Adolescent Medicine, 64(2), 165–171. https://doi.org/10.1016/j.jadohealth.2018.09.023

Goldstein, R. L., Upadhyay, U. D., & Raine, T. R. (2013). With pills, patches, rings, and shots: Who still uses condoms? A longitudinal cohort study. Journal of Adolescent Health, 52(1), 77–82. https://doi.org/10.1016/j.jadohealth.2012.08.001

Gomez, A. M., Mann, E. S., & Torres, V. (2018). 'It would have control over me instead of me having control': Intrauterine devices and the meaning of reproductive freedom. Critical Public Health, 28(2), 190–200. https://doi.org/10.1080/09581596.2017.1343935

Gomez, F., & Perez, M. (2022). Motivation for dietary restraint, and disordered eating among adults experiencing food insecurity in the United States. International Journal of Eating Disorders, 55(6), 838–844. https://doi.org/10.1002/eat.23730

Goshtasebi, A., Subotic Brajic, T., Scholes, D., Beres Lederer Goldberg, T., Berenson, A., & Prior, J. C. (2019). Adolescent use of combined hormonal contraception and peak bone mineral density accrual: A meta-analysis of international prospective controlled studies. Clinical Endocrinology, 90(4), 517–524. https://doi.org/10.1111/cen.13932

Graham, B. M. (2022). The impact of hormonal contraceptives on anxiety treatments: From preclinical models to clinical settings. Frontiers in Neuroendocrinology, 67, 101030. https://doi.org/10.1016/j.yfrne.2022.101030

Grasso, M., Nazzaro, F., Vona, L., Capacchione, G., & Loriedo, C. (2012). "Maturity fears" e "weight phobia" nei disturbi dell'alimentazione: Alla ricerca di una relazione. Rivista Di Psichiatria, 47(4), 319–326.

Gregory, S. T., Hall, K., Quast, T., Gatto, A., Bleck, J., Storch, E. A., & DeBate, R. (2018). Hormonal Contraception, depression, and Academic Performance among females

attending college in the United States. Psychiatry Research, 270, 111–116. https://doi.org/10.1016/j.psychres.2018.09.029

Griksiene, R., Monciunskaite, R., & Ruksenas, O. (2022). What is there to know about the effects of progestins on the human brain and cognition? Frontiers in Neuroendocrinology, 67, 101032. https://doi.org/10.1016/j.yfrne.2022.101032

Gross, J., Rosen, J. C., Leitenberg, H., Willmuth, M. E., & Rosen, C. (1986). Validity of the Eating Attitudes Test and the Eating Disorders Inventory in Bulimia Nervosa. In Journal of Consulting and Clinical Psychology (Vol. 54, Issue 6, pp. 875–876).

Grzanka, P. R., & Frantell, K. A. (2017). Counseling Psychology and Reproductive Justice: A Call to Action. The Counseling Psychologist, 45(3), 326–352. https://doi.org/10.1177/0011000017699871

Grzanka, P. R., & Moradi, B. (2021). The qualitative imagination in counseling psychology: Enhancing methodological rigor across methods. Journal of Counseling Psychology, 68(3), 247–258. https://doi.org/10.1037/cou0000560

Grzanka, P. R., & Schuch, E. (2020). Reproductive Anxiety and Conditional Agency at the Intersections of Privilege: A Focus Group Study of Emerging Adults' Perception of Long-Acting Reversible Contraception. Journal of Social Issues, 76(2), 270–313. https://doi.org/10.1111/josi.12363

Gurvich, C., Warren, A. M., Worsley, R., Hudaib, A. R., Thomas, N., & Kulkarni, J. (2020). Effects of oral contraceptive androgenicity on visuospatial and social-emotional cognition: A prospective observational trial. Brain Sciences, 10(4). https://doi.org/10.3390/brainsci10040194

Haddad, L. B., RamaRao, S., Hazra, A., Birungi, H., & Sailer, J. (2021). Addressing contraceptive needs exacerbated by COVID-19: A call for increasing choice and access to self-managed methods. Contraception, 103(6), 377–379. https://doi.org/10.1016/j.contraception.2021.03.023

Hagan, K. E., Forbush, K. T., & Chen, P.-Y. (2017). Is Dietary Restraint a Unitary or Multi-Faceted Construct? Psychological Assessment. https://doi.org/10.1037/pas0000429.supp

Hall, K. S., Moreau, C., Trussell, J., & Barber, J. (2013). Role of young women's depression and stress symptoms in their weekly use and nonuse of contraceptive methods. Journal of Adolescent Health, 53(2), 241–248. https://doi.org/10.1016/j.jadohealth.2013.02.009

Hall, K. S., Steinberg, J. R., Cwiak, C. A., Allen, R. H., & Marcus, S. M. (2015). Contraception and mental health: A commentary on the evidence and principles for practice. American Journal of Obstetrics and Gynecology, 212(6), 740–746. https://doi.org/10.1016/j.ajog.2014.12.010

Hall, K. S., White, K. O. C., Rickert, V. I., Reame, N. K., & Westhoff, C. L. (2013). An exploratory analysis of associations between eating disordered symptoms, perceived weight changes, and oral contraceptive discontinuation among young minority women. Journal of Adolescent Health, 52(1), 58–63. https://doi.org/10.1016/j.jadohealth.2012.04.015

Hall, K. S., White, K. O. C., Rickert, V. I., Reame, N., & Westhoff, C. (2012). Influence of depressed mood and psychological stress symptoms on perceived oral contraceptive side effects and discontinuation in young minority women. Contraception, 86(5), 518–525. https://doi.org/10.1016/j.contraception.2012.04.010

Hammarström, A., Lehti, A., Danielsson, U., Bengs, C., & Johansson, E. E. (2009). Gender-related explanatory models of depression: A critical evaluation of medical articles. Public Health, 123(10), 689–693. https://doi.org/10.1016/j.puhe.2009.09.010

Hampson, E. (2023). Oral contraceptives in the central nervous system: Basic pharmacology, methodological considerations, and current state of the field. Frontiers in Neuroendocrinology, 68, 101040. https://doi.org/10.1016/j.yfrne.2022.101040

Hamstra, D. A., de Kloet, E. R., de Rover, M., & Van der Does, W. (2017). Oral contraceptives positively affect mood in healthy PMS-free women: A longitudinal study. Journal of Psychosomatic Research, 103, 119–126. https://doi.org/10.1016/j.jpsychores.2017.10.011

Handy, A. B., Greenfield, S. F., Yonkers, K. A., & Payne, L. A. (2022). Psychiatric Symptoms Across the Menstrual Cycle in Adult Women: A Comprehensive Review. Harvard Review of Psychiatry, 30(2), 100. https://doi.org/10.1097/HRP.0000000000000329

Hantsoo, L., Sajid, H., Murphy, L., Buchert, B., Barone, J., Raja, S., & Eisenlohr-Moul, T. (2022). Patient Experiences of Health Care Providers in Premenstrual Dysphoric Disorder: Examining the Role of Provider Specialty. Journal of Women's Health, 31(1), 100–109. https://doi.org/10.1089/jwh.2020.8797

Hardin, S. L., Thornton, L. M., Munn-Chernoff, M. A., & Baker, J. H. (2020). Premenstrual symptoms as a marker of ovarian hormone sensitivity in eating disorders. International Journal of Eating Disorders, 53(2), 296–301. https://doi.org/10.1002/eat.23213

Harper, C. C., Rao, L., Muñoz, I., Stern, L., Kerns, J. L., Parra, M., Chambers, B. D., & Rocca, C. H. (2023). Agency in Contraceptive Decision-Making in Patient Care: A Psychometric

Measure. Journal of General Internal Medicine, 38(6), 1366–1374. https://doi.org/10.1007/s11606-022-07774-0

Hay, P. (2020). Current approach to eating disorders: A clinical update. Internal Medicine Journal, 50(1), 24–29. https://doi.org/10.1111/imj.14691

Hill, S. E., & Mengelkoch, S. (2023). Moving beyond the mean: Promising research pathways to support a precision medicine approach to hormonal contraception. Frontiers in Neuroendocrinology, 68, 101042. https://doi.org/10.1016/J.YFRNE.2022.101042

Hill, S., Kuo, H.-C., Aban, I., Gray, S., Simpson, T., & Dionne-Odom, J. (2019). A comparative analysis of documented contraceptive use among women aged 18–30 living with and without HIV in Alabama. Contraception, 100(4), 275–278. https://doi.org/10.1016/j.contraception.2019.06.012

Hoist, J., Bbckstriim, T., Hammarbiick, S., & Von Schoultz, B. (n.d.). Progestogen addition during oestrogen replacement therapy-effects on vasomotor symptoms and mood.

Holt, K., Kimport, K., Kuppermann, M., Fitzpatrick, J., Steinauer, J., & Dehlendorf, C. (2020). Patient-provider communication before and after implementation of the contraceptive decision support tool My Birth Control. Patient Education and Counseling, 103(2), 315–320. https://doi.org/10.1016/j.pec.2019.09.003

Hoopes, A. J., Timko, C. A., & Akers, A. Y. (2021). What's Known and What's Next: Contraceptive Counseling and Support for Adolescents and Young Adult Women. Journal of Pediatric and Adolescent Gynecology, 34(4), 484–490. https://doi.org/10.1016/j.jpag.2020.12.008

Howell, F. M. (2023). Resistance and Gendered Racism: Middle-Class Black Women's Experiences Navigating Reproductive Health Care Systems. Psychology of Women Quarterly, 47(4), 494–509. https://doi.org/10.1177/03616843231168113

Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The Prevalence and Correlates of Eating Disorders in the National Comorbidity Survey Replication. Biological Psychiatry, 61(3), 348–358. https://doi.org/10.1016/j.biopsych.2006.03.040

Hughes, L. D., & Majekodunmi, O. (2018). Hormonal contraception and suicide: A new dimension of risk. British Journal of General Practice, 68(676), 512–513. https://doi.org/10.3399/bjgp18X699473

Inoue, K., Barratt, A., & Richters, J. (2015). Does research into contraceptive method discontinuation address women's own reasons? A critical review. Journal of Family Planning and Reproductive Health Care, 41(4), 292–299. https://doi.org/10.1136/jfprhc-2014-100976

Jacobson, J. C., Likis, F. E., & Murphy, P. A. (2012). Extended and Continuous Combined Contraceptive Regimens for Menstrual Suppression. Journal of Midwifery & Women's Health, 57(6), 585–592. https://doi.org/10.1111/j.1542-2011.2012.00250.x

Janjetic, M. A., Rossi, M. L., Acquavía, C., Denevi, J., Marcolini, C., & Torresani, M. E. (2020). Association Between Anxiety Level, Eating Behavior, and Nutritional Status in Adult Women. Journal of the American College of Nutrition, 39(3), 200–205. https://doi.org/10.1080/07315724.2019.1633970

Jimerson, D. C., Lesem, M. D., Kaye, W. H., Hegg, A. P., & Brewerton, T. D. (1990). Eating Disorders and Depression: Is There a Serotonin Connection? In BIOL PSYCHIATRY (Vol. 28, pp. 443–454).

