Effects Of Sex Education Perspectives

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ABSTRACT
Sex education is crucial for promoting informed and healthy sexual behaviors, though the content and approach of these programs have varied significantly. This study examined three distinct approaches to sex education—love and intimacy-based, biology-based, and abstinence-based—with the aim of evaluating how each influenced perceptions of sex, virginity, love, intimacy, and sexual well-being. By examining the strengths and limitations of these strategies, this research aims to enhance the investigation of diverse sex education perspectives. Participants were randomly assigned to one of four groups: love and intimacy-based, biology-based, abstinence-based, or control, with each group receiving a corresponding educational video, except for the control group. Although no statistically significant differences were observed among the groups, participants who already held abstinence-based perspectives were more likely to view virginity as a gift. Significant gender differences were also found, with women reporting higher levels of stigma and stronger associations of love with sex. These findings underscored the impact of participants' preexisting sex education perspectives and gender on their attitudes toward sex and virginity, suggesting that sex education programs may benefit from accounting for these individual differences to enhance their effectiveness.

KEYWORDS
Sex Education; Comprehensive Sex Education; Abstinence-Based Sex Education; Love And Intimacy-Based Sex Education; Biology-Based Sex Education; Sexual Well-Being; Perceptions Of Virginity; Gender Differences; Sexual Attitudes

INTRODUCTION

Sex education plays a crucial role in fostering informed attitudes and behaviors toward sexuality, yet the effectiveness of various programs continues to be a topic of debate. Many sex education programs still do not offer comprehensive approaches that meet the diverse needs of individuals, leaving gaps in knowledge about sexual health, emotional intimacy, and relationship dynamics. These limitations ultimately impact individuals' ability to make knowledgeable decisions about their sexual lives.[1]

Implementing comprehensive sex education programs is crucial for fostering a healthy understanding of sexuality and promoting overall sexual well-being. Comprehensive sex education refers to programs that not only cover the biological aspects of sex, such as reproduction and contraception, but also explore emotional, relational, and ethical dimensions. This includes topics like consent, relationships, communication, and decision-making, offering individuals a more holistic approach to sexual health. Sexual well-being, which encompasses aspects of sexual activity, partner satisfaction, and quality of life, plays an integral role in shaping individuals' sexual experiences.[2] These programs address not only biological aspects of sex but also emotional, relational, and ethical dimensions, offering a more holistic approach. In contrast, abstinence-only or purely biology-based programs can leave significant gaps in understanding. Comprehensive sex education has been shown to improve sexual well-being, enhance relationship satisfaction, and boost overall quality of life, though outcomes may vary based on individual context and prior knowledge.[3] Additionally, such programs have demonstrated effectiveness in delaying the onset of sexual activity, reducing the number of sexual partners, increasing contraceptive use, and lowering the incidence of STDs and unintended pregnancies.[4,5] These findings underscore the benefits of comprehensive education, which abstinence-only approaches often fail to match.[6]

Conversely, the absence of comprehensive sex education leaves individuals vulnerable to the consequences of uninformed decisions. Without access to vital information, individuals may lack the knowledge and skills to effectively manage sexual health, which can lead to unintended outcomes such as unplanned pregnancies or the spread of STDs.[7] Recent legislative developments, particularly those restricting abortion rights, have further complicated access to reproductive health services.[8] These changes have contributed to an increase in unplanned pregnancies among teens and young women, underscoring the need for broader access to

reproductive knowledge and comprehensive educational programs.[9] Advocacy groups and educators continue to push for comprehensive sex education in schools to address these gaps in knowledge and promote healthier sexual behaviors.[10]

A key issue contributing to the ongoing debate about sex education is the inconsistency in curricula across different states and school systems, which has resulted in varying levels of knowledge and preparedness among students.[7] Many states still prioritize abstinence-only programs, which are often rooted in fear-based messaging. These programs have consistently failed to delay sexual activity or reduce risky sexual behaviors, yet they remain prevalent due to persistent beliefs that discussing sex might promote harmful behavior.[3] Recent legislative restrictions on sexual and reproductive health access further underscore the need for standardized, inclusive sex education programs that provide accurate, evidence-based information.[9] Despite evidence showing the ineffectiveness of abstinence-only education, the lack of comprehensive, inclusive programs leaves significant gaps in students' understanding of sexual health. Comprehensive sex education, on the other hand, has proven to be more effective in empowering individuals to make informed, safer decisions regarding their sexual health and well-being.[6,4]

Sexual well-being is deeply connected to comfort in one's sexuality, sexual activity levels, and relationship satisfaction.[2] While women who are more comfortable with their sexuality typically report higher sexual well-being, men may experience it differently. Some studies suggest that men associate sexual well-being with frequent sexual thoughts—often referred to as sexual preoccupation—rather than emotional intimacy.[11] This difference in perspective highlights the need for sex education programs to address gender-specific attitudes toward sexuality and intimacy. Traditionally, societal beliefs suggest men prioritize physical aspects of relationships over emotional connection. However, newer research indicates that men are placing greater value on emotional intimacy and love before sex, reflecting changing attitudes in younger generations.[11]

These factors are critical to the quality of relationships, as individuals with greater knowledge and confidence regarding their sexual health and bodies tend to establish more fulfilling partnerships.[12] Perceptions of virginity also vary widely, with some individuals viewing the concept of virginity as a sacred act reserved for marriage, while others see it as a foundational experience for developing love and intimacy.[12,13] These differing perceptions can influence sexual outcomes and enhance overall sexual satisfaction.[12,13]

