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RESEARCH ARTICLE

The Moderating Role of Cognitive Shema Activation on the Relationship Between Sexual Health Awareness and Adherence to Safe Sex Behaviours among Cisgender Generation Z Women in India

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Abstract

The purpose of this study was to examine how cognitive schemas influence the relationship between sexual health awareness and adherence to safe sex practices among cisgender generation Z women in India. Using a quantitative, cross-sectional design, 114 cisgender Indian women aged 18 to 29 who had prior sexual experience with cisgender men completed validated questionnaires assessing sexual health awareness, cognitive schema activation in sexual contexts, and safe sex behaviors. Data was analyzed using Spearman's rho correlations and moderation analyses with bootstrapping, with both overall schema scores and individual subscales tested as moderators. Results indicated that while greater awareness was associated with stronger adherence to safe sex practices, maladaptive schemas, particularly helplessness, weakened this relationship. These findings highlight the role of psychological factors in translating awareness into behavior. This research adds to existing literature by addressing a gap in the Indian context, where cultural taboos and limited access to formal sex education present unique challenges. This study highlights the need for sexual health interventions that not only provide accurate information but also target underlying cognitive patterns, ensuring that awareness translates into consistent and empowered safe sex behaviors.

Introduction

It is only natural to assume that the choices we make in our daily lives are informed by our knowledge of the subject at hand. However, there is often a tangible gap between what we know and what we choose to do. This may explain why individuals sometimes make choices that do not align with or reflect their understanding of the situation. This is especially apparent within a sexual context.

Although knowledge of sexual health has grown, many young women still do not consistently practice safe sex. In India, this gap is especially visible because access to formal sex education is limited, and cultural taboos often prevent open conversations.[1] This, in turn, leads to many women relying on peers or online sources that can be inaccurate.[2] Research also finds that simply having sexual health knowledge does not always lead to practicing safe behaviors. For instance, one study found that knowledge on its own had no significant

effect on whether adolescents engaged in safe sex,[3] pointing to the need to look at deeper psychological and social factors.

One such psychological factor is the role of cognitive schemas in sexual contexts. These sexual schemas refer to mental frameworks we use to make sense of our experiences. However, when they are negative or maladaptive, they can distort how risk and self-worth are perceived in sexual situations.[4] Schemas linked to helplessness or rejection, for example, have been associated with risky sexual behaviors and difficulty in asserting protective practices.[5,6] Similarly, some women choose unprotected sex to maintain intimacy or stability, even when they distrust their partners.[7] In such cases, schemas and relationship dynamics overpowered one's awareness of risk. Research further shows that women who feel they have less power in relationships are less able to negotiate condom use, indicating that such power imbalances also affect adherence to well-known safe sex behaviours.[8,9]

Most existing research on schemas has focused on sexual satisfaction or dysfunction, not on safe sex behaviors.[4,10] However, evidence suggests that when women carry maladaptive schemas into sexual situations, these can lower confidence, create fear of rejection, or reduce their ability to insist on protection.[5,6] Taken together with the studies showing that knowledge is necessary but not sufficient on its own,[3] this highlights a possible intervening factor: cognitive schemas activated in such sexual situations. Because awareness alone does not guarantee adherence to safe sex practice, the present study focuses on women with high sexual health awareness to explore whether maladaptive schemas interfere even when knowledge is not lacking.

Investigation of cognitive schemas is especially pertinent in the context of Generation Z women, who are growing up in a time of shifting social norms and greater digital exposure to sexual content. This constant flow of information, combined with cultural restrictions and traditional gender roles, makes their sexual context unique.[11] Research has found that the mean number of lifetime sexual partners is highest among Generation Z women, compared to Gen X and Millennial women.[12] Gen Z women also engage in more high-risk sexual behaviours as compared to their Millennial counterparts.[13]

This study has been conducted to determine whether cognitive schemas do indeed moderate the relationship between sexual health awareness and adherence to safe sex practices in cisgender Generation Z women in India. Examining the intersection of psychological and social influences provides a more holistic view of what drives safe sex behaviors within this population. The findings may be used to design interventions that do not stop at simply providing information, but also focus on reshaping schemas and empowering women to act on what they know.