Joffe, H., & Cohen, L. S. (1998). Estrogen, serotonin, and mood disturbance: Where is the therapeutic bridge? Biological Psychiatry, 44(9), 798–811. https://doi.org/10.1016/S0006-3223(98)00169-3

Johansson, T., Vinther Larsen, S., Bui, M., Ek, W. E., Karlsson, T., & Johansson, A. (2023). Population-based cohort study of oral contraceptive use and risk of depression. Epidemiology and Psychiatric Sciences, 32. https://doi.org/10.1017/S2045796023000525

Johnson, F., Pratt, M., & Wardle, J. (2012). Dietary restraint and self-regulation in eating behavior. International Journal of Obesity, 36(5), 665–674. https://doi.org/10.1038/ijo.2011.156

Jones, S. C., Boniface, E. R., Boehnlein, C., Jones Packham, A., & Baldwin, M. K. (2023). Menstrual Health Literacy among Adolescents and Young Adults Who Menstruate: Impact of Christian Family Background and United States Region. Journal of Pediatric and Adolescent Gynecology, 36(6), 518–524. https://doi.org/10.1016/j.jpag.2023.07.006

Kaitz, M., Mankuta, D., & Mankuta, L. (2019). Long-acting reversible contraception: A route to reproductive justice or injustice. Infant Mental Health Journal, 40(5), 673–689. https://doi.org/10.1002/imhj.21801

Kaunitz, A. M. (2000). Menstruation: Choosing whether … and when. Contraception, 62(6), 277–284. https://doi.org/10.1016/S0010-7824(00)00182-7

Kavanaugh, M. L., & Jerman, J. (2018). Contraceptive method use in the United States: Trends and characteristics between 2008, 2012 and 2014. Contraception, 97(1), 14–21. https://doi.org/10.1016/j.contraception.2017.10.003

Kavanaugh, M. L., & Pliskin, E. (2020). Use of contraception among reproductive-aged women in the United States, 2014 and 2016. F&S Reports, 1(2), 83–93. https://doi.org/10.1016/j.xfre.2020.06.006

Kavanaugh, M. L., Pliskin, E., & Jerman, J. (2021). Use of concurrent multiple methods of contraception in the United States, 2008 to 2015. Contraception: X, 3, 100060. https://doi.org/10.1016/j.conx.2021.100060

Kavanaugh, M. L., & Zolna, M. R. (2023). Where Do Reproductive-Aged Women Want to Get Contraception? Journal of Women's Health, 32(6), 657–669. https://doi.org/10.1089/jwh.2022.0406

Kessler, R. C., Mcgonagle, K. A., Swartz ', M., Blazer ', D. G., & Nelson, C. B. (1993). Sex and depression in the National Comorbidity Survey I: Lifetime prevalence, chronicity and recurrence. In Journal of Affectice Disorders (Vol. 29, pp. 85–96).

Keyes, K. M., Cheslack-Postava, K., Westhoff, C., Heim, C. M., Haloossim, M., Walsh, K., & Koenen, K. (2013). Association of hormonal contraceptive usewith reduced levels of depressive symptoms: A national study of sexually activewomen in the united states. American Journal of Epidemiology, 178(9), 1378–1388. https://doi.org/10.1093/aje/kwt188

Kheloui, S., Smith, A., & Ismail, N. (2023). Combined oral contraceptives and mental health: Are adolescence and the gut-brain axis the missing links? Frontiers in Neuroendocrinology, 68, 101041. https://doi.org/10.1016/j.yfrne.2022.101041

Kimmig, A.-C. S., Bischofberger, J. A., Birrenbach, A. D., Drotleff, B., Lämmerhofer, M., Sundström-Poromaa, I., & Derntl, B. (2022). No Evidence for a Role of Oral Contraceptive-Use in Emotion Recognition But Higher Negativity Bias in Early

Follicular Women. Frontiers in Behavioral Neuroscience, 15. https://www.frontiersin.org/articles/10.3389/fnbeh.2021.773961

Kirana, P.-S., Gudeloglu, A., Sansone, A., Fode, M., Reisman, Y., Corona, G., & Burri, A. (2020). E-Sexual Health: A Position Statement of the European Society for Sexual Medicine. The Journal of Sexual Medicine, 17(7), 1246–1253. https://doi.org/10.1016/j.jsxm.2020.03.009

Kirkendall, A., & Dutt, A. (2023). Refugee women's pregnancy and childbirth experiences in the US: Examining context through a reproductive justice framework. Feminism & Psychology, 33(4), 529–549. https://doi.org/10.1177/09593535221149166

Klaiber, E. L., Broverman, D. M., Vogel, W., Peterson, L. G., & Snyder, M. B. (1996). PH: S0306-4530(96)00023-6 INDIVIDUAL DIFFERENCES IN CHANGES IN MOOD AND PLATELET MONOAMINE OXIDASE (MAO) ACTIVITY DURING HORMONAL REPLACEMENT THERAPY IN MENOPAUSAL WOMEN. In Pergamon Psychoneuroendocrinology (Vol. 21, Issue 7, pp. 575–592).

Klann, E. M., & Wong, Y. J. (2023). Pregnancy Decision Making for Women With Mental Health Conditions: The Roles of Distress, Lay Beliefs, and Self-Efficacy. Psychology of Women Quarterly, 47(4), 547–561. https://doi.org/10.1177/03616843231191505

Klump, K. L., & Di Dio, A. M. (2022). Combined oral contraceptive use and risk for binge eating in women: Potential gene × hormone interactions. Frontiers in Neuroendocrinology, 67, 101039. https://doi.org/10.1016/j.yfrne.2022.101039

Krupansky, M. E. (2023). Inclusivity, Access, and Identity in Contraceptive Health Discourses [Ph.D., Wayne State University]. https://www.proquest.com/docview/2871578213/abstract/1009420B4385441CPQ/1

Lacasse, J. M., Ismail, N., & Tronson, N. C. (2023). Editorial overview: Hormonal contraceptives and the brain: A call for translational research. Frontiers in Neuroendocrinology, 69. https://doi.org/10.1016/j.yfrne.2023.101063

Laird, S., Ney, L. J., Felmingham, K. L., & Gogos, A. (2019). Hormonal Contraception and the Brain: Examining Cognition and Psychiatric Disorders. Current Psychiatry Research and Reviews, 15(2), 116–131. https://doi.org/10.2174/1573400515666190521113841

Lampe, N. M. (2023). Accounting for Cisnormativity: Understanding Transgender and Non-Binary Young People's Strategies to Resist and Reduce Inequality in Healthcare. Social Currents, 23294965231179432. https://doi.org/10.1177/23294965231179432

Lanfranchi, A. (2021). Hormonal Contraception and Violent Death: The Physiological and Psychological Links. Frontiers in Behavioral Neuroscience, 15. https://doi.org/10.3389/fnbeh.2021.667563

Larsen, S. V., Ozenne, B., Köhler-Forsberg, K., Poulsen, A. S., Dam, V. H., Svarer, C., Knudsen, G. M., Jørgensen, M. B., Gedso Frokjaer, V., Derntl, B., Henigsberg, N., & Miller, J. (2022). The Impact of Hormonal Contraceptive Use on Serotonergic Neurotransmission and Antidepressant Treatment Response: Results From the NeuroPharm 1 Study. Article, 13, 1. https://doi.org/10.3389/fendo.2022.799675

Lattimore, P., Mead, B. R., Irwin, L., Grice, L., Carson, R., & Malinowski, P. (2017). 'I can't accept that feeling': Relationships between interoceptive awareness, mindfulness and eating disorder symptoms in females with, and at-risk of an eating disorder. Psychiatry Research, 247, 163–171. https://doi.org/10.1016/j.psychres.2016.11.022

Le Guen, M., Schantz, C., Régnier-Loilier, A., & De La Rochebrochard, E. (2021). Reasons for rejecting hormonal contraception in Western countries: A systematic review. Social Science & Medicine, 284, 114247. https://doi.org/10.1016/j.socscimed.2021.114247

Lee, I., & Dokras, A. (2020). Mental health and body image in polycystic ovary syndrome. Current Opinion in Endocrine and Metabolic Research, 12, 85–90. https://doi.org/10.1016/j.coemr.2020.04.004

Lee, S. Y., Brodyn, A. L., Koppel, R. S., Tyler, C. P., Geppert, A. A., Truehart, A. I., & Gilliam, M. L. (2021). Provider and Patient Perspectives on a New Tangible Decision Aid Tool to Support Patient-Centered Contraceptive Counseling with Adolescents and Young Adults. Journal of Pediatric and Adolescent Gynecology, 34(1), 18–25. https://doi.org/10.1016/j.jpag.2020.10.004

Leelakanok, N., & Methaneethorn, J. (2020). A Systematic Review and Meta-analysis of the Adverse Effects of Levonorgestrel Emergency Oral Contraceptive. Clinical Drug Investigation, 40(5). https://doi.org/10.1007/s40261-020-00901-x

Lemke, J., Mollen, D., & Buzolits, J. S. (2023). Sterilized and Satisfied: Outcomes of Childfree Sterilization Obtainment and Denials. Psychology of Women Quarterly, 47(4), 562–573. https://doi.org/10.1177/03616843231164069

Lewandowski, S. K., Duttge, G., & Meyer, T. (2020). Quality of life and mental health in adolescent users of oral contraceptives. Results from the nationwide, representative German Health Interview and Examination Survey for Children and Adolescents (KiGGS). Quality of Life Research, 29(8), 2209–2218. https://doi.org/10.1007/s11136-020-02456-y

Lewis, C. A., Kimmig, A.-C. S., Zsido, R. G., Jank, A., Derntl, B., & Sacher, J. (2019). Effects of Hormonal Contraceptives on Mood: A Focus on Emotion Recognition and Reactivity, Reward Processing, and Stress Response. Current Psychiatry Reports, 21(11), 115. https://doi.org/10.1007/s11920-019-1095-z

Löfberg, I. (n.d.). ASSOCIATIONS BETWEEN MENSTRUAL CYCLE AND HORMONAL CONTRACEPTION WITH SATIETY HORMONES AND FOOD INTAKE.

