

Research Paper

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

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ABSTRACT

In various studies, time perspective has been one of the variables that has been proved to impact life satisfaction and forgiveness. However, there is a prevalent research gap present when it comes to a link between the aforementioned three variables and gender identity. The major purpose of our study was to fill this research gap. The study tried to find how the time perspective of people belonging to the queer community and people belonging to the heterosexual community impacts their life satisfaction and forgiveness levels. This study was conducted on 223 individuals with representation from both the communities- heterosexual and queer community. Data was collected using a questionnaire consisting of three different scales: Zimbardo Time Perspective Inventory, The Forgiveness Scale (Rye et al., 2001) and Satisfaction with Life Scale. For statistical analysis, two-way MANOVA was used to determine the interaction effect of independent variables (Sexuality and Time Perspective) on dependent variables (Life Satisfaction and Forgiveness). The results indicate a strong interaction effect between the independent variables on the dependent variables. However, there was no significant difference in terms of sexuality and time perception which can be explained with the help of the same demographics and educational qualifications having an underlying moderation effect. Future studies can be focused on exploring this effect using sampling involving different demographics.

Keywords: *Time Perspective, Forgiveness, Life Satisfaction, Sexuality, Interaction effect*

Time perspective has been associated with numerous significant life outcomes, such as those pertaining to people's health, prosperity, happiness, personal and professional success, etcetera. It impacts a variety of key concepts related to cognition, attitudes and decision-making process (Andre et al., 2018). The most prevalent and commonly used scale is the Zimbardo Time Perspective scale (Zimbardo & Boyd, 1999). Zimbardo's research forms a reliable basis for the studies conducted revolving around time perspective. A positive correlation has been found between futuristic time perspective and subjective well-being in studies (Stolarski et al., 2018; Kooij et al., 2018).

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Received: August 11, 2024; Revision Received: October 13, 2024; Accepted: October 17, 2024

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

Considering the components of subjective well-being, life satisfaction has been one of the prevalent ones. Life satisfaction is one of the most critical factors for a person to find happiness in their life. Hence, it is prevalent in positive psychology. A review done by Pavot & Diener (2008) provides a very comprehensive view about life satisfaction and has been used frequently as a source. Just like life satisfaction, another phenomena highly associated with quality of life is forgiveness. McCollough, a well-founded researcher on the topic, considered forgiveness to be a motivational tool to promote reconciliation and inhibit negative feelings of revengeful aggression, hence, strengthening its link to life satisfaction (2000). The effect of time perspective on forgiveness, especially when it comes to age differences, has been found in the literature (Cheng & Kim, 2008; Allemand, 2018).

Hence, in the research literature, there have been studies conducted on the links between time perspective, life satisfaction and forgiveness. However, an essential demographic has not been included when it comes to studies related to time perspective and forgiveness: sexuality. Research focusing on life satisfaction and sexuality is present (Hwang & Shin, 2012; Christianson et al., 1995) but a research gap is prevailing when it comes to connecting these three variables together to sexuality, which is a complex topic shrouded with stigma, at least till the beginning of 21st century, especially in India. We intend to fill this research gap through this paper by focusing on how the life experiences and time perspectives of people belonging to the queer community affect their outlook on forgiveness and life satisfaction altogether. The study can provide new insights to the counseling and positive intervention models focused on different sexual orientations.

Objectives

- To assess the interaction effect of sexual orientation and time orientation on levels of life satisfaction in queer community.
- To assess the interaction effect of sexual orientation and time orientation on levels of forgiveness in queer community.
- To compare levels of life satisfaction and forgiveness of queer community and heterosexual community.

Hypotheses

- **H1** - Queer community with present oriented time perspective has a lower level of life satisfaction than heterosexual community.
- **H2** - Queer community with present oriented time perspective has a lower level of forgiveness than heterosexual community.

REVIEW OF LITERATURE

Time Perspective on Forgiveness and life satisfaction

An individual's orientation to past, present, and future psychological concepts or events is represented by their time perspective (TP). Time and its dimensions are seen as psychological constructs that the individual constructs and reconstructs rather than as objective stimuli that exist independently of the person (Block, 1990). The majority of these instruments, however, had poor scoring accuracy, examined just one or two temporal zones, and mainly neglected the past TP (Kazakina, 1999). Zimbardo (1992) created the Stanford Time Perspective Inventory (STPI), which included five main orientations: time press factor, hedonistic and fatalistic present orientations, past regret factor, and future accomplishment component. However, later factor analyses produced four, five, or seven factors, indicating

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

that this factor structure was relatively unstable (Lennings, 2000a, 2000b). The most recent revision of the STPI, the Zimbardo Time Perspective Inventory (ZTPI), addressed the flaws of the earlier scales (Zimbardo & Boyd, 1999). According to Zimbardo and Boyd (1999), the ZTPI assesses five distinct dimensions of time perspective.