Extensive research directly challenges the misconception that discussing sex encourages harmful sexual behavior, as evidence consistently shows the opposite effect. Comprehensive sex education equips individuals with the knowledge and skills to make informed, safer decisions, reinforcing the importance of well-rounded education in promoting healthy sexual behavior and overall sexual well-being.[4] Studies have shown that these programs delay the onset of sexual activity, reduce the number of sexual partners, and increase the use of contraceptives. Through comprehensive programs, individuals can develop greater self-awareness, boost self-esteem, confront gender and sexual discrimination, and navigate unwanted sexual encounters more effectively.[6,4]

This study aimed to explore the impacts of three common sex education approaches—love and intimacy-based, biology-based, and abstinence-based—on individuals' perceptions of sex, virginity, love, intimacy, and sexual well-being. Rather than pitting these approaches against each other, the intention was to highlight the strengths and critical elements of **each.** Relationship-focused sex education, often centered around emotional literacy and relational dynamics, has been shown to foster inclusivity and healthy emotional connections.[13] In contrast, biology-based programs focus on the physical and reproductive aspects of sex, which can improve informed decision-making about sexual health.[2] Meanwhile, abstinence-based programs emphasize personal responsibility and often discourage premarital sexual activity, though research suggests they may fail to address emotional or relational complexities.[6,15] By evaluating the strengths and limitations of each approach, this research aims to provide insights into how these different strategies influence sexual attitudes and behaviors and contribute to the development of a more integrated model for sex education.

The Current Study

This research introduces a paradigm for examining three distinct approaches to sex education: love and intimacy-based, biology-based, and abstinence-based. These approaches represent common methods of sex education used in various curricula, each with a unique focus on different dimensions of sexual well-being. Relationship-focused sex education, often centered around emotional literacy and relational dynamics, has been shown to foster inclusivity and healthy emotional connections.[14,15] In contrast, biology-based programs emphasize the physical and reproductive aspects of sex, improving informed decision-making regarding sexual health.[2] Meanwhile, abstinence-based programs highlight personal responsibility and discourage premarital sexual activity, though they often fail to address emotional or relational complexities.[6,16] However, there remains a gap in the literature regarding how these approaches influence sexual well-being, perceptions of sex, and attitudes toward intimacy.[17] By examining the impacts of these approaches, this study aims to provide insights into developing a more integrated model for sex education that incorporates emotional, relational, and biological components.

This study investigated the respective impacts of these approaches on individuals' sexual well-being, attitudes toward sex, and relationship experiences. Additionally, we examined participants' preferences for specific types of sex education, referred to as *chosen sex education perspectives*, and how gender differences played a role in shaping outcomes. These individual preferences, often shaped by family values, cultural beliefs, or peer influences, and gender-specific views were critical in understanding how participants engaged with and benefited from the educational approaches. The study explored how these factors influenced participants' sexual well-being, including their confidence, comfort with intimacy, and overall relationship satisfaction.

To test these hypotheses, the study employed several statistical analyses. First, we compared the effects of the three different sex education approaches (love and intimacy-based, biology-based, and abstinence-based) on sexual well-being, perceptions of virginity (e.g., gift, stigma, and process), and beliefs about love and intimacy. Educational manipulations were designed to shift participants' perspectives on these topics, which were expected to impact the dependent variables. In addition to examining the direct effects of these manipulations, we analyzed participants' chosen sex education perspectives to determine how personal preferences interacted with the educational approaches. The study also considered how gender differences influenced the outcomes.

A one-way ANOVA was used to evaluate differences between conditions, exploring how each educational approach shaped sexual well-being, attitudes toward virginity, and perceptions of love and intimacy. Further ANOVA tests were conducted to assess differences based on participants' chosen sex education perspectives and gender, particularly focusing on how these factors influenced their engagement with the sex education mediums. Additionally, multiple regression analyses were performed to assess the interactions between gender, chosen sex education perspectives, and the assigned educational condition on participants' perceptions of sexual well-being and virginity.

The study compared the effects of different sex education approaches on sexual well-being and individuals' perceptions of sex and virginity. The educational manipulations (love and intimacy-based, biology-based, and abstinence-based) were designed to influence participants' perspectives on sex education, which were expected to impact the dependent variables—sexual well-being, perceptions of virginity, and attitudes toward sex. The goal was to compare how each educational approach shaped these outcomes. By examining the effects of the manipulations on the dependent variables, the study aimed to provide a more comprehensive understanding of how different sex education strategies impact key dimensions of sexual health.

The primary hypothesis predicted notable differences between the educational conditions (i.e., the manipulated types of sex education approaches: love and intimacy-based, biology-based, and abstinence-based). Love and intimacy-based education was anticipated to yield higher levels of sexual well-being due to its emphasis on inclusivity and acceptance.[13] Biology-based education was expected to enhance perceptions of sex-related knowledge, while abstinence-based education was predicted to foster positive perceptions of virginity.[18] A secondary hypothesis predicted that participants' chosen sex education perspectives and gender differences would significantly influence the outcomes, potentially shaping their engagement with and perceptions of the educational approaches.

METHODS AND PROCEDURES

Participants

Participants were recruited via Texas A&M University's online research subject pool (SONA). Eligibility criteria required participants to be at least 18 years of age. Informed consent was obtained from all participants prior to their involvement in the study. The final sample comprised 108 men, 64 women, four non-binary individuals, and one participant who self-identified as other.