Lowe, M. R., Thomas, J. G., Safer, D. L., & Butryn, M. L. (2007). The relationship of weight suppression and dietary restraint to binge eating in bulimia nervosa. International Journal of Eating Disorders, 40(7), 640–644. https://doi.org/10.1002/eat.20405

Luna, B., Garver, K. E., Urban, T. A., Lazar, N. A., & Sweeney, J. A. (2004). Maturation of Cognitive Processes From Late Childhood to Adulthood. Child Development, 75(5), 1357–1372. https://doi.org/10.1111/j.1467-8624.2004.00745.x

Lunde, G. H., Blaalid, L., Gerbild, H., & Areskoug Josefsson, K. (2022). Assessment of the Psychometrics of the Students' Attitudes towards Addressing Sexual Health Extended (SA-SH-Ext) Questionnaire for Social Educator Students. Sexual Medicine, 10(3), 1–9. https://doi.org/10.1016/j.esxm.2022.100507

Lundin, C., Wikman, A., Bixo, M., Gemzell-Danielsson, K., & Sundström Poromaa, I. (2021). Towards individualised contraceptive counselling: Clinical and reproductive factors associated with self-reported hormonal contraceptive-induced adverse mood symptoms. BMJ Sexual & Reproductive Health, 47(3), e1.1-e8. https://doi.org/10.1136/bmjsrh-2020-200658

Ma, R., Mikhail, M. E., Culbert, K. M., Johnson, A. W., Sisk, C. L., & Klump, K. L. (2020). Ovarian hormones and reward processes in palatable food intake and binge eating. Physiology, 35(1), 69–78. https://doi.org/10.1152/physiol.00013.2019

Maher, E. E., Strzelecki, A. M., Weafer, J. J., & Gipson, C. D. (2023). The importance of translationally evaluating steroid hormone contributions to substance use. Frontiers in Neuroendocrinology, 69. https://doi.org/10.1016/j.yfrne.2023.101059

Mann, E. S. (2022). The power of persuasion: Normative accountability and clinicians' practices of contraceptive counseling. SSM - Qualitative Research in Health, 2, 100049. https://doi.org/10.1016/j.ssmqr.2022.100049

Mann, E. S., White, A. L., Beavin, C., & Dys, G. (2020). Foreign objects in college bodies: Young women's feelings about long-acting reversible contraception (LARC). Women & Health, 60(6), 719–733. https://doi.org/10.1080/03630242.2019.1710891

Mansoor, H., Gutiérrez-Rojas, L., Alvarez-Mon, M. A., Burgo, L. C., Donat-Vargas, C., Llavero-Valero, M., Gea, A., Alvarez-Mon, M., Martinez-Gonzalez, M. A., & Lopez-del Burgo, C. (2021). Analysis of Media Outlets on Women's Health: Thematic and Quantitative Analyses Using Twitter. Front. Public Health, 9, 644284. https://doi.org/10.3389/fpubh.2021.644284

Martell, S., Marini, C., Kondas, C. A., & Deutch, A. B. (2023). Psychological side effects of hormonal contraception: A disconnect between patients and providers. Contraception and Reproductive Medicine, 8(1). https://doi.org/10.1186/s40834-022-00204-w

Martinez G, Ce, C., & Abma Jc. (2006). Suggested citation Library of Congress Catalog Number 306.70835' 09073090511-dc22. In National Survey of Family Growth. National Center for Health Statistics (Vol. 23, Issue 31).

Martinez, G., Copen, C., & Abma, J. (2011). Teenagers in the United States: Sexual Activity, Contraceptive Use, and Childbearing. National Center for Health Statistics.

Mccarthy, M. (1990). THE THIN IDEAL, DEPRESSION AND EATING DISORDERS IN WOMEN. In Behat. Rer. Ther (Vol. 2, Issue 3, p. 990).

McCloskey, L. R., Wisner, K. L., Cattan, M. K., Betcher, H. K., Stika, C. S., & Kiley, J. W. (2021). Contraception for Women With Psychiatric Disorders. American Journal of Psychiatry, 178(3), 247–255. https://doi.org/10.1176/appi.ajp.2020.20020154

McDiarmid, S. V. (2013). Adolescence: Challenges and responses. Liver Transplantation, 19(S2), S35–S39. https://doi.org/10.1002/lt.23740

McElroy, S. L., Guerdjikova, A. I., Mori, N., & Keck, P. E. (2015). Psychopharmacologic Treatment of Eating Disorders: Emerging Findings. Current Psychiatry Reports, 17(5). https://doi.org/10.1007/s11920-015-0573-1

MCEWEN Harold, B. S., & Milliken, M. (2001). Highlighted topics Genome and Hormones: Gender Differences in Physiology Invited Review: Estrogens effects on the brain: Multiple sites and molecular mechanisms Downloaded from. In J Appl Physiol (Vol. 91, pp. 2785–2801). http://jap.physiology.org/

McLean, J. A., & Barr, S. I. (2003). Cognitive dietary restraint is associated with eating behaviors, lifestyle practices, personality characteristics and menstrual irregularity in college women. Appetite, 40(2), 185–192. https://doi.org/10.1016/S0195-6663(02)00125-3

McLean, J. A., Barr, S. I., & Prior, J. C. (2001). Cognitive dietary restraint is associated with higher urinary cortisol excretion in healthy premenopausal women. The American Journal of Clinical Nutrition, 7, 7–12.

Mclean, J., & Barr, S. I. (1995). Cognitive Dietary Restraint: Stability Across the Menstrual Cycle and Over Time.

McVay, M. A., Copeland, A. L., & Geiselman, P. J. (2011). Eating disorder pathology and menstrual cycle fluctuations in eating variables in oral contraceptive users and non-users. Eating Behaviors, 12(1), 49–55. https://doi.org/10.1016/j.eatbeh.2010.11.005

Melbostad, H. S., Wachtel, D. S., Lipke, K. A., Badger, G. J., Matusiewicz, A. K., Rey, C. N., MacAfee, L. K., Dougherty, A. K., & Heil, S. H. (2022). Preliminary side effect profile, safety, and tolerability of hormonal contraception among women receiving opioid-agonist therapy. Contraception, 110, 16–20. https://doi.org/10.1016/j.contraception.2022.02.013

Menting-Henry, S., Hidalgo-Lopez, E., Aichhorn, M., Kronbichler, M., Kerschbaum, H., & Pletzer, B. (2022). Oral Contraceptives Modulate the Relationship Between Resting Brain Activity, Amygdala Connectivity and Emotion Recognition – A Resting State fMRI Study. Frontiers in Behavioral Neuroscience, 16. https://doi.org/10.3389/fnbeh.2022.775796

Meule, A. (2020). Cross-Cultural Testing of Dietary Restraint. In Handbook of Eating and Drinking: Interdisciplinary Perspectives (pp. 1367–1380). Springer International Publishing. https://doi.org/10.1007/978-3-030-14504-0_134

Mills, J. S., Weinheimer, L., Polivy, J., & Herman, C. P. (2018). Are there different types of dieters? A review of personality and dietary restraint. Appetite, 125, 380–400. https://doi.org/10.1016/j.appet.2018.02.014

Monciunskaite, R., Malden, L., Lukstaite, I., Ruksenas, O., & Griksiene, R. (2019). Do oral contraceptives modulate an ERP response to affective pictures? Biological Psychology, 148, 107767. https://doi.org/10.1016/j.biopsycho.2019.107767

Morison, T. (2021). Reproductive justice: A radical framework for researching sexual and reproductive issues in psychology. Social and Personality Psychology Compass, 15(6), e12605. https://doi.org/10.1111/spc3.12605

Morison, T. (2023). Using reproductive justice as a theoretical lens in qualitative research in psychology. Qualitative Research in Psychology, 20(1), 172–192. https://doi.org/10.1080/14780887.2022.2121236

Naessén, S., Carlström, K., Byström, B., Pierre, Y., & Lindén Hirschberg, A. (2007). Effects of an antiandrogenic oral contraceptive on appetite and eating behavior in bulimic women. Psychoneuroendocrinology, 32(5), 548–554. https://doi.org/10.1016/j.psyneuen.2007.03.008

Naessén, S., & Hirschberg, A. L. (2011). Sex Hormones and Appetite in Women: A Focus on Bulimia Nervosa. In Handbook of Behavior, Food and Nutrition (pp. 1759–1767). Springer New York. https://doi.org/10.1007/978-0-387-92271-3_114

Nagl, M., Jacobi, C., Paul, M., Beesdo-Baum, K., Höfler, M., Lieb, R., & Wittchen, H. U. (2016). Prevalence, incidence, and natural course of anorexia and bulimia nervosa among adolescents and young adults. European Child and Adolescent Psychiatry, 25(8), 903–918. https://doi.org/10.1007/s00787-015-0808-z

Nandrino, J.-L., Dodin, V., Cottencin, O., & Doba, K. (2020). Effect of intrapersonal emotional competences on the relationship between attachment insecurity and severity of eating disorder symptoms in patients with restrictive anorexia. Journal of Clinical Psychology, 76(3), 476–492. https://doi.org/10.1002/jclp.22877

Neilson, E. C., Ayala, S., Jah, Z., Hairston, I., Hailstorks, T., Vyavahare, T., Gonzalez, A., Hernandez, N., Jackson, K., Bailey, S., Hall, K. S., Diallo, D. D., & Mosley, E. A.