Methodology

Design

This study employed a quantitative, cross-sectional design to examine the relationship between cognitive schema activation in sexual contexts, sexual health awareness, and adherence to safe sex behaviors among cisgender women in India.

Sample/Participants

A total of 145 cisgender women, aged 18 to 29 years, who had engaged in sexual activity with cisgender men were recruited using snowball sampling via online platforms, including social media and email.

Only 114 participants (Mage = 22.9, SDage = 2.42) with "high" scores (scores > 176) on the Sexual Health Awareness Scale (SHAS) were included in the main analyses, as the study aimed to examine whether cognitive schemas interfere with safe sex behaviour even when awareness is already high. Analyses of the full sample (N = 145) were retained for comparison and reported in supplementary materials.

Inclusion Criteria

Participants in this study were cisgender women between 18 and 29 years of age. They were either currently involved in, or had previously been involved in, sexual activity with cisgender men. Only individuals who could read and understand English well enough to complete the survey were included. Participants were also required to be Indian citizens or residents.

Exclusion Criteria

Married women were not included in the study. Individuals with diagnosed cognitive difficulties that could affect their ability to understand the survey were excluded. Women who were receiving treatment for psychiatric disorders that might affect cognitive functioning were also not eligible to take part.

Procedure

Participants were recruited through online platforms and provided informed consent prior to participation. Surveys were administered via Google Forms to ensure accessibility and confidentiality. All questionnaires were self-administered and responses were anonymous.

Ethical Considerations

Privacy and Confidentiality

Participant data were anonymized, securely stored, and identified using codes rather than personal identifiers.

Informed Consent

Participants received a detailed explanation of the study purpose, procedures, potential risks, and benefits. They were informed of their right to withdraw at any time without penalty.

Emotional Distress

Participants could skip questions or discontinue participation at any point, and referrals for psychological support were provided.

Cultural Sensitivity

Survey materials were designed to respect diverse cultural norms and attitudes toward sexual health.

Avoiding Coercion

Voluntary participation was emphasized to mitigate potential pressure, particularly for younger participants.

Measures/Tools

- Independent variable (IV) for moderation model: Sexual health awareness.
- Moderating variable: Cognitive schema activation in sexual contexts.
- Dependent variable (DV): Adherence to safe sex behaviours.

Instruments

Sexual Health Awareness Scale (SHAS)

Assesses knowledge of STIs, contraception, and sexual health-related decision-making. (Internal consistency is in the range of .805 to .824, and Cronbach's α for various samples are in the range of .795 to .812; Demonstrated good content validity).[14]

Questionnaire of Cognitive Schema Activation in Sexual Context (QCSASC)

Evaluates cognitive schemas activated during sexual encounters, including emotions such as worry, guilt, frustration, and perceived sexual challenges. (Demonstrated internal consistency (Cronbach's α = .94), test–retest reliability (r[34] = .66), convergent validity (high correlations with other measures of general schemas), and incremental validity).[15]

Safe Sex Behaviors Questionnaire (SSBQ)

Measures adherence to protective sexual behaviors, including condom use, discussions with partners, avoidance of direct contact with sexual fluids, and carrying protection when anticipating sexual activity. (Demonstrated internal consistency, Cronbach's α =.82; Content Validity Index derived from expert rating on each item was 98%) JAMOVI software was used for statistical analyses, including correlation and regression models.[16]

Data Analysis

Descriptive statistics were calculated for all variables. Normality was assessed using Shapiro-Wilk tests. SSBQ and SHAS scores were normally distributed, whereas QCSASC total and subscale scores violated normality assumptions. Consequently, Spearman's rho was used for correlations involving non-normal variables.