Demographics

A basic demographics questionnaire was administered to gather detailed information on participants' religious affiliation, sexual experiences, gender, sexual orientation, and political affiliation. Participants had the option to skip any question or select "Don't know" when applicable. Religious affiliation was identified from a predefined list, and religiosity was assessed using a 5-point Likert scale. Sexual experience was measured on a 10-point Likert scale, with participants also indicating their virginity status and reporting the age and context of their virginity loss.[17] Political affiliation was assessed through two 10-point Likert scales: one ranging from "Conservative" to "Liberal," and the other from "Republican" to "Democrat."

Design

Participants were randomly assigned to one of four conditions: love and intimacy-based, biology-based, abstinence-based, or control. Those assigned to the educational conditions watched a nine-minute sex education video tailored to their specific

perspective. In contrast, participants in the control group did not receive any educational material. Following the video (or, for the control group, no video), all participants completed post-intervention questionnaires.

Love and Intimacy Based Sex Education Condition: Script and Language Style
This condition was designed to promote confidence in one's body and sexual experiences by emphasizing the importance of communication and intimacy for fulfilling relationships, both platonic and romantic. The aim was to foster a sex-positive mindset by normalizing sexual experiences and encouraging openness with oneself and one's partner.[13]

> *Script Excerpt.*
> "It might be best to see sex, sexual acts, and physical intimacy in general as part of the very human, important, and *precious* process of *communicating and experiencing* love, respect, understanding, and appreciation."

Biology-Based Sex Education Condition: Script and Language Style
This condition provided a comprehensive overview of the reproductive system, utilizing precise medical terminology. It explained processes such as intercourse and masturbation while emphasizing the importance of understanding both male and female bodies.[2]

> *Script Excerpt.*
> "Hormones are the chemical messengers that travel throughout your whole body through your bloodstream. It is absolutely essential to keep this in mind: your hormones influence your body *holistically*."

Abstinence-Based Sex Education Condition: Script and Language Style
This condition maintained a neutral tone, focusing on the biological functions of sex, particularly in reproduction. It emphasized the sacredness of sex and encouraged abstinence, regardless of virginity status. The script discussed the emotional impacts of early sexual activity and highlighted the benefits of abstaining from sex.[16]

> *Script Excerpt.*
> "Building a family between two loving and prepared adults can be one of life's greatest joys. However, becoming pregnant before you are ready is an outcome that can best be avoided by abstinence."

Control Condition
Participants in the control condition did not receive any scripted sex education material and proceeded directly to the surveys without viewing a video.

Measures and Materials
Sex Education Conditions
Participants in the experimental conditions viewed a nine-minute video tailored to their assigned perspective—love and intimacy-based, biology-based, or abstinence-based. Each video addressed key topics, including safe sex practices and the importance of consent. The videos were developed following an extensive literature review and underwent expert review to ensure they were aligned with the intended educational objectives.[14]

Perceptions of Virginity
The *Perceptions of Virginity Scale* is a five-point Likert scale that assesses participants' beliefs about virginity, with subscales categorizing perceptions into "Gift," "Stigma," and "Process."[18] The scale was adapted to reflect participants' self-identified virginity status. Virgins completed the *Perceptions of Virginity Scale (Virgin)*, while non-virgins completed the *Perceptions of Virginity Scale (Non-Virgin)*.

Sexual Well-being
The *Sexual Well-Being Scale* measures participants' satisfaction with their sex life using a 10-point Likert scale.[13]

Perceptions of Love and Sex
The *Love and Intimacy Scale* is a five-point Likert scale that measures the importance of love and intimacy in relationships. Key subscales include "Love is Most Important" and "Sex Demonstrates Love."[19]

Sex Ed Perspective & Average Sex Ed Satisfaction
Participants identified their preferred or "chosen" sex education perspective and indicated the type of sex education they had previously received. They also rated their satisfaction with their sex education on a 10-point Likert scale.

Procedure

After completing the demographics questionnaire, participants were randomly assigned to one of four conditions: love and intimacy-based sex education, biology-based sex education, abstinence-based sex education, or the control condition. Participants in the experimental groups watched a nine-minute video tailored to their assigned perspective, with an eight-minute timer lock in place to ensure engagement before they could proceed. The videos were presented as PowerPoint slides with a scripted voice-over narration.

Following the video (or lack of video for the control group), participants completed one of two versions of the post-intervention questionnaires, determined by their response to the question, "Are you currently a virgin?" Control group participants completed the same post-intervention questionnaires as those in the experimental groups, despite not receiving any educational material.

After completing the questionnaires, participants responded to three additional questions regarding their beliefs, the sex education they received, and their satisfaction with that education. Finally, participants were given the option to view the other sex education videos or opt out before receiving debriefing information.

Data Analysis

Data were analyzed using one-way ANOVAs and multiple regression analyses to assess the effects of the different sex education conditions (love and intimacy-based, biology-based, abstinence-based, and control) on participants' perceptions of virginity (*Gift*, *Stigma*, and *Process* subscales), sexual well-being, and beliefs about love and intimacy (*e.g.*, *Love Is Most Important*, *Sex Demonstrates Love*). One-way ANOVAs were used to compare group differences across these outcome measures.

In addition to ANOVAs, multiple regression analyses were conducted to examine how gender and participants' chosen sex education perspective (love and intimacy-based, biology-based, abstinence-based) predicted perceptions of virginity, sexual well-being, and beliefs about love and intimacy. Demographic factors, such as gender and chosen sex education perspective, were entered in step 1 of the regression analysis, while the assigned sex education conditions were added in step 2. This hierarchical method allowed for a comparison of condition effects while controlling for key demographic factors. The significance level was set at $p < 0.05$ for all analyses.