(2023). “If I Control Your Body, I Can Fully Control You”: Interpersonal and Structural Violence Findings from the Georgia Medication Abortion Project. Psychology of Women Quarterly, 47(4), 462–477. https://doi.org/10.1177/03616843231175388

Nelson, A. L. (2020). Pulling back the curtain on trends in contraceptive use in recent years: What can we predict for the future? F&S Reports, 1(2), 63–64. https://doi.org/10.1016/j.xfre.2020.07.005

Nguyen, T. V., Reuter, J. M., Gaikwad, N. W., Rotroff, D. M., Kucera, H. R., Motsinger-Reif, A., Smith, C. P., Nieman, L. K., Rubinow, D. R., Kaddurah-Daouk, R., & Schmidt, P. J. (2017). The steroid metabolome in women with premenstrual dysphoric disorder during GnRH agonist-induced ovarian suppression: Effects of estradiol and progesterone addback. Translational Psychiatry, 7(8). https://doi.org/10.1038/TP.2017.146

Nichols, F. H. (2000). History of the Women’s Health Movement in the 20th century. Journal of Obstetric, Gynecologic, and Neonatal Nursing : JOGNN / NAACOG, 29(1), 56–64. https://doi.org/10.1111/j.1552-6909.2000.tb02756.x

Nieschlag, E. (2011). The struggle for male hormonal contraception. Best Practice and Research: Clinical Endocrinology and Metabolism, 25(2), 369–375. https://doi.org/10.1016/j.beem.2010.08.008

Noachtar, I. A., Frokjaer, V. G., & Pletzer, B. (2023). Mental Health Symptoms in Oral Contraceptive Users during Short-Term Hormone Withdrawal. JAMA Network Open, 6(9), E2335957. https://doi.org/10.1001/jamanetworkopen.2023.35957

Noble, R. E. (2005). Depression in women. Metabolism: Clinical and Experimental, 54(5 SUPPL.), 49–52. https://doi.org/10.1016/j.metabol.2005.01.014

Nowosielski, K. (2022). Do oral combined contraceptive pills modify body image and sexual function? Reproductive Biology and Endocrinology, 20(1), 94. https://doi.org/10.1186/s12958-022-00968-5

O'Brien, K. M., Whelan, D. R., Sandler, D. P., Hall, J. E., & Weinberg, C. R. (2017). Predictors and long-term health outcomes of eating disorders. PLoS ONE, 12(7). https://doi.org/10.1371/journal.pone.0181104

Oddens, B. J. (1996). Determinants of contraceptive use National population-based studies in various West European countries.

Oduyebo, T., Zapata, L. B., Boutot, M. E., Tepper, N. K., Curtis, K. M., D'Angelo, D. V., Marchbanks, P. A., & Whiteman, M. K. (2019). Factors associated with postpartum use of long-acting reversible contraception. American Journal of Obstetrics and Gynecology, 221(1), 43.e1-43.e11. https://doi.org/10.1016/j.ajog.2019.03.005

Okawa, E. R., Gardner, R., Feltmate, C., Hirsch, M. S., Craig, J. W., & Chan, Y.-M. (2020). An Unusual Cause of Secondary Amenorrhea in an Adolescent: Expanding the Differential. Journal of the Endocrine Society, 4(12), 1–4. https://doi.org/10.1210/jendso/bvaa159

Ordaz, S. J., Foran, W., Velanova, K., & Luna, B. (2013). Longitudinal Growth Curves of Brain Function Underlying Inhibitory Control through Adolescence. The Journal of Neuroscience, 33(46), 18109–18124. https://doi.org/10.1523/JNEUROSCI.1741-13.2013

Otto, A. K., Jary, J. M., Sturza, J., Miller, C. A., Prohaska, N., Bravender, T., & Van Huysse, J. (2021). Medical admissions among adolescents with eating disorders during the COVID-19 pandemic. Pediatrics, 148(4). https://doi.org/10.1542/peds.2021-052201

Owens, S. A., Eisenlohr-Moul, T. A., & Prinstein, M. J. (2020). Understanding When and Why Some Adolescent Girls Attempt Suicide: An Emerging Framework Integrating Menstrual

Cycle Fluctuations in Risk. Child Development Perspectives, 14(2), 116–123. https://doi.org/10.1111/cdep.12367

Pagano, H. P., Zapata, L. B., Berry-Bibee, E. N., Nanda, K., & Curtis, K. M. (2016). Safety of hormonal contraception and intrauterine devices among women with depressive and bipolar disorders: A systematic review. Contraception, 94(6), 641–649. https://doi.org/10.1016/j.contraception.2016.06.012

Paslakis, G., Maas, S., Gebhardt, B., Mayr, A., Rauh, M., & Erim, Y. (2018). Prospective, randomized, double-blind, placebo-controlled phase IIa clinical trial on the effects of an estrogen-progestin combination as add-on to inpatient psychotherapy in adult female patients suffering from anorexia nervosa. BMC Psychiatry, 18(1). https://doi.org/10.1186/s12888-018-1683-1

Payne, J. L. (2003). The role of estrogen in mood disorders in women. International Review of Psychiatry, 15(3), 280–290. https://doi.org/10.1080/0954026031000136893

Pérez-Campos, E., Dueas, J. L., De La Viuda, E., Gómez, M. Á., Lertxundi, R., Sánchez-Borrego, R., Canals, I., Bermejo, R., Arbat, A., Badia, X., Perulero, N., & Lete, L. I. (2011). Development and validation of the SEC-QOL questionnaire in women using contraceptive methods. Value in Health, 14(6), 892–899. https://doi.org/10.1016/j.jval.2011.08.1729

Period. (2023). https://press.princeton.edu/books/hardcover/9780691191317/period

Peters, J. R., Owens, S. A., Schmalenberger, K. M., & Eisenlohr-Moul, T. A. (2020). Differential effects of the menstrual cycle on reactive and proactive aggression in borderline personality disorder. Aggressive Behavior, 46(2), 151–161. https://doi.org/10.1002/ab.21877

Petersen, N., Kearley, N. W., Ghahremani, D. G., Pochon, J.-B., Fry, M. E., Rapkin, A. J., & London, E. D. (2021). Effects of oral contraceptive pills on mood and magnetic resonance imaging measures of prefrontal cortical thickness HHS Public Access. Mol Psychiatry, 26(3), 917–926. https://doi.org/10.1038/s41380-020-00990-2

Piccinelli, M., & Wilkinson, G. (2000). Gender differences in depression. BRITISH JOURNAL OF PSYCHIATRY, 177, 486–492.

Plessow, F., Singhal, V., Toth, A. T., Micali, N., Eddy, K. T., & Misra, M. (2019). Estrogen administration improves the trajectory of eating disorder pathology in oligo-amenorrheic athletes: A randomized controlled trial. Psychoneuroendocrinology, 102, 273–280. https://doi.org/10.1016/j.psyneuen.2018.11.013

Poleon, S., & Thompson, E. L. (2022). Reasons for Intent to Discontinue and Remove Long-Acting Reversible Contraceptives: National Survey of Family Growth 2017–2019. Journal of Women's Health, 31(5), 733–740. https://doi.org/10.1089/jwh.2021.0272

Polis, C. B., Hussain, R., & Berry, A. (2018). There might be blood: A scoping review on women's responses to contraceptive-induced menstrual bleeding changes. Reproductive Health, 15(1), 114. https://doi.org/10.1186/s12978-018-0561-0

Pradhan, S., & Gomez-Lobo, V. (2019). Hormonal Contraceptives, Intrauterine Devices, Gonadotropin-releasing Hormone Analogues and Testosterone: Menstrual Suppression in Special Adolescent Populations. Journal of Pediatric and Adolescent Gynecology, 32(5), S23–S29. https://doi.org/10.1016/j.jpag.2019.04.007

Prior, J. C. (2018). Progesterone for the prevention and treatment of osteoporosis in women. Climacteric, 21(4), 366–374. https://doi.org/10.1080/13697137.2018.1467400

Prol, B., Klein, S., Rennie, C., & Andelija, S. (n.d.). The Relationship Between Respondent Demographics and Patterns of Contraceptive Use in 2017-2019: A National Survey of Family Growth Analysis. Cureus Journal of Medical Science. Retrieved November 29, 2023, from https://www.cureus.com/posters/2593-the-relationship-between-respondent-demographics-and-patterns-of-contraceptive-use-in-2017-2019-a-national-survey-of-family-growth-analysis

Qureshey, E. J., Chen, H.-Y., Wagner, S. M., Chauhan, S. P., & Fishel Bartal, M. (2023). Factors associated with long-acting reversible contraception usage: Results from the National Survey of Family Growth. International Journal of Gynecology & Obstetrics, 161(1), 71–78. https://doi.org/10.1002/ijgo.14485

Racine, S. E. (2018). Emotional ratings of high- and low-calorie food are differentially associated with cognitive restraint and dietary restriction. Appetite, 121, 302–308. https://doi.org/10.1016/j.appet.2017.11.104

Racine, S. E., VanHuysse, J. L., Keel, P. K., Burt, S. A., Neale, M. C., Boker, S., & Klump, K. L. (2017). Eating Disorder-Specific Risk Factors Moderate the Relationship Between Negative Urgency and Binge Eating: A Behavioral Genetic Investigation. Journal of Abnormal Psychology. https://doi.org/10.1037/abn0000204.supp

Ramdani, H., Benbrahim, F. Z., Jidal, M., Zamani, O., Drissi, M., En-Nouali, H., & El Fenni, J. (2022). Primary amenorrhea secondary to imperforate hymen. Clinical Case Reports, 10(4), e05786. https://doi.org/10.1002/ccr3.5786

Rao, L., Rocca, C. H., Muñoz, I., Chambers, B. D., Devaskar, S., Asiodu, I. V., Stern, L., Blum, M., Comfort, A. B., & Harper, C. C. (2023). “She should support me, she’s my doctor:” Patient perceptions of agency in contraceptive decision-making in the clinical encounter

in Northern California. Perspectives on Sexual and Reproductive Health, 55(2), 94–103. https://doi.org/10.1363/psrh.12226

Richards, A. L., & Specker, B. (2021). Evaluating hours of sleep and perceived stress on dietary cognitive restraint in a survey of college students. Journal of American College Health, 68(8), 824–831. https://doi.org/10.1080/07448481.2019.1618312