Moderation analyses were conducted within the general linear model (GLM) framework in JAMOVI to test whether cognitive schema activation moderated the association between sexual health awareness and safe sex behaviors. Variables were mean-centered to reduce multicollinearity, and bootstrapping techniques were applied to improve

confidence interval accuracy. Multiple moderation models were tested using both the total QCSASC score and individual schema subscales as moderators. Only four out of the five schemas- Helplessness, incompetence, difference/loneliness, and undesirability/rejection- demonstrated significant interactions and were retained for detailed reporting.

Results

Descriptive Statistics and Assumption Testing

Descriptive statistics for the high-SHA subsample (N = 114) are presented in Table 1. Safe sex behavior (SSB) and Sexual health awareness (SHA) scores were approximately normally distributed (Shapiro-Wilk: W = 0.981, p = .095; W = 0.982, *p* = .130, respectively). However, the total cognitive schema activation score (QCSASC) and all subscales violated normality assumptions (all *p* < .001). Bootstrapping techniques were applied in moderation analyses to address non-normality and improve the accuracy of confidence intervals.

Correlational Analyses

Bivariate correlations were conducted using Spearman's rho due to non-normality in cognitive schema variables (Table 2). SSBQ scores were positively correlated with SHAS scores (ρ = .288, *p* < .01). Correlations between SSBQ and total QCSASC or subscales were weak and mostly non-significant. Negative associations were observed between SHAS and total QCSASC (ρ = −.219, *p* < .05). Strong intercorrelations were present among QCSASC subscales (*p*> .80, ps < .001).

Moderation Analyses

To test hypothesis 2 whether cognitive schema activation in sexual contexts (CSASC) moderates the relationship between sexual health awareness (SHA) and adherence to safe sex behaviors (SSB)- a moderation analysis was conducted using the General linear model (GLM) framework in JAMOVI. Residuals for the model met the assumption of normality (Shapiro-Wilk, *p* > .05; Kolmogorov-Smirnov, *p* > .05), justifying the use of parametric procedures.

Total QCSASC as Moderator

The overall model was significant, F(3, 110) = 5.89, *p* = .001, η^2p = .138. SHAS significantly predicted SSBQ (β = 0.267, *p* = .004). The interaction between SHAS and QCSASC was significant (β = −0.201, *p* = .020), indicating that higher cognitive schema activation weakened the positive association between sexual health awareness and safe sex behaviors.

Table 1: *Descriptive statistics and normality tests*

Variable	*Mean*	*SD*	*Median*	*SE*	*(Shapiro–Wilk)*	
					W	*p*
SHAS	195.61	9.87	195.50	0.92	0.982	0.130
QCSASC Total	52.63	25.79	42.00	2.41	0.827	< .001
HL	11.52	5.07	10.00	0.47	0.884	< .001
IC	15.04	8.11	12.00	0.76	0.817	< .001
D/L	7.11	3.00	7.00	0.28	0.944	< .001
S-D	4.95	3.17	3.00	0.29	0.675	< .001
U/R	14.02	8.82	10.00	0.83	0.719	< .001
SSBQ	71.45	8.94	73.00	0.84	0.981	0.095

Note: SSBQ = Safe Sex Behavior Questionnaire; SHAS = Sexual Health Awareness Scale; QCSASC = Questionnaire of Cognitive Schema Activation in Sexual Context (Total Score); HL = Helplessness, IC = Incompetence, D/L = Difference/Loneliness; S-D = Self-Deprecation; U/R = Undesirability/Rejection.