RESULTS

Demographic Characteristics

The demographic characteristics of the participants are summarized in **Table 1.** The majority of participants were men (61%), with women making up 36%, non-binary individuals comprising 2%, and 1% identifying as another gender. Sexual orientation was predominantly heterosexual (82%), followed by asexual (4%), bisexual (6%), gay (2%), lesbian (1%), pansexual (2%), queer (2%), and other (1%).

Religiosity levels among participants varied, with 16% identifying as not religious and 20% reporting that they were very religious. The majority described themselves as slightly religious (27%) or moderately religious (36%). Regarding religious engagement, 28% of participants indicated strong adherence to religious practices, 39% reported moderate adherence, 15% had no religious engagement, and 19% reported minimal engagement.

Political affiliation was measured on a 10-point Likert scale, ranging from conservative to liberal. The majority of participants identified as moderate (56%), with 28% identifying as conservative and 16% as liberal.

Category	Subcategory	Percentage
Gender	Men	61%
	Women	36%
	Non-binary	2%
	Other	1%
Sexual Orientation	Heterosexual/Straight	82%
	Asexual	4%
	Bisexual	6%
	Gay	2%
	Lesbian	1%
	Pansexual	2%
	Queer	2%
	Other	1%
	Other	1%
Religiosity	Not religious	16%
	Slightly religious	27%
	Moderately religious	36%
	Very religious	20%
Religious Engagement	Yes, strongly	28%
	Yes, somewhat	39%
	No	15%
	Not really	19%
Political Affiliation	1 (Conservative)	-
	2	12%
	3	9%
	4	7%
	5 (Moderate)	56%
	6 (Liberal)	8%
	7	10%
	8	6%
	9	6%
	10	-

Table 1. Demographic Distribution.

Sexual Experience and Virginity Status

Sexual experience and virginity status of participants are summarized in **Table 2.** Sexual experience ratings showed significant variability, with 18% of participants reporting low levels of experience, 18% reporting moderate levels, and 18% reporting high levels of experience.

In terms of virginity status, the majority of participants (55%) were not virgins by any definition, while 35% identified as virgins by all definitions. Among sexually active participants, 75% reported a positive and consensual experience, 17% reported a negative but consensual experience, and 1% reported a negative, non-consensual experience. Most participants reported losing their virginity between the ages of 17-20 (52%) or between the ages of 16-11 (43%).

Category	Subcategory	Percentage
Sexual Experience	1 (Not at all Experienced)	18%
	2	10%
	3	3%
	4	5%
	5	18%
	6	11%
	7	11%
	8	18%
	9	4%
	10 (Very Experienced)	3%
Virginity Status	No, by all definitions	55%
	Yes, by all definitions	35%
	Yes, by my definition	4%
	No, by my definition	6%
Virginity Loss Experience	Positive, consensual	75%
	Negative, consensual	17%
	Negative, non-consensual	1%
Age of Virginity Loss	20-17 years old	52%
	16-11 years old	43%
	Other	-

Table 2. Sexual Experience and Virginity Status.

Sex Education Medium and Satisfaction

Participants were asked to indicate which of five potential sex education mediums they had encountered and rated their satisfaction with each on a 10-point scale, with 10 representing the highest satisfaction. The satisfaction ratings for each medium were averaged, as shown in **Table 3.** The overall mean satisfaction score across all mediums was 6.42.

Sex-Education Medium	Frequency	Average Satisfaction (1-10)
Peer Education/Word of Mouth	142	6.18
Self-directed (Books, Podcasts, Internet)	115	6.43
One General Health Course in High School	94	6.65
Sexual Education via Parents	74	6.73
A Few Sexual Education Courses in High School	48	6.94

Table 3. Sex Education Medium and Satisfaction Levels.

Analysis of Variance (ANOVAs)

Gender Differences

A one-way ANOVA was conducted to evaluate the impact of gender on key outcome measures, comparing male and female participants. Due to the limited representation of non-binary individuals and others, their data were excluded from this analysis to ensure statistical validity. Significant gender differences were observed for five outcome variables, as shown in Table 5. Descriptive statistics and ANOVA results are summarized in **Tables 4** and **4.1.**

	Sum of Squares	*df*	Mean Square	*F*	*p*	η^2
POVGiftAverage	1.13	1	1.13	1.06	0.30	0.006
POVStigmaAverage*	5.86	1	5.86	7.15	0.09	0.040
POVProcessAverage*	3.78	1	3.78	3.99	0.05	0.023
POVtotalAvg	0.48	1	0.48	1.22	0.27	0.007
SexWellBeingSum	37.35	1	37.35	0.37	0.54	0.002
PSL.LoveIsMostImpAverage*	2.43	1	2.43	5.20	0.02	0.030
PSLSexDemoLoveAverage*	17.99	1	17.99	21.58	<0.001	0.113
PSL.LoveComesB4SexAverage*	7.47	1	7.47	7.96	0.01	0.045
PSLSexIsDecliningAverage	2.06	1	2.06	2.37	0.13	0.014
PSLtotalAvg	0.05	1	0.05	0.38	0.54	0.002

Table 4. One-Way ANOVA results. Testing differences in outcomes between genders (Male/Female).
Note. The difference is significant at the 0.05 level. The following data was coded with Women = 1 and Men = 2.