Riches, E., Barrett, G., & Hall, J. A. (2023). Evaluation of the psychometric properties of the Reproductive Autonomy Scale for use in the UK. BMJ Sexual & Reproductive Health, 49(3), 151–157. https://doi.org/10.1136/bmjsrh-2022-201685

Rieder, J. K., Kleshchova, O., & Weierich, M. R. (2022). Estradiol, stress reactivity, and daily affective experiences in trauma-exposed women. Psychological Trauma: Theory, Research, Practice, and Policy, 14(5), 738–746. https://doi.org/10.1037/tra0001113

Robakis, T., Williams, K. E., Nutkiewicz, L., & Rasgon, N. L. (2019). Hormonal Contraceptives and Mood: Review of the Literature and Implications for Future Research. Current Psychiatry Reports, 21(7), 57. https://doi.org/10.1007/s11920-019-1034-z

Roberts, B., Eisenlohr-Moul, T., & Martel, M. M. (2018). Reproductive steroids and ADHD symptoms across the menstrual cycle. Psychoneuroendocrinology, 88, 105–114. https://doi.org/10.1016/j.psyneuen.2017.11.015

Roberts, T. A., Curtin, N., Duncan, L. E., & Cortina, L. M. (2016). Feminist perspectives on building a better psychological science of gender. In Feminist Perspectives on Building a Better Psychological Science of Gender. Springer International Publishing. https://doi.org/10.1007/978-3-319-32141-7

Rodgers, R. F., & Paxton, S. J. (2014). The impact of indicated prevention and early intervention on co-morbid eating disorder and depressive symptoms: A systematic review. Journal of Eating Disorders, 2(1). https://doi.org/10.1186/s40337-014-0030-2

Rosenberg, M. J., & Waugh, M. S. (1998). Oral contraceptive discontinuation: A prospective evaluation of frequency and reasons. American Journal of Obstetrics and Gynecology, 179(3), 577–582. https://doi.org/10.1016/S0002-9378(98)70047-X

Ross, L. J. (2017). Reproductive Justice as Intersectional Feminist Activism. Souls, 19(3), 286–314. https://doi.org/10.1080/10999949.2017.1389634

Ross, L., & Solinger, R. (2017). Reproductive Justice: An Introduction. Univ of California Press.

Rowlands, S., & Walker, S. (2019). Reproductive control by others: Means, perpetrators and effects. BMJ Sexual & Reproductive Health, 45(1), 61–67. https://doi.org/10.1136/bmjsrh-2018-200156

Rozzell, K., Moon, D. Y., Klimek, P., Brown, T., & Blashill, A. J. (2019). Prevalence of eating disorders among US children aged 9 to 10 years: Data from the adolescent brain cognitive development (ABCD) study. JAMA Pediatrics, 173(1), 100–101. https://doi.org/10.1001/jamapediatrics. 2018.3678

Saguy, A. (2012). Why Fat is a Feminist Issue. Sex Roles, 66(9–10), 600–607. https://doi.org/10.1007/s11199-011-0084-4

Samari, G., Foster, D. G., Ralph, L. J., & Rocca, C. H. (2020). Pregnancy preferences and contraceptive use among US women. Contraception, 101(2), 79–85. https://doi.org/10.1016/j.contraception.2019.10.007

Sanders, S. A., Graham, C. A., Bass, J. L., & Bancroft, J. (2001). A prospective study of the effects of oral contraceptives on sexuality and well-being and their relationship to discontinuation. Contraception, 64, 51–58.

Santomauro, D. F., Herrera, A. M. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., ... & Ferrari, A. J. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. The Lancet, 398(10312), 1700-1712. https://doi.org/10.1016/S0140-6736(21)02143-7

Schaffir, J., Worly, B. L., & Gur, T. L. (2016). Combined hormonal contraception and its effects on mood: A critical review. European Journal of Contraception and Reproductive Health Care, 21(5), 347–355. https://doi.org/10.1080/13625187.2016.1217327

Schaumberg, K., Anderson, D. A., Anderson, L. M., Reilly, E. E., & Gorrell, S. (2016). Dietary restraint: What's the harm? A review of the relationship between dietary restraint, weight trajectory and the development of eating pathology. Clinical Obesity, 6(2), 89–100. https://doi.org/10.1111/cob.12134

Schmalenberger, K. M., Tauseef, H. A., Barone, J. C., Owens, S. A., Lieberman, L., Jarczok, M. N., Girdler, S. S., Kiesner, J., Ditzen, B., & Eisenlohr-Moul, T. A. (2021). How to study the menstrual cycle: Practical tools and recommendations. Psychoneuroendocrinology, 123, 104895. https://doi.org/10.1016/j.psyneuen.2020.104895

Schmidt, P. J., Nieman, L. K., Danaceau, M. A., Adams, L. F., & Rubinow, D. R. (1998). Differential Behavioral Effects of Gonadal Steroids in Women with and in Those without Premenstrual Syndrome. New England Journal of Medicine, 338(4), 209–216. https://doi.org/10.1056/NEJM199801223380401

Schneider-Kamp, A., & Takhar, J. (2023). Interrogating the pill: Rising distrust and the reshaping of health risk perceptions in the social media age. Social Science & Medicine, 331, 116081. https://doi.org/10.1016/j.socscimed.2023.116081

Schulte, E. M., Grilo, C. M., & Gearhardt, A. N. (2016). Shared and unique mechanisms underlying binge eating disorder and addictive disorders. Clinical Psychology Review, 44, 125–139. https://doi.org/10.1016/j.cpr.2016.02.001

Segarra, I., Menárguez, M., & Roqué, M. V. (2023). Women's health, hormonal balance, and personal autonomy. Frontiers in Medicine, 10. https://doi.org/10.3389/fmed.2023.1167504

Senderowicz, L., & Kolenda, A. (2022). "She told me no, that you cannot change": Understanding provider refusal to remove contraceptive implants. SSM - Qualitative Research in Health, 2, 100154. https://doi.org/10.1016/j.ssmqr.2022.100154

Sexual Functioning, Satisfaction, and Well-Being Among Contraceptive Users: A Three-Month Assessment From the HER Salt Lake Contraceptive Initiative. (n.d.). Retrieved December 3, 2023, from https://www.tandfonline.com/doi/epdf/10.1080/00224499.2021.1873225?needAccess=true

Shelton, K. H., & Van Den Bree, M. B. M. (2010). The Moderating Effects of Pubertal Timing on the Longitudinal Associations Between Parent–Child Relationship Quality and Adolescent Substance Use. Journal of Research on Adolescence, 20(4), 1044–1064. https://doi.org/10.1111/j.1532-7795.2010.00643.x

Shiferaw, K., & Musa, A. (2017). Assessment of utilization of long acting reversible contraceptive and associated factors among women of reproductive age in Harar City,

Ethiopia. Pan African Medical Journal, 28. https://doi.org/10.11604/pamj.2017.28.222.13475

Silva dos Santos, P. de N., Madden, T., Omvig, K., & Peipert, J. F. (2017). Changes in body composition in women using long-acting reversible contraception. Contraception, 95(4), 382–389. https://doi.org/10.1016/j.contraception.2016.12.006

Singata-Madliki, M., Carayon-Lefebvre D'hellencourt, F., Lawrie, T. A., Balakrishna, Y., & Justus Hofmeyr, G. (2021). Effects of three contraceptive methods on depression and sexual function: An ancillary study of the ECHO randomized trial. https://doi.org/10.1002/ijgo.13594

Skovlund, C. W., Mørch, L. S., Kessing, L. V., Lange, T., & Lidegaard, J. (2018). Association of hormonal contraception with suicide attempts and suicides. American Journal of Psychiatry, 175(4), 336–342. https://doi.org/10.1176/appi.ajp.2017.17060616

Skovlund, C. W., Mørch, L. S., Kessing, L. V., & Lidegaard, O. (2016). Association of hormonal contraception with depression. JAMA Psychiatry, 73(11), 1154–1162. https://doi.org/10.1001/jamapsychiatry.2016.2387

Smith, A. C., Marty-Dugas, J., & Smilek, D. (2023). Examining the relation between oral contraceptive use and attentional engagement in everyday life. Frontiers in Human Neuroscience, 17. https://doi.org/10.3389/fnhum.2023.1147515

Steenland, M. W., Geiger, C. K., Chen, L., Rokicki, S., Gourevitch, R. A., Sinaiko, A. D., & Cohen, J. L. (2021). Declines in contraceptive visits in the United States during the COVID-19 pandemic. Contraception, 104(6), 593–599. https://doi.org/10.1016/j.contraception.2021.08.003

Stefaniak, M., Dmoch-Gajzlerska, E., Jankowska, K., Rogowski, A., Kajdy, A., & Maksym, R. B. (2023). Progesterone and Its Metabolites Play a Beneficial Role in Affect Regulation in the Female Brain. Pharmaceuticals, 16(4). https://doi.org/10.3390/ph16040520

Stevens, R., Machiyama, K., Mavodza, C. V., & Doyle, A. M. (2023). Misconceptions, Misinformation, and Misperceptions: A Case for Removing the "Mis-" When Discussing Contraceptive Beliefs. Studies in Family Planning, 54(1), 309–321. https://doi.org/10.1111/sifp.12232

Stewart, S. A., Peltier, M. R., Roys, M. R., & Copeland, A. L. (2022). The association between hormonal contraceptive use and smoking, negative affect, and cessation attempts in college females. Drug and Alcohol Dependence Reports, 3, 100063. https://doi.org/10.1016/j.dadr.2022.100063

Stice, E., Cooper, J. A., Schoeller, D. A., Tappe, K., & Lowe, M. R. (2007). Are Dietary Restraint Scales Valid Measures of Moderate- to Long-Term Dietary Restriction? Objective Biological and Behavioral Data Suggest Not. Psychological Assessment, 19(4), 449–458. https://doi.org/10.1037/1040-3590.19.4.449

Stice, E., Ng, J., & Shaw, H. (2010). Risk factors and prodromal eating pathology. Journal of Child Psychology and Psychiatry and Allied Disciplines, 51(4), 518–525. https://doi.org/10.1111/j.1469-7610.2010.02212.x