Table 2: Spearman correlations among study variables

Variables	*SSBQ*	*SHAS*	*QCSASC Total*	*HL*	*IC*	*D/L*	*S-D*	*U/R*
SSBQ	—							
SHAS	.288**	—						
QCSASC Total	−.153	−.219*	—					
HL	−.117	−.260**	.923***	—				
IC	−.126	−.150	.912***	.823***	—			
D/L	−.110	−.133	.865***	.792***	.723***	—		
S-D	−.102	−.223*	.792***	.667***	.645***	.652***	—	
U/R	−.130	−.192*	.859***	.734***	.707***	.699***	.855***	—

Note: ***p < .001, **p < .01, *p < .05;
SSBQ = Safe Sex Behavior Questionnaire; SHAS = Sexual Health Awareness Scale; QCSASC = Questionnaire of Cognitive Schema Activation in Sexual Context (Total Score); Helpless = Helplessness, Incomp = Incompetence, Diff-Lon = Difference/Loneliness; Self-Dep = Self-Deprecation; Und/Rej = Undesirablity/Rejection.

Moderation Analyses with Specific Schemas as Moderator

To examine whether any of the specific cognitive schemas moderated the association between sexual health awareness and adherence to safe sex behaviors, a moderation analysis was conducted using centered variables. The analysis included 114 cisgender Indian women aged 18 to 29, who reported sexual experience with cisgender men. Women who scored an average or lower on the SHAS Scale were screened out. The residuals were normally distributed across all models (Shapiro–Wilk *p*s > .05), satisfying regression assumptions (Table 3).

The interaction between SHAS and the helplessness schema scores was statistically significant (*p* = .033), indicating that greater interference of the helplessness schema weakened the positive relationship between sexual health awareness and safe sex behavior (Table 4).

The interaction between SHAS and the incompetence schema scores was statistically significant (*p* = .020, indicating that greater interference of the incompetence schema weakened the positive relationship between sexual health awareness and safe sex behavior (Table 5).

The interaction between SHAS and difference/loneliness schema scores was statistically significant (*p* = .013), indicating that greater interference of the difference/loneliness schema weakened the positive relationship between sexual health awareness and safe sex behavior (Table 6).

The interaction between SHAS and undesirability/rejection schema scores was statistically significant (*p* = .034), indicating that greater interference of the undesirability/rejection schema weakened the positive relationship between sexual health awareness and safe sex behavior (Table 7).

No significant moderation effects were observed for the self-depreciating schema in this sample

Table 3: Moderation analysis predicting SSBQ (N = 145)

Predictor	*SE*	*β*	*t*	*p*	η^2p
(Intercept)	0.800	0.000	88.92	< .001	
SHAS	0.082	0.267	2.95	.004	.074
QCSASC Total	0.032	−0.120	−1.32	.190	.016
SHAS * QCSASC Total	0.003	−0.201	−2.36	.020	.048

Note: SHAS = Sexual Health Awareness Scale; QCSASC = Questionnaire of Cognitive Schema Activation in Sexual Context.

Table 4: Moderation model: Helplessness schema (N = 114)

Predictor	SE	β	*t*	*p*	η^2p
Intercept	0.81	—	87.59	<.001	
SHAS	0.08	0.27	2.98	.004	.075
HL	0.16	−0.09	−1.00	.322	.009
SHAS * HL	0.016	−0.19	−2.16	.033	.041

Note: SHAS = Sexual Health Awareness Scale; HL = Helplessness schema.

Table 5: Moderation model: Incompetence schema (N = 114)

Predictor	SE	β	*t*	*p*	η^2p
Intercept	0.79	—	89.67	<.001	
SHAS	0.08	0.28	3.18	.002	.084
IC	0.10	−0.10	−1.07	.288	.010
SHAS * IC	0.010	−0.20	−2.36	.020	.048

Note: SHAS = Sexual Health Awareness Scale; IC = Incompetence schema.

Table 6: Moderation model: Difference/loneliness schema (N = 114)

Predictor	*SE*	*β*	*t(110)*	*p*	η^2p
Intercept	0.79	—	89.83	<.001	
SHAS	0.08	0.28	3.11	.002	.081
D/L	0.27	−0.05	−0.55	.583	.003
SHAS * D/L	0.027	−0.23	−2.53	.013	.055

Note: SHAS = Sexual Health Awareness Scale; D/L = Difference/Loneliness Schema

Table 7: Moderation model: Undesirability/rejection schema (N = 114)

Predictor	*SE*	*β*	*t(110)*	*p*	η^2p
Intercept	0.800	—	88.610	<.001	
SHAS Score	0.080	0.260	2.850	.005	.069
U/R	0.090	−0.130	−1.440	.153	.019
SHAS Score * U/R	0.009	−0.190	−2.140	.034	.040

Note: SHAS = Sexual Health Awareness Scale; U/R = Undesirability/Rejection schema.