	Mean	SD
POVGiftAverage	3.43	1.03
POVStigmaAverage*	1.82	0.92
POVProcessAverage*	3.15	0.98
POVtotalAvg	2.82	0.63
SexWellBeingSum	28.49	9.98
PSL.LoveIsMostImpAverage*	4.09	0.69
PSLSexDemoLoveAverage*	2.64	0.97
PSL.LoveComesB4SexAverage*	3.85	0.99
PSLSexIsDecliningAverage	2.37	0.94
PSLtotalAvg	3.34	0.35

Table 4.1. Descriptive statistics for gender differences in outcome measures.
Note. The difference is significant at the 0.05 level

Significant gender effects were observed across several outcome measures. On the *Stigma* subscale of the *Perceptions of Virginity Scale*, women ($M = 2.06$, $SD = 0.97$) reported significantly higher levels of stigma compared to men ($M = 1.68$, $SD = 0.86$) [F (1, 170) = 7.15, $p = .008$, $\eta^2 = 0.015$]. A similar gender effect was found on the *Process* subscale, where women ($M = 3.34$, $SD = 0.91$) reported higher levels than men ($M = 3.04$, $SD = 1.01$) [F (1, 170) = 3.99, $p = .05$, $\eta^2 = 0.021$].

Further, significant gender effects were found on the *Love Is Most Important* subscale of the *Perceptions of Love and Sex Scale*, with men ($M = 4.18$, $SD = 0.65$) placing more importance on love compared to women ($M = 3.93$, $SD = 0.74$) [F(1, 170) = 5.20, $p = .024$, $\eta^2 = 0.007$]. Women ($M = 3.06$, $SD = 0.87$) reported significantly higher levels of *Sex Demonstrates Love* compared to men ($M = 2.39$, $SD = 0.94$) [F (1, 170) = 21.58, $p < .001$, $\eta^2 = 0.008$]. Finally, men ($M = 4.01$, $SD = 0.95$) were more likely to believe *Love Comes Before Sex* compared to women ($M = 3.58$, $SD = 1.00$) [F (1, 170) = 7.96, $p = .005$, $\eta^2 = 0.042$].

Additionally, significant gender effects were observed on the *Love Is Most Important* subscale of the *Perceptions of Love and Sex Scale*, with men ($M = 4.18$, $SD = 0.65$) placing more importance on love than women ($M = 3.93$, $SD = 0.74$) [F(1, 170) = 5.20, $p = .024$, $\eta^2 = 0.007$]. Women ($M = 3.06$, $SD = 0.87$) reported significantly higher levels on the *Sex Demonstrates Love* subscale compared to men ($M = 2.39$, $SD = 0.94$) [F (1, 170) = 21.58, $p < .001$, $\eta^2 = 0.008$]. Finally, men ($M = 4.01$, $SD = 0.95$) were more likely to believe that *Love Comes Before Sex* than women ($M = 3.58$, $SD = 1.00$) [F(1, 170) = 7.96, $p = .005$, $\eta^2 = 0.042$].

Condition Differences

A one-way ANOVA was conducted to evaluate the differences between the four conditions (love and intimacy-based, biology-based, abstinence-based, and control) on key outcome measures, including perceptions of virginity (Gift, Stigma, and Process subscales), sexual well-being, and beliefs about love and intimacy (*e.g.*, Love Is Most Important, Sex Demonstrates Love). The analysis revealed no significant effects of the sex education conditions on these outcomes, as summarized in **Table 5.** Descriptive statistics for each outcome are detailed in **Table 5.1.**

	Sum of Squares	*df*	Mean Square	*F*	*p*	η^2
POVGiftAverage	2.70	3	0.90	0.85	0.47	0.014
POVStigmaAverage	2.22	3	0.74	0.87	0.46	0.015
POVProcessAverage	3.59	3	1.20	1.24	0.30	0.021
POVtotalAvg	0.67	3	0.22	0.56	0.64	0.010
SexWellBeingSum	191.43	3	63.81	0.64	0.59	0.011
PSL.LoveIsMostImpAverage	0.62	3	0.21	0.42	0.74	0.007
PSLSexDemoLoveAverage	1.28	3	0.43	0.45	0.72	0.008
PSL.LoveComesB4SexAverage	7.27	3	2.42	2.52	0.06	0.042
PSLSexIsDecliningAverage	4.30	3	1.43	1.64	0.18	0.028
PSLtotalAvg	0.04	3	0.01	0.10	0.96	0.002

Table 5. One-Way ANOVA results. Testing differences in outcomes between conditions.

Note. The difference is significant at the 0.05 level. The data was coded as follows: Love and intimacy-based condition = 1, Biology-based condition = 2, Abstinence-based condition = 3, and Control condition = 4. *Abbreviations: POVGiftAverage:* Perceptions of Virginity – Gift subscale average; *POVStigmaAverage:* Perceptions of Virginity – Stigma subscale average; *POVProcessAverage:* Perceptions of Virginity – Process subscale average; *POVtotalAvg:* Total Perceptions of Virginity average; *SexWellBeingSum:* Total score for Sexual Well-Being; *PSLSexDemoLoveAverage:* Perceptions of Love and Sex – Sex Demonstrates Love subscale average; *PSL.LoveComesB4SexAverage:* Perceptions of Love and Sex – Love Comes Before Sex subscale average; *PSLSexIsDecliningAverage:* Perceptions of Love and Sex – Sex Is Declining subscale average; *PSLtotalAvg:* Total Perceptions of Love and Sex average.