The ZTPI has been frequently utilised in research on positive psychology to examine the connection between perspective on time and well-being. According to one study, people with a more future-focused temporal view typically have greater levels of well-being than people with a more present-focused, hedonistic perspective (Stolarski, Bitner, & Zimbardo, 2011). A 2011 study by Janssen, Nijenhuis, and Van der Wee found that those who were more future-focused and had a more positive outlook on the future are likely to have higher levels of life satisfaction. According to the study, those who view time in the future were more optimistic and hopeful, and this was linked to higher levels of life satisfaction. Wang, Kong, and Huang (2019) found that individuals who reported a more future-oriented time perspective were more likely to forgive those who had wronged them than individuals with a past-oriented or present-oriented time perspective. Taysi, Curun, and Boysan (2017) also found that a future-oriented time perspective was positively related to forgiveness, while a present-oriented time perspective was negatively related to forgiveness.

Sexuality on Life Satisfaction and Forgiveness

Studies on sexuality and life satisfaction was also related to subjective well being. A study by Wen & Zheng (2019) found gay and bisexual men in China experience poorer quality of life and less satisfaction with life compared to heterosexuals. A study by Gokilapriya & Annalakshmi (2021) on Indian trans women who were single had a higher level of life satisfaction than those who were in a relationship in the present study. A study by Pachankis & Bränström (2018) in 28 countries found that the structural stigma of nations and the accompanying need to conceal one's sexual orientation are major contributors to the wide disparities in life satisfaction among sexual minorities across nations. A study in the UK and Australia found a lower level of life satisfaction in homosexual compared to heterosexuals (Bartram, 2023). One study by Greene & Britton (2013) found self esteem can be predicted by self forgiveness in LGBTQ people. But the forgiveness aspect in comparison to heterosexual is not explored.

METHODOLOGY

Operational definition

- **Time perception:** This study considered time perception as “a tendency to focus on the past, the present, or the future, combined with a positive or negative evaluation of a particular dimension of time” (Zimbardo and Boyd, 1999).
- **Forgiveness:** This study considered forgiveness as “a prosocial motivation, which is expressed through the decreased desire to avoid the transgressing person and to harm or seek revenge toward that individual and increased desire to act positively toward the same person” (McCullough, 2008).
- **Life Satisfaction:** This study considered life satisfaction as “a person's cognitive and affective evaluations of his or her life” (Diener et al., 2002).
- **Sexuality:** This study considered sexuality as “the totality of experiences, systems, attributes, and behavior that characterize the sexual sensation, reproduction, and intimacy of Homo sapiens” (Gangestad, 2015)

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

Research Design

On the lines of Quantitative Research Methodology, this research followed a Survey research design.

Variables

The independent variables of this study are sexuality and time dimension.

The dependent variables of this study are forgiveness and life satisfaction.

Population

- **Universal Population**

The universal population consisted of college students.

- **Target Population**

The target population consisted of college students between the ages 18- 25.

Sample Size

The study was conducted on 223 college students in India between ages 18-25 with equal representation from queer community.

Sampling Methods

The sampling method was convenience sampling as they were chosen on the basis of easy availability and accessibility for the study.

Inclusion criteria

- The sample population was selected on the following criteria:
- University students from India currently pursuing Undergraduate or postgraduate education
- Between 18-25 years of age
- Individuals with a sexual stance

Exclusion criteria

- The sample population would be not selected on the following criteria:
- Individuals who do not hold any sexual stance
- Individuals diagnosed with mental disorder

Tools

The tools used for data collection include:

- 1) **Zimbardo Time Perspective Inventory**: This inventory aims to measure the individual differences based on their focus on time- orientation. It contains five dimensions of time perspective: negative past, positive past, present hedonistic, present fatalistic, and future (Zimbardo and Boyd, 1999). The 25- item ZTPI scale is a 7 point likert scale ranging from 1 (Very Uncharacteristic) to 5 (Very Characteristic). This shorter version has a higher frequency of items giving it stronger CFA results as well as internal consistency. ($\alpha = 0.516-0.798$, $\omega = 0.533-0.799$)
- 2) **The Forgiveness Scale**: This scale measures the willingness of an individual to forgive (Rye and et al, 2001). It is a 15- item likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The Cronbach coefficient Alpha method (0.92) gave the reliability coefficients for the Forgiveness Scale and a concurrent validity of

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

(0/84) was significantly correlated with the Heartland Forgiveness Scale (at p-value 0.0001).