($p > .05$), and it was therefore excluded from detailed analysis.

Discussion

The present study examined whether maladaptive cognitive schemas activated in sexual contexts moderated the relationship between sexual health awareness (SHA) and adherence to safe sex behaviors (SSB) among cisgender Generation Z women in India. Overall, findings supported the proposed hypotheses: SHA was positively associated with SSB; Schema activation weakened this relationship, particularly among women with higher awareness

levels, suggesting that psychological barriers may exert the strongest influence when knowledge is already present. In the complete undifferentiated sample, the helplessness schema alone moderated the association, whereas multiple schemas (helplessness, incompetence, difference/loneliness, and undesirability/rejection) moderated the association in the high-SHA subsample only.

Sexual Health Awareness and Safe Sex Behavior

Consistent with prior research, higher SHA predicted greater adherence to SSB, supporting the role of knowledge in facilitating protective sexual behaviors.[3,17] However, the relationship was modest, reinforcing that awareness does not always translate into behaviour unless psychosocial and contextual factors are addressed.[1,18]

Cognitive Schema Activation as a Moderator

A key contribution of this study was demonstrating that cognitive schema activation moderated the relationship between SHA and SSB. Specifically, higher schema activation weakened the positive effect of awareness on behavior. This effect was most pronounced among participants with higher SHA, suggesting that women who are more knowledgeable may still struggle to enact SSB if maladaptive cognitive patterns such as self-doubt, fear of rejection, or perceived helplessness are activated. Cognitive-affective factors can undermine condom negotiation and assertive communication.[5,9] These findings add to this literature by showing that schemas specifically interfere with translating awareness into practice.

Specific Schemas as Moderators

Detailed analyses revealed differential effects of individual schemas. In the full sample, only helplessness moderated the SHA-SSB relationship, suggesting that perceived powerlessness is a primary barrier when awareness is moderate. In the high-SHA subsample, multiple schemas moderated the association alongside the helplessness schema, including incompetence, difference/loneliness, and undesirability/rejection. Incompetence reflects doubts about managing sexual situations effectively; difference/loneliness captures fears of social disconnection; and undesirability/rejection reflects sensitivity to partner evaluation. Each schema may hinder condom negotiation or safer sex discussions, even when women are aware of protective practices.[19] These results are consistent with schema theory, which posits that maladaptive cognitive patterns shape affective responses and decision-making in interpersonal contexts.[4] Notably, self-deprecation did not significantly moderate the SHA-SSB relationship, suggesting that while self-deprecating cognitions may influence sexual health broadly, they do not specifically weaken the effect of awareness on behavior.

Interpretation and Implications

The emergence of these effects primarily among high-awareness participants indicates that maladaptive schemas may exert their strongest influence when informational gaps are minimised. Maladaptive schemas, particularly helplessness and rejection-related beliefs, undermine the protective role of awareness by shaping women's perceptions of themselves and their ability to act in sexual encounters. These findings support an integrative model of sexual health behavior that incorporates both informational and cognitive-affective determinants. Practically, sexual health interventions should consider targeting maladaptive schemas through psychoeducation or skills training, particularly for highly aware populations.[5,6]

Conclusion

This study demonstrated that sexual health awareness (SHA) positively predicts adherence to safe sex behaviors (SSB) among cisgender Generation Z women, but maladaptive cognitive schemas can weaken this relationship. Specifically, helplessness was the primary moderating schema in the complete undifferentiated sample, while multiple schemas, including incompetence, difference/loneliness, and undesirability/rejection, moderated the relationship in participants with higher SHA. These findings suggest that awareness alone may not be

sufficient to ensure protective sexual behavior, and that cognitive-affective factors play a critical role in translating knowledge into practice.