	Mean	SD
POVGiftAverage	3.42	1.03
POVStigmaAverage	1.82	0.92
POVProcessAverage	3.16	0.98
POVtotalAvg	2.82	0.63
SexWellBeingSum	28.59	9.95
PSL.LoveIsMostImpAverage	4.09	0.70
PSLSexDemoLoveAverage	2.66	0.98
PSL.LoveComesB4SexAverage	3.84	0.99
PSLSexIsDecliningAverage	2.34	0.94
PSLtotalAvg	3.34	0.37

Table 5.1. Descriptive statistics for outcomes across conditions.
Note. The difference is significant at the 0.05 level

Chosen Sex Education Perspective

A one-way ANOVA was conducted to examine differences in participants' chosen sex education perspectives. Two significant effects were observed, shown in **Table 6**, with descriptive statistics in **Table 6.1.**

	Sum of Squares	*df*	Mean Square	*F*	*p*	η^2
POVGiftAverage*	10.02	2	5.01	4.93	0.01	0.05
POVStigmaAverage	0.85	2	0.43	0.50	0.61	0.01
POVProcessAverage	3.95	2	1.97	2.10	0.13	0.02
POVtotalAvg	0.91	2	0.45	1.16	0.32	0.01
SexWellBeingSum	117.03	2	58.51	0.59	0.57	0.07
PSL.LoveIsMostImpAverage	1.26	2	0.63	1.28	0.28	0.02
PSLSexDemoLoveAverage	1.96	2	0.98	1.03	0.36	0.01
PSL.LoveComesB4SexAverage*	12.64	2	6.32	6.82	0.001	0.07
PSLSexIsDecliningAverage	1.65	2	0.82	0.93	0.40	0.01
PSLtotalAvg	0.57	2	0.28	2.11	0.12	0.02

Table 6. One-Way ANOVA results. Testing differences in outcomes between chosen sex education perspectives.
Note. The difference is significant at the 0.05 level. The following data was coded with the Love and intimacy-based condition = 1, Biology-based condition = 2, and Abstinence-based condition = 3

	Mean	SD
POVGiftAverage*	3.42	1.03
POVStigmaAverage	1.82	0.92
POVProcessAverage	3.16	0.98
POVtotalAvg	2.82	0.63
SexWellBeingSum	28.59	9.95
PSL.LoveIsMostImpAverage	4.09	0.70
PSLSexDemoLoveAverage	2.66	0.98
PSL.LoveComesB4SexAverage*	3.8	0.99
PSLSexIsDecliningAverage	2.34	0.94
PSLtotalAvg	3.34	0.37

Table 6.1. Descriptive statistics for chosen sex education perspectives in outcome measures.
Note. The difference is significant at the 0.05 level

A significant effect of the chosen sex education perspective was observed on the *Gift* subscale of the *Perceptions of Virginity Scale* [$F(2, 174) = 4.93$, $p = .008$, $\eta^2 = 0.006$]. Post hoc comparisons using the Tukey HSD test revealed a significant difference between the abstinence group ($M = 3.84$, $SD = 1.08$) and the biology group ($M = 2.97$, $SD = 1.09$), but no significant difference between the love and intimacy groups ($M = 3.40$, $SD = 0.97$) and the abstinence or biology groups.

Similarly, a significant effect was found on the *Love Comes Before Sex* subscale [$F(2, 174) = 6.82$, $p = .001$, $\eta^2 = 0.045$]. Post hoc analysis revealed a significant difference between the biology group ($M = 3.36$, $SD = 1.05$) and the abstinence group ($M = 4.32$, $SD = 0.82$), but no significant difference between the love and intimacy groups ($M = 3.81$, $SD = 0.98$) and the biology or abstinence groups.

Multiple Regression Analysis
Multiple regression analyses were performed to examine the influence of gender and chosen sex education perspectives (love and intimacy-based, biology-based, abstinence-based) on participants' perceptions of virginity, sexual well-being, and beliefs about love and intimacy. Significant demographic variables (gender and chosen sex education perspective), as identified in the ANOVAs, were entered in step 1 of each regression analysis, while the assigned sex education conditions were added in step 2. A summary of the regression analysis results is provided in **Table 7.**

	Predictors	R	R^2	Adjusted R^2	*F*	*p*
POVStigmaAverage	Gender	0.20	0.04	0.04	7.15	0.01
POVProcessAverage	ChosenAbstinence, Gender, ConLove	0.27	0.07	0.06	4.35	0.01
PSL.LoveIsMostImpAverage	Gender	0.17	0.03	0.02	5.20	0.02
PSLSexDemoLoveAverage	Gender	0.34	0.11	0.11	21.58	<.001
PSL.LoveComesB4SexAverage	ChosenAbstinence, Gender, ConControl, Bio	0.43	0.18	0.16	9.22	<.001

Table 7. Multiple Regression Analysis Summary.
Note. The difference is significant at the 0.05 level. Abbreviations: *POVStigmaAverage*: Perceptions of Virginity – Stigma subscale average; *POVProcessAverage*: Perceptions of Virginity – Process subscale average; *PSL.LoveIsMostImpAverage*: Perceptions of Love and Sex – Love Is Most Important subscale average; *PSLSexDemoLoveAverage*: Perceptions of Love and Sex – Sex Demonstrates Love subscale average; *PSL.LoveComesB4SexAverage2*: Perceptions of Love and Sex – Love Comes Before Sex subscale average.