Stice, E., Presnell, K., & Bearman, S. K. (2001a). Relation of early menarche to depression, eating disorders, substance abuse, and comorbid psychopathology among adolescent girls. Developmental Psychology, 37(5), 608–619. https://doi.org/10.1037/0012-1649.37.5.608

Stice, E., Presnell, K., & Bearman, S. K. (2001b). Relation of Early Menarche to Depression, Eating Disorders, Substance Abuse, and Comorbid Psychopathology Among Adolescent Girls. Developmental Psychology, 37(5), 608–619. https://doi.org/10.1037/0O12-1649.37.5.608

Strandjord, S., & Rome, E. (2015). Monthly Periods—Are They Necessary? Pediatric Annals, 44, e231–e236. https://doi.org/10.3928/00904481-20150910-11

Streatfeild, J., Hickson, J., Austin, S. B., et al. (2021). Social and economic cost of eating disorders in the United States: Evidence to inform policy action. International Journal of Eating Disorders, 54, 851–868. https://doi.org/10.1002/eat.23486

Suarez-Balcazar, Y., Buckingham, S., Rusch, D. B., Charvonia, A., Young, R. I., Lewis, R. K., Ford-Paz, R. E., Mehta, T. G., & Perez, C. M. (n.d.). Reproductive justice for Black, Indigenous, Women of Color: Uprooting race and colonialism. American Journal of Community Psychology, n/a(n/a). https://doi.org/10.1002/ajcp.12650

Svendal, G., Berk, M., Pasco, J. A., Jacka, F. N., Lund, A., & Williams, L. J. (2012). The use of hormonal contraceptive agents and mood disorders in women. Journal of Affective Disorders, 140(1), 92–96. https://doi.org/10.1016/j.jad.2012.03.030

Taub, R. L., Ellis, S. A., Neal-Perry, G., Magaret, A. S., Prager, S. W., & Micks, E. A. (2020). The effect of testosterone on ovulatory function in transmasculine individuals. American Journal of Obstetrics and Gynecology, 223(2), 229.e1-229.e8. https://doi.org/10.1016/j.ajog.2020.01.059

Taquet, M., Geddes, J. R., Luciano, S., & Harrison, P. J. (2022). Incidence and outcomes of eating disorders during the COVID-19 pandemic. The British Journal of Psychiatry, 220(5), 262-264. https://doi.org/10.1192/bjp.2021.105

Tavolacci, M. P., Ladner, J., & Dechelotte, P. (2021). COVID-19 pandemic and eating disorders among university students. Nutrients, 13(12), 4294. https://doi.org/10.3390/nu13124294

The Role of Family Relationships in Eating Disorders in Adolescents: A Narrative Review. (2020). https://doi.org/10.3390/bs10040071

Thirumalai, A., & Page, S. T. (2020). Annual Review of Medicine Male Hormonal Contraception. Annual Review of Medicine, 71, 17–31. https://doi.org/10.1146/annurev-med-042418

Timmer-Murillo, S., Schramm, A. T., Geier, T. J., Mcleod, E., Larson, C. L., & deRoon-Cassini, T. A. (2023). Facets of emotion dysregulation differentially predict depression and PTSD symptom severity following traumatic injury. European Journal of Psychotraumatology, 14(2), 2193524. https://doi.org/10.1080/20008066.2023.2193524

Toffol, E., But, A., Heikinheimo, O., Latvala, A., Partonen, T., & Haukka, J. (2020). Associations between hormonal contraception use, sociodemographic factors and mental health: A nationwide, register-based, matched case-control study. BMJ Open, 10(10). https://doi.org/10.1136/bmjopen-2020-040072

Toffol, E., Heikinheimo, O., Koponen, P., Luoto, R., & Partonen, T. (2011). Hormonal contraception and mental health: Results of a population-based study. Human Reproduction, 26(11), 3085–3093. https://doi.org/10.1093/humrep/der269

Toffol, E., Heikinheimo, O., Koponen, P., Luoto, R., & Partonen, T. (2012). Further evidence for lack of negative associations between hormonal contraception and mental health. Contraception, 86(5), 470–480. https://doi.org/10.1016/j.contraception.2012.02.014

Toffol, E., Partonen, T., Heikinheimo, O., But, A., Latvala, A., & Haukka, J. (2022). Associations between use of psychotropic medications and use of hormonal contraception

among girls and women aged 15-49 years in Finland: A nationwide, register-based, matched case-control study. BMJ Open, 12(2). https://doi.org/10.1136/bmjopen-2021-053837

Treasure, J. (2008). Eating disorders. Psychiatric Disorders.

Treasure, J., Cardi, V., Leppanen, J., & Turton, R. (2015). New treatment approaches for severe and enduring eating disorders. Physiology and Behavior, 152, 456–465. https://doi.org/10.1016/j.physbeh.2015.06.007

Treasure, J., Claudino, A. M., & Zucker, N. (2010). Eating disorders. The Lancet, 375(9714), 583–593. https://doi.org/10.1016/S0140-6736(09)61748-7

Treasure, J., & Todd, G. (2016). Interpersonal Maintaining Factors in Eating Disorder: Skill Sharing Interventions for Carers. In Bio-Psycho-Social Contributions to Understanding Eating Disorders (pp. 125–137). Springer International Publishing. https://doi.org/10.1007/978-3-319-32742-6_9

Udo, T., & Grilo, C. M. (2018). Prevalence and Correlates of DSM-5–Defined Eating Disorders in a Nationally Representative Sample of U.S. Adults. Biological Psychiatry, 84(5), 345–354. https://doi.org/10.1016/j.biopsych.2018.03.014

Upadhyay, U. D., Dworkin, S. L., Weitz, T. A., & Foster, D. G. (2014). Development and Validation of a Reproductive Autonomy Scale. Studies in Family Planning, 45(1), 19–41. https://doi.org/10.1111/j.1728-4465.2014.00374.x

Ussher, J. M., & Perz, J. (2020). “I feel fat and ugly and hate myself”: Self-objectification through negative constructions of premenstrual embodiment. Feminism and Psychology, 30(2), 185–205. https://doi.org/10.1177/0959353519900196

van der Heijden, G. J. M. G., T. Donders, A. R., Stijnen, T., & Moons, K. G. M. (2006). Imputation of missing values is superior to complete case analysis and the missing-indicator method in multivariable diagnostic research: A clinical example. Journal of Clinical Epidemiology, 59(10), 1102–1109. https://doi.org/10.1016/j.jclinepi.2006.01.015

Vegunta, S., Carrubba, A. R., & Wasson, M. N. (2021). Changing US trends in contraceptive choices. Cleveland Clinic Journal of Medicine, 88(12), 689–695. https://doi.org/10.3949/ccjm.88a.20110

Vescovi, J. D., Scheid, J. L., Hontscharuk, R., & De Souza, M. J. (2008). Cognitive dietary restraint: Impact on bone, menstrual and metabolic status in young women. Physiology and Behavior, 95(1–2), 48–55. https://doi.org/10.1016/j.physbeh.2008.04.003

Vlahoyiannis, A., & Nifli, A. P. (2020). Dietary restraint is associated with adiposity and repeated attempts of food avoidance since early adolescence. Physiology and Behavior, 218. https://doi.org/10.1016/j.physbeh.2020.112826

Wacker, E. C., & Dolbin-MacNab, M. L. (2020). Feminist-Informed Protective Factors for Subthreshold Eating Disorders. Qualitative Health Research, 30(10), 1546–1560. https://doi.org/10.1177/1049732320921832

Ward, Z. J., Rodriguez, P., Wright, D. R., Austin, S. B., & Long, M. W. (2019). Estimation of eating disorders prevalence by age and associations with mortality in a simulated nationally representative US cohort. *JAMA network open*, 2(10), e1912925. https://doi.org/10.1002/eat.23486

Watson, L. B., & Germain, J. M. (2023). Reproductive Justice in the Post-Roe v. Wade Era: Examining Reactions to Dobbs v. Jackson and Psychological Distress Among Cisgender

Women and People Assigned Female at Birth. Psychology of Women Quarterly, 03616843231210219. https://doi.org/10.1177/03616843231210219

Wesselhoeft, R., Pedersen, C. B., Mortensen, P. B., Mors, O., & Bilenberg, N. (2015). Gender-age interaction in incidence rates of childhood emotional disorders. Psychological Medicine, 45(4), 829–839. https://doi.org/10.1017/S0033291714001901

Weyand, A. C., Fitzgerald, K. D., Mcgrath, M., Gupta, V., Braun, T. M., Quint, E. H., & Choi, S. W. (2022). Depression in adolescent females with heavy menstrual bleeding HHS Public Access. J Pediatr, 240, 171–176. https://doi.org/10.1016/j.jpeds.2021.09.007

White, J. (n.d.). IUDs and Women's Contraceptive Decision-Making: Examining the Impact of Contraceptive Experiences, Reproductive Goals and Changing Life Circumstances on Contraceptive Choices.