Limitations of the study include reliance on self-report measures and potential sampling bias due to the recruitment being conducted online. As the primary analyses were restricted to unmarried, highly aware cisgender Indian women aged 18 to 29, the findings should be interpreted cautiously and may not generalise to women with lower awareness levels or to broader demographic and sociocultural groups. Strengths include the use of validated measures of cognitive schema activation and sexual health awareness, as well as rigorous moderation analyses employing bootstrapping to account for the non-normality.

Based on these findings, interventions should combine sexual health education with strategies targeting maladaptive schemas, such as cognitive restructuring or assertiveness training. Future research could examine the longitudinal effects of schema-focused interventions on safe sex practices and explore additional psychosocial moderators across diverse cultural and age groups.

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Appendix A

Supplementary Analyses

A Spearman's correlation analysis was conducted to explore the relationships among the study variables in the total undifferentiated population (N = 145). As shown in Table 8, safe sex behavior (SSB) was positively correlated with sexual health awareness (SHA; ρ = .39, p < .001) and negatively correlated with total negative sexual schema activation (CSASC 2; ρ = -.19, p < .05). Among the individual schema scores, significant negative associations were found between SSBQ scores and helplessness (ρ = -.18, p < .05), incompetence (ρ = -.17, p < .05), self-deprecation (ρ = -.19, p < .05), and undesirability/rejection (ρ = -.18, p < .05). Other schema subscales showed no significant relationship with SSBQ scores. Strong multicollinearity was observed among the QCSASC subscales (ρs > .80).

The overall model was statistically significant, $F(3, 141) = 9.37$, $p < .001$, explaining approximately 17% of the variance in safe sex behavior scores. The interaction between SHAS and the Helplessness schema was also significant, F(1, 141) = 4.02, p = .047, suggesting that the helplessness schema moderated the association between sexual health awareness and safe sex behaviors (Table 9).

Additional moderation models were tested with other QCSASC subscales (Incompetence, Difference–Loneliness, Self-Depreciating, Undesirability–Rejection) as moderators. None of these interaction terms reached statistical significance (*p*s > .05), and were therefore not included in detailed reporting.

Table 8: Spearman's correlation matrix (N = 145)

Measure	*SSBQ Score*	*SHAS Score*	*QCSASC 2*	*Helpless*	*Incomp*	*Diff/ Lon*	*Self- Dep*	*Und/ Rej*
SSBQ	—							
SHAS	.39***	—						
QCSASC Total	−.19*	−.30***	—					
HL	−.18*	−.38***	.91***	—				
IC	−.17*	−.24**	.92***	.82***	—			
D/L	−.06	−.10	.85***	.75***	.73***	—		
S-D	−.19*	−.29***	.83***	.69***	.69***	.66***	—	
U/R	−.18*	−.28***	.89***	.75***	.75***	.72***	.88***	—

Note: ***p < .001, **p < .01, *p < .05;
SSBQ = Safe Sex Behavior Questionnaire; SHAS = Sexual Health Awareness Scale; QCSASC = Questionnaire of Cognitive Schema Activation in Sexual Context (Total Score); HL = Helplessness, IC = Incompetence, D/L = Difference/Loneliness; S-D = Self-Deprecation; U/R = Undesirablity/Rejection.

Table 9: ANOVA Omnibus test for moderation model with helplessness schema (N = 145)

Predictor	SE	β	t	p	η^2p
(Intercept)	0.765	-0.058	90.948	<.001	
SHAS	0.048	0.419	4.716	<.001	0.136
HL	0.150	-0.044	-0.528	.598	0.002
SHAS * HL	0.008	-0.155	-2.004	.047	0.028

Note: SHAS = Sexual Health Awareness Scale; HL= Helplessness schema