The regression analyses indicated that gender was a significant predictor for *POVStigmaAverage*, accounting for 4% of the variance, with women reporting higher levels of stigma than men ($\beta = -.201$, $p = .008$). For *POVProcessAverage*, chosen abstinence perspective, gender, and the love-based condition together accounted for 7.2% of the variance, with participants in the chosen abstinence group and women reporting higher levels of process perception ($\beta = -.172$, $p = .022$; $\beta = -.162$, $p = .032$).

In the case of *PSL.LoveIsMostImpAverage*, gender was a significant predictor, accounting for 3% of the variance, with men placing more importance on love than women ($\beta = .172$, $p = .024$). For *PSLSexDemoLoveAverage*, gender was again a significant predictor, accounting for 11.3% of the variance, with women reporting higher levels of *Sex Demonstrates Love* than men ($\beta = -.336$, $p < .001$). Finally, for *PSL.LoveComesB4SexAverage*, chosen abstinence perspective, gender, control, and biology conditions together accounted for 18.1% of the variance, with participants in the chosen abstinence group and men reporting higher levels of *Love Comes Before Sex* ($\beta = .253$, $p < .001$; $\beta = .198$, $p = .006$).

These findings underscore that both gender and preexisting perspectives significantly shape participants' views on virginity and sexual well-being. The data highlight the importance of considering these factors when designing sex education programs.

DISCUSSION

Contrary to our hypotheses, the one-way analysis of variance (ANOVA) revealed no significant differences between the four assigned sex education conditions. We initially hypothesized that the love and intimacy-based condition would enhance sexual well-being, the biology-based condition would improve sex-related knowledge, and the abstinence-based condition would reinforce positive perceptions of virginity. However, these hypotheses were not supported by the findings. The results do not indicate significant differences between the experimental conditions. However, further analysis suggests that participants' preexisting perspectives may have influenced their responses, which potentially overshadowed the effects of the experimental conditions.[11,16] The brief nine-minute sex education videos may have been insufficient to alter participants' deeply ingrained beliefs. This implies that more comprehensive and sustained programs are necessary to create meaningful changes in attitudes toward sex and virginity.[2,16]

Gender Considerations and Study Limitations

Gender analyses were conducted exclusively on data from participants who identified as female or male, excluding non-binary or other gender identities. The predominance of heterosexual males in the sample may have introduced response biases. Significant gender differences were observed for five outcome measures: *Stigma* and *Process* from the *Perceptions of Virginity Scale*, and *Love Is Most Important*, *Sex Demonstrates Love*, and *Love Comes Before Sex* from the *Perceptions of Love & Sex Scale*. These results suggest that women experience greater stigma around virginity and view sex as a milestone, while men place greater importance on love before sex.[20]

Given the heteronormative nature of the sample, future research should explicitly recruit non-binary and LGBTQ participants to ensure inclusivity. Studies should also explore potential discomfort participants may experience when engaging with sexual content, as well as investigating diverse perspectives on sex and sexuality. Previous research has documented similar challenges in navigating sensitive topics like sex education.[21] Although this study makes a modest contribution, it moves the discourse forward on sex-related topics and highlights the need for more inclusive sex education research.

The significant effects observed in participants' chosen sex education perspectives underscore the impact of preexisting views. For example, significant results were found on the *Gift* subscale from the *Perceptions of Virginity Scale* and the *Love Comes Before Sex* subscale from the *Perceptions of Love & Sex Scale*. These findings suggest that participants with an abstinence-focused perspective view virginity as a cherished gift and prioritize love before sex.[17,18] This reinforces the idea that preexisting beliefs and attitudes are highly influential and can overshadow the effects of brief educational interventions. Effective sex education programs should engage with these preexisting beliefs, presenting information that encourages critical reflection, while acknowledging that certain beliefs may remain strong. One possible interpretation of this finding is that the reinforcement of preexisting perspectives—such as those around abstinence—could explain the limited influence of the educational interventions.[6] Other factors, such as cultural or familial values, might also contribute to this outcome.[17] While many individuals may have already been exposed to some form of sex education, the quality and scope of that education can vary significantly. Without access to a more comprehensive and balanced curriculum, individuals might continue to rely on incomplete or biased information from peers or media, reinforcing their existing beliefs.[13] Comprehensive sex education is essential in helping individuals develop a well-rounded understanding of sexual health and challenge any misconceptions they may hold.[22]

The study's report on participants' satisfaction with prior sex education provides additional context. Participants expressed the highest satisfaction when they received at least some of their sex education through structured high school courses, although this was the least common source. Similarly, receiving sex education from parents, while also less common, resulted in the second-highest satisfaction levels. Conversely, participants who received sex education from peers or word of mouth reported the lowest satisfaction levels. Despite these differences, satisfaction scores across all sources fell within a relatively narrow range, and the overall average score of 6.5/10 indicates there is significant room for improvement across all sex education mediums.[3]

Implications for Sex Education Programs

These findings highlight an important insight: informal sources of sex education, while easily accessible, often lack the comprehensive, reliable information provided by formal education.[10] This disparity emphasizes the need for structured, well-rounded sex education programs designed to equip individuals with accurate and diverse perspectives on sexuality. Effective sex education should go beyond the dissemination of information—it should provide sustained, step-by-step education on practical skills like condom use and contraception, similar to how academic subjects are taught over several lessons.[4] Just as students are taught how to solve math problems through repetition and practice, sexual health education should engage participants in active learning over time to ensure they understand not just the facts but also how to apply them in real-life contexts.[5] This supports the

argument for integrating comprehensive sex education into school curricula to ensure individuals receive the tools and knowledge necessary to navigate their sexual lives confidently.