- 3) **Satisfaction with Life Scale:** This scale measures the overall judgment of one's life satisfaction. It on a 5 - item likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The Satisfaction with Life Scale is said to have excellent test-retest reliability, with a correlation of 0.82 over a two-month period, and very strong internal consistency, with an alpha of 0.87.

Procedure

The subjects were chosen based on inclusion and exclusion criteria with the help of a convenience sampling method. They were asked to fill the questionnaires for self-esteem and ego identity process. The data was analyzed statistically to obtain the results.

Statistical Analysis

The data was analyzed using SPSS software. MANOVA (Multivariate Analysis of Variance) was used to determine the multiple levels of independent variables on its own as well as its interaction effect on dependent variables.

Ethical Considerations

The ethical considerations of debriefing and informed consent were followed in this study for the purpose of data collection. Confidentiality regarding the responses was maintained and not disclosed for any other purpose under any circumstances.

RESULTS AND DISCUSSION

The descriptive statistics for forgiveness, life satisfaction, sexuality, and time perception among college students is given in the table below (Table 1).

Table 1: Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Forgiveness	Heterosexual (1)	132	47.00	6.594	.574
	Queer (2)	84	47.31	7.710	.841
Life Satisfaction	Heterosexual (1)	132	21.05	7.261	.632
	Queer (2)	84	20.45	8.035	.877

Note. Sexuality differences among group statistics

The data was analyzed for normality using normality tests like Shapiro-wilk test and the results are shown in the table given below (Table 2).

**Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness
in Indian Students**

Table 2: Tests of Normality

	Sexuality	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig	Statistic	df	Sig
Forgiveness	1	.094	138	.005	.977	138	.020
	2	.366	4	-	.787	4	.081
	3	.109	40	.200	.978	40	.622
	4	.189	14	.188	.899	14	.110
	5	.172	27	.039	.936	27	.095
Life Satisfaction	1	.106	138	<.001	.955	138	<.001
	2	.250	4	-	.852	4	.233
	3	.123	40	.127	.944	40	.047
	4	.118	14	.200	.958	14	.692
	5	.134	27	.200	.964	27	.459

Note. Shapiro- Wilk Normality Test

The table indicates that forgiveness and life satisfaction are distributed normally with sexuality as the significance value is greater than .05, i.e., $p > .05$. However, time perception is not normally distributed across the parameters of dependent variables as indicated by Table 3.

Table 3: Hypothesis testing for time perception

Null hypothesis	Test	Significance	Decision
1. The distribution of FORGIVENESS is the same across categories of TIME.	Independent Samples	a	Unable to complete Mann- Whitney U Test
2. The distribution of FORGIVENESS is the same across categories of TIME.	Independent Samples	b	Unable to complete Kolmogorov-Smirnov test
3. The distribution of Life SATISFACTION is the same across categories of TIME.	Independent Samples	a	Unable to complete Mann- Whitney U Test
4. The distribution of Life SATISFACTION is the same across categories of TIME.	Independent Samples	b	Unable to complete Kolmogorov-Smirnov test

Note. There is no significant difference between the distribution of dependent variables in terms of time perception

The findings indicate that the distribution of the dependent variables i.e., Life satisfaction and forgiveness are not significantly different between the two groups. This finding suggests that the time perception has no significant effect on the dependent variable.

**Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness
in Indian Students**

Table 4: Levene's Test of Equality of Error Variance

		Levene Statistic	df1	df2	Significance
Forgiveness	Based on Mean	1.543	38	124	.04
	Based on Median	.836	38	124	.73
	Based on Median and with adjusted df	.836	38	68.343	.72
	Based on trimmed Mean	1.491	38	124	.05
Life satisfaction	Based on Mean	1.972	38	124	.003
	Based on Median	.945	38	124	.566
	Based on Median and with adjusted df	.945	38	75.355	.567
	Based on trimmed Mean	1.840	38	124	.007

Note. Equality of error variances among groups

Levene's test was done and the result indicated a significant difference between the dependent and the independent variables as p-value (0.04; 0.003) < 0.05 for forgiveness levels and life satisfaction respectively (Table 3).

Table 5: Box's test of Equality of Covariance Matrices

Box's M	122.259
F	1.089
df1	81
df2	2667.186
Significance	.277

Tests the null hypothesis than the observed covariance matrices of the dependent variables are equal across groups.

- a. Design: Intercept