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., Charlson, F. J., Norman, R. E., Flaxman, A. D., Johns, N., Burstein, R., Murray, C. J. L., & Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. The Lancet, 382(9904), 1575–1586. https://doi.org/10.1016/S0140-6736(13)61611-6

Williams, W. V., Brind, J., Haynes, L., Manhart, M. D., Klaus, H., Lanfranchi, A., Migeon, G., Gaskins, M., Seman, E. I., Ruppersberger, L., & Raviele, K. M. (n.d.). South Australia 12 Medical Lead in Urogynaecology. Flinders Medical Centre, 88(2). https://doi.org/10.1177/0024363920982709

Willie, T. C., Callands, T., Alexander, K. A., & Kershaw, T. (2023). Measuring women's sexual autonomy: Development and preliminary validation of the women's sexual autonomy

scale. Women's Health, 19, 17455057231183837. https://doi.org/10.1177/17455057231183837

Wingo, E., Sarnaik, S., Michel, M., Hessler, D., Frederiksen, B., Kavanaugh, M. L., & Dehlendorf, C. (2023). The status of person-centered contraceptive care in the United States: Results from a nationally representative sample. Perspectives on Sexual and Reproductive Health, 55(3), 129–139. https://doi.org/10.1363/psrh.12245

Wirhn, A. B., Foldemo, A., Josefsson, A., & Lindberg, M. (2010). Use of hormonal contraceptives in relation to antidepressant therapy: A nationwide population-based study. European Journal of Contraception and Reproductive Health Care, 15(1), 41–47. https://doi.org/10.3109/13625181003587004

Worly, B. L., Gur, T. L., & Schaffir, J. (2018). The relationship between progestin hormonal contraception and depression: A systematic review. Contraception, 97(6), 478–489. https://doi.org/10.1016/j.contraception.2018.01.010

Wu, J., Liu, J., Li, S., Ma, H., & Wang, Y. (2020). Trends in the prevalence and disability-adjusted life years of eating disorders from 1990 to 2017: results from the Global Burden of Disease Study 2017. Epidemiology and psychiatric sciences, 29, e191. https://doi.org/10.1017/S2045796020001055

Yang, Q., Sjölander, A., Li, Y., Viktorin, A., Bertone-Johnson, E. R., Ye, W., Fang, F., Valdimarsdóttir, U. A., & Lu, D. (2021). Clinical indications of premenstrual disorders and subsequent risk of injury: A population-based cohort study in Sweden. BMC Medicine, 19(1), 119. https://doi.org/10.1186/s12916-021-01989-4

Yavarikia, P., Dousti, S., Ostadrahimi, A., Mobasseri, M., & Farshbaf-Khalili, A. (2019). Quality of life specified for polycystic ovary syndrome and its relationship with nutritional

attitude and behavior. International Journal of Women's Health and Reproduction Sciences, 7(1), 99–105. https://doi.org/10.15296/ijwhr.2019.16

Zendehdel, M., Jahanfar, S., Hamzehgardeshi, Z., & Fooladi, E. (2020). An Investigation into Long-acting Reversible Contraception: Use, Awareness, and Associated Factors. European Journal of Environment and Public Health, 4(2). https://doi.org/10.29333/ejeph/7837

Zipfel, S., & Schmidt, U. (2018). Psychobiology of Eating Disorders – a Gateway to Precision Medicine. Current Neuropharmacology, 16(8), 1100–1101. https://doi.org/10.2174/1570159X1608180821144325

APPENDICES

Appendix A: Hormonal Contraception and Mental Health Survey

Q239 Dear Participant, My name is Mallory Almengual and I am a researcher from Colorado State University in the Psychology department. We are conducting a research study to assess the relationship(s) between hormonal contraceptive use and symptoms of mood and eating disorders. The title of our project is Exploring the Relationship between Hormonal Contraceptive Methods and Symptoms of Depression and Bulimia Nervosa. The Principal Investigator is Kathryn Rickard, Ph.D. and I am the Co-Principal Investigator. We would like you to take an online survey. Participation will take approximately 30 minutes. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty. We will be collecting each participant's name, CSU ID, age, ethnicity, and relevant reproductive and mental health history. When we report and share the data to others, we will combine the data from all participants. We will keep your data confidential; your name and data will be kept separately in an encrypted file on a password protected computer accessible only to the research team. While there are no direct benefits to you, your participation in this project will to contribute to the larger body of research concerning whether or not HC use contributes to the development and maintenance of these highly impairing disorders. If a positive relationship is found, implications for health providers and a screening method to inform HC prescribers of relevant psychological risk factors will be proposed to enhance women's reproductive healthcare practices. Participants will complete the entire survey once during the course of the Fall 2019 academic semester, and will receive course credit for research participation after all parts of the battery are completed. Some participants may experience discomfort while completing the survey due to the sensitive nature of the questionnaire subject matter. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential (but unknown) risks. To indicate your willingness to participate please continue to the survey. Otherwise, close your browser now. If you have any questions about the research, please contact Mallory Almengual at malmen@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553. Kathryn Rickard, Ph.D. Mallory Almengual, B.S. Principle Investigator Co-Principle Investigator

Q1 What is current your age?

16 22 29 35 42 48 54 61 67 74 80

Age in years ()

Q2 What is your date of birth?

_____

Q3 Do you identify as having Hispanic, Latino, or Spanish origin? Check all that apply.

- [ ] No, not of Hispanic, Latino, or Spanish origin (1)
- [ ] Yes, Mexican, Mexican American, Chicano/a (2)
- [ ] Yes, Puerto Rican (3)
- [ ] Yes, Cuban (4)
- [ ] Yes, another Hispanic, Latino, or Spanish origin (5)
- [ ] Prefer not to answer (6)

Q4 Which racial group do you most identify with? Check all that apply.

- [ ] White (1)
- [ ] Black or African American (2)
- [ ] American Indian or Alaska Native (3)
- [ ] Asian (4)
- [ ] Native Hawaiian or Pacific Islander (5)
- [ ] Asian Indian (6)
- [ ] Chinses (7)
- [ ] Filipino (8)
- [ ] Japanese (9)
- [ ] Korean (10)
- [ ] Vietnamese (11)
- [ ] Guamanian or Chamorro (12)
- [ ] Samoan (13)
- [ ] Other Pacific Islander (14)
- [ ] Other Asian descent (15)
- [ ] Prefer not to answer (16)

Q5 What is your gender identity?

- Cisgender Female (1)
- Transgender MTF (2)
- Transgender FTM (3)
- Nonbinary/Fluid (4)
- Prefer not to answer (5)

Q6 What is your current education level?

- Undergraduate Freshman (1)
- Undergraduate Sophomore (2)
- Undergraduate Junior (3)
- Undergraduate Senior (4)
- Other Undergraduate (5)
- Graduate Student (6)

Q7 What is your current marital status?

- Married (1)
- Widowed (2)
- Divorced (3)
- Separated (4)
- Never married (5)

Q8 How many times have you been married?

0 1 2 3 4 5 6 7 8 9 10

Click to write Choice 1 ()

Q9 Enter current weight in pounds (lb)

_____

Q10 Enter current height in feet and inches

_____

Q11 Heaviest past weight (excluding pregnancy):

_____

Q12 How long ago did you reach you first reach this weight? Enter answer in months.

_____

Q13 How long did you weigh this weight? Enter answer in months.

_____

Q14 Lowest weight as an adult:

_____

Q15 How long ago did you first reach this weight? Enter answer in months.

_____

Q16 How long did you weigh this weight? Enter answer in months.

_____

Q17 At what age did you have your first menstrual period? Enter your age in years. Write "never" if you have not had a menstrual period.

_____

Q18 What is the approximate date for your first menstrual period? Enter month and year. If month is unknown, enter year

_____

Q19 At what age did your menstrual periods become regular? That is, you could usually predict about when they could start? If periods never became regular, enter "never"

_____

Q20 Now we'll talk about any birth control or methods of contraception you have ever used. Which of the following have you used with a sexual partner? Please check all that apply.

- ☐ Birth control pill (1)
- ☐ Male condom (2)
- ☐ Female condom (3)
- ☐ Hormonal IUD (Mirena, Skyla) (4)

- [ ] Copper IUD (ParaGard) (5)
- [ ] Contraceptive implant (Nexplanon) (6)
- [ ] Injection (Depo-subQ Provera, Depo-Provera) (7)
- [ ] Vaginal ring (Nuvaring) (8)
- [ ] Birth control patch (Xulane) (21)
- [ ] Spermicidal jelly, cream, or suppository (9)
- [ ] Spermicidal sponge (10)
- [ ] Spermicidal contraceptive foam (11)
- [ ] Douche (12)
- [ ] Rhythm or safe method by calendar or temperature (13)
- [ ] Withdrawal or pulling out (14)
- [ ] Operation - female sterilization and/or hysterectomy (15)
- [ ] Operation - male sterilization (vasectomy) (16)
- [ ] Cervical cap (17)
- [ ] Abstinence (no sexual activity) (18)
- [ ] Other method (19)
- [ ] No birth control used (20)

Q21 During what month and year did you have your most recent period?

_____

Q22 Do you have any children?

- ○ Yes (1)
- ○ No (2)

Q23 If yes, how many children do you have?

_____

Q24 Please list which method(s) of hormonal contraceptive (birth control pills, hormonal IUD, injection, implant, vaginal ring, or patch) you have every used. If known, dosage as well.

_____

Q25 At what age were you first prescribed any type of hormonal contraceptive (birth control pills, hormonal IUD, injection, implant, vaginal ring, or patch)?

_____

Q26 Was this prescribed to prevent pregnancy?

- ○ Yes (1)
- ○ No (2)
- ○ Yes, and other reason(s) (3)

Q27 Sometimes women are prescribed hormonal contraceptives for reasons other than birth control, for example, for irregular menstrual periods or acne.
Did you ever take hormonal contraceptives (birth control pills, hormonal IUD, injection, implant, or vaginal ring) for a reason other than birth control? If yes, please check all that apply.

- ☐ Irregular periods (1)
- ☐ Acne (2)
- ☐ Premenstrual dysphoric disorder (PMDD) (3)
- ☐ Premenstrual syndrome (PMS) (4)
- ☐ Adverse mood associated with menstruation ("mood swings") (5)
- ☐ Painful cramping (6)
- ☐ Other reason (7)
- ☐ No, I was never prescribed hormonal contraceptives for reasons other than birth control (8)
- ☐ No, I have never used hormonal contraceptives (9)

Q28 Have you ever experienced side effects as a result of hormonal contraceptive (birth control pills, hormonal IUD, injection, implant, or vaginal ring) use? Select all that apply.

- ☐ Weight gain (1)
- ☐ Headaches (2)
- ☐ Sore breasts (3)
- ☐ Irregular periods (4)
- ☐ Mood changes (5)
- ☐ Decreased sexual desire (6)

- [ ] Decreased vaginal lubrication (7)
- [ ] Acne (8)
- [ ] Nausea (9)
- [ ] Other (10)
- [ ] None (11)

Q29 What method(s) of birth control are you **currently** using?