Integrating Different Educational Approaches

The study's findings represent a preliminary step in the development of sex education programs by integrating insights from each approach. Love and intimacy-based education amplifies the beauty of sex and its inevitability, but it might leave individuals vulnerable to emotional challenges if trust is not emphasized. The biological approach provides valuable information on the mechanics of sex and reproductive processes but can overlook emotional and psychological aspects crucial to healthy sexual relationships.[2] Abstinence-based education highlights the sacredness of sex and the consequences of premature sexual activity but risks stigmatizing a natural human behavior.[6] Each approach has its strengths, but they are most effective when integrated into a comprehensive program that addresses the multifaceted nature of human sexuality.

Implications for Gender and Preexisting Perspectives

The regression analyses further illustrate the influence of gender and preexisting sex education perspectives on participants' perceptions of virginity, sexual well-being, and attitudes toward love and intimacy. Notably, gender differences were evident in key outcomes, such as *Stigma* and *Process* from the *Perceptions of Virginity Scale* and *Love Is Most Important* from the *Perceptions of Love & Sex Scale*. These findings suggest that women may experience greater stigma surrounding virginity and view sex as a rite of passage, while men may place higher value on emotional intimacy, prioritizing love before sex.

Interestingly, men placing higher importance on love before sex contrasts with traditional gender norms, which often portray men as prioritizing the physical aspects of relationships over emotional connections. As research has shown, shifting cultural norms and educational influences may explain this change in attitudes among younger generations.[14] This suggests that cultural and educational factors emphasizing emotional intimacy may have influenced these attitudes. The complexity of evolving gender roles and their impact on sexual experiences highlights the need for sex education programs that address and integrate these nuanced perspectives to meet the diverse needs of individuals.

The limited impact of the assigned conditions in the study—particularly the nine-minute educational interventions—suggests that short-term efforts are insufficient to meaningfully influence deeply held beliefs about sex and relationships. This underscores the importance of long-term, comprehensive sex education programs that engage participants over time and provide opportunities for reflection and growth. While brief educational efforts may be useful as part of a broader curriculum, they cannot replace the depth and consistency required to shift ingrained perspectives.

Reluctance to Discuss Sex-Related Issues

Participants' reluctance to openly discuss sex-related issues can reinforce preconceived notions and hinder meaningful changes in their perspectives. This limitation should be considered when interpreting the results, as discomfort in addressing sensitive topics might have influenced participants' engagement with the material.[1] Real education on sexual health must grapple with these difficult, often taboo subjects, making them unavoidable in comprehensive programs.[23] While the study's online format allowed for greater anonymity, it cannot fully eliminate the cultural or personal barriers that lead to hesitation in expressing views about sensitive topics. Ethical considerations in sex education research must acknowledge this discomfort while aiming to create educational environments that promote openness and dialogue around complex and taboo subjects.[21] In practice, addressing sensitive issues in sex education may require extended time and trust-building to overcome reluctance and foster an atmosphere conducive to open discussion.

Challenges of Societal Shifts in Sex Education

Addressing societal reluctance to openly discuss sex-related topics represents a broader challenge that extends beyond individual participants. A societal shift toward more open discussions about sexuality is necessary to improve the effectiveness of sex education.[21] However, this raises ethical considerations, as educators and policymakers must navigate the fine line between respecting cultural values and pushing for progressive, inclusive dialogues about sexual well-being, relationships, and consent.[9] This balance can be difficult, as the sensitivity of these topics often creates resistance or discomfort. Breaking down societal taboos and encouraging comprehensive dialogue around these issues is essential, but must be handled with care to avoid alienating individuals or communities. Although this study contributes to the empirical literature on sex education, it also highlights the ongoing need for evidence-based approaches to overcome societal and ethical barriers, fostering environments where these complex topics can be addressed openly.

CONCLUSION

This study provides valuable insights into the complex interplay between gender, chosen sex education perspectives, and the effectiveness of brief educational interventions. The findings emphasize the importance of considering preexisting beliefs and

demographic factors in the design and implementation of sex education programs. Contrary to our hypotheses, the brief nine-minute educational interventions did not result in significant shifts in participants' perspectives. This highlights the need for longer-term, more comprehensive educational programs that offer individuals meaningful opportunities to engage with new information. Future research should focus on developing these more extensive interventions while also recruiting more diverse samples, including non-binary and LGBTQ participants, to ensure inclusivity.

Although the study's contribution is modest, it advances the conversation on sex education by addressing gaps in previous research, particularly by incorporating gender and diverse sex education perspectives. Rather than seeking to determine the "best" approach, this research advocates for an integrated model that combines elements from love and intimacy-based, biology-based, and abstinence-based programs. By exploring these approaches, the study encourages a more holistic view of sex education that includes emotional, psychological, and ethical dimensions—critical factors in fostering well-rounded sexual well-being. Encouraging open discourse on sexual health is essential for understanding the profound impact sex education can have on individuals' self-perception, sexual behaviors, and overall quality of life.

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PRESS SUMMARY

Sex education is crucial for fostering informed and healthy sexual behaviors. This study evaluated three distinct sex education approaches—love and intimacy-based, biology-based, and abstinence-based—against a control group. While no statistically significant differences emerged among the four conditions, significant effects related to participants' chosen sex perspectives and gender differences were observed. These findings provoke thought-provoking questions that align with the study's original aim of advancing sex-related conversations and improving sex education. By highlighting the influence of preexisting beliefs and the role of gender, the research underscores the importance of considering both perceptions and realities in developing comprehensive and inclusive sex education programs.