- [ ] Birth control pill (1)
- [ ] Male condom (2)
- [ ] Female condom (3)
- [ ] Hormonal IUD (Mirena, Skyla) (4)
- [ ] Copper IUD (ParaGard) (5)
- [ ] Contraceptive implant (Nexplanon) (6)
- [ ] Injection (Depo-subQ Provera, Depo-Provera) (7)
- [ ] Vaginal ring (Nuvaring) (8)
- [ ] Birth control patch (Xulane) (9)
- [ ] Spermicidal jelly, cream, or suppository (10)
- [ ] Spermicidal sponge (11)
- [ ] Spermicidal contraceptive foam (12)
- [ ] Douche (13)
- [ ] Rhythm or safe method by calendar or temperature (14)
- [ ] Withdrawal or pulling out (15)
- [ ] Operation - female sterilization and/or hysterectomy (16)
- [ ] Operation - male sterilization (vasectomy) (17)
- [ ] Cervical cap (18)
- [ ] Abstinence (no sexual activity) (19)

- [ ] Other method (20)
- [ ] No birth control used (21)

Q30 How long have you been using your **current** method(s) of birth control?

- Less than 1 month (1)
- 1 month - 6 months (2)
- 6 months - 1 year (3)
- More than 1 year (4)

Q31 Was your **current** method of birth control prescribed to prevent pregnancy?

- Yes (1)
- No (2)
- Yes, and other reason(s) (3)

Q32 For what reason(s) other than birth control was your **current** birth control prescribed? Please check all that apply.

- Irregular periods (1)
- Acne (2)
- Premenstrual dysphoric disorder (PMDD) (3)
- Premenstrual syndrome (PMS) (4)
- Adverse mood associated with menstruation ("mood swings") (5)
- Painful cramping (6)
- Other reason (7)
- No, I was never prescribed hormonal contraceptives for reasons other than birth control (8)
- No, I have never used hormonal contraceptives (9)

Q33 Have you experienced any of the following side effects related to your **current** birth control method? Select all that apply

- Weight gain (1)
- Headaches (2)
- Sore breasts (3)
- Irregular periods (4)
- Mood changes (5)
- Decreased sexual desire (6)
- Decreased vaginal lubrication (7)

- ○ Acne (8)
- ○ Nausea (9)
- ○ Other (10)
- ○ None (11)

Q34 Has anyone in your biological family ever been diagnosed with Major Depressive Disorder by a mental health professional?

- ○ Yes (1)
- ○ No (2)
- ○ Unknown (3)

Q35 Please select all family members that have ever been diagnosed with Major Depressive Disorder

- ☐ Mother (1)
- ☐ Father (2)
- ☐ Sibling (3)
- ☐ Maternal grandmother (4)
- ☐ Maternal grandfather (5)
- ☐ Paternal grandmother (6)
- ☐ Paternal grandfather (7)
- ☐ Maternal aunt (8)
- ☐ Maternal uncle (9)
- ☐ Maternal cousin (10)
- ☐ Paternal aunt (11)
- ☐ Paternal uncle (12)
- ☐ Paternal cousin (13)
- ☐ Biological child (14)
- ☐ Other (15)

Q36 Have you ever been diagnosed with Major Depressive Disorder by a mental health professional?

- ○ Yes (1)
- ○ No (2)

Q37 At what age were you first diagnosed with Major Depressive Disorder?

_____

Q38 Has anyone in your biological family every been diagnosed with an eating disorder (Anorexia Nervosa, Bulimia Nervosa, Binge-Eating Disorder, etc.) by a mental health professional?

- ○ Yes (1)
- ○ No (2)
- ○ Unknown (3)

Q39 Please select all family members that have ever been diagnosed with an eating disorder

- ☐ Mother (1)
- ☐ Father (2)
- ☐ Sibling (3)
- ☐ Maternal grandmother (4)
- ☐ Maternal grandfather (5)
- ☐ Paternal grandmother (6)
- ☐ Paternal grandfather (7)
- ☐ Maternal aunt (8)
- ☐ Maternal uncle (9)
- ☐ Maternal cousin (10)
- ☐ Paternal aunt (11)
- ☐ Paternal uncle (12)
- ☐ Paternal cousin (13)
- ☐ Biological child (14)
- ☐ Other (15)

Q40 Have you ever been diagnosed with an eating disorder by a mental health professional?

- ○ Yes (1)
- ○ No (2)

Q41 At what age were you first diagnosed with an eating disorder?

_____

Q42 Please select all eating disorder diagnoses that apply

- ☐ Anorexia Nervosa (1)
- ☐ Bulimia Nervosa (2)
- ☐ Eating Disorder Not Otherwise Specified (EDNOS) (3)
- ☐ Binge-Eating Disorder (4)

Appendix B: Three Factor Eating Questionnaire - R18

Please read each statement and select from the multiple choice options the answer that indicates the frequency with which you find yourself feeling or experiencing what is being described in the statements below.

1. When I smell a delicious food, I find it very difficult to keep from eating, even if I have just finished a meal.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

2. I deliberately take small helpings as a means of controlling my weight.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

3.When I feel anxious, I find myself eating.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

4. Sometimes when I start eating, I just can't seem to stop.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

5. Being with someone who is eating often makes me hungry enough to eat also.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

6. When I feel blue, I often overeat.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

7. When I see a real delicacy, I often get so hungry that I have to eat right away.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

8. I get so hungry that my stomach often seems like a bottomless pit.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

9. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

10. When I feel lonely, I console myself by eating.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

11. I consciously hold back at meals in order not to weight gain.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

12. I do not eat some foods because they make me fat.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

13. I am always hungry enough to eat at any time.
Definitely true (4)/ mostly true (3)/ mostly false (2)/ definitely false (1)

14. How often do you feel hungry?
Only at meal times (1)/ sometimes between meals (2)/ often between meals (3)/almost always (4)

15. How frequently do you avoid "stocking up" on tempting foods?
Almost never (1)/ seldom (2)/ moderately likely (3)/ almost always (4)

16. How likely are you to consciously eat less than you want?
Unlikely (1)/ slightly likely (2)/ moderately likely (3)/ very likely (4)

17. Do you go on eating binges though you are not hungry?
Never (1)/ rarely (2)/ sometimes (3)/ at least once a week (4)

18. On a scale of 1 to 8, where 1 means no restraint in eating (eating whatever you want, whenever you want it) and 8 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself? 

Revised 18-Item (Karlsson et. Al. 2000)

Appendix C: Eating Disorder Inventory - 3

Item Booklet

David M. Garner, PhD

DIRECTIONS

Enter your name, the date, your age, gender, marital status, and occupation. Complete the questions on the rest of this page. Then, turn to the inside of this booklet and carefully follow the instructions.

Name_____ Date ____/____/____

*Age_____ Gender _____ Marital Status _____ Occupation_____

A. *Current weight: _____ pounds

B. *Height: _____ feet _____ inches

C. Highest past weight (excluding pregnancy): _____ pounds

How long ago did you first reach this weight? _____ months

How long did you weigh this weight? _____ months

D. *Lowest weight as an adult (or lowest weight as an adolescent if not yet age 18): _____ pounds

How long ago did you first reach this weight? _____ months

How long did you weigh this weight? _____ months

E. What weight have you been at for the longest period of time? _____ pounds

At what age did you first reach this weight? _____ years old

F. If your weight has changed a lot over the years, is there a weight that you keep coming back to when you are not dieting? _____ Yes _____ No

If yes, what is this weight? _____ pounds

At what age did you first reach this weight? _____ years old

G. What is the most weight you have ever lost? _____ pounds

Did you lose this weight on purpose? _____ Yes _____ No

What weight did you lose to? _____ pounds

At what age did you reach this weight? _____ years old

H. What do you think your weight would be if you did not consciously try to control your weight? _____ pounds

I. How much would you like to weigh? _____ pounds

J. Age at which weight problems began (if any): _____ years old

K. Father's occupation: _____

L. Mother's occupation: _____

PAR • 16204 N. Florida Ave. • Lutz, FL 33549 • 1.800.331.8378 • www.parinc.com

9 8 Reorder #RO-5386 Printed in the U.S.A.

INSTRUCTIONS

First, write your name and the date on the EDI-3 Answer Sheet. Your ratings on the items below should be circled on the Answer Sheet. The items ask about your attitudes, feelings, and behaviors. Some of the items relate to food or eating; other items ask about your feelings about yourself.

For each item, decide if the item is true about you **ALWAYS** (**A**), **USUALLY** (**U**), **OFTEN** (**O**), **SOMETIMES** (**S**), **RARELY** (**R**), or **NEVER** (**N**). Circle the letter that corresponds to your rating on the Answer Sheet. For example, if your rating for an item is **OFTEN**, you would circle the "**O**" for that item on the Answer Sheet.

Respond to *all* of the items, making sure that you circle the letter for the rating that is true about you. **DO NOT ERASE!** If you need to change an answer, mark an "X" through the incorrect letter, and then circle the correct one.

---

1. I eat sweets and carbohydrates without feeling nervous.
2. I think that my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after overeating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.
19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.
21. I get confused about what emotion I am feeling.
22. I would rather be an adult than a child.
23. I can communicate with others easily.
24. I wish I were someone else.
25. I exaggerate or magnify the importance of weight.
26. I can clearly identify what emotion I am feeling.

27. I feel inadequate.
28. I have gone on eating binges where I felt that I could not stop.
29. As a child, I tried very hard to avoid disappointing my parents and teachers.
30. I have close relationships.
31. I like the shape of my buttocks.
32. I am preoccupied with the desire to be thinner.
33. I don't know what's going on inside me.
34. I have trouble expressing my emotions to others.
35. The demands of adulthood are too great.
36. I hate being less than best at things.
37. I feel secure about myself.
38. I think about bingeing (overeating).
39. I feel happy that I am not a child anymore.
40. I get confused as to whether or not I am hungry.
41. I have a low opinion of myself.
42. I feel that I can achieve my standards.
43. My parents have expected excellence of me.
44. I worry that my feelings will get out of control.
45. I think my hips are too big.
46. I eat moderately in front of others and stuff myself when they're gone.
47. I feel bloated after eating a normal meal.
48. I feel that people are happiest when they are children.
49. If I gain a pound, I worry that I will keep gaining.
50. I feel that I am a worthwhile person.
51. When I am upset, I don't know if I am sad, frightened, or angry.
52. I feel that I must do things perfectly or not do them at all.
53. I have the thought of trying to vomit in order to lose weight.
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think my buttocks are too large.
60. I have feelings I can't quite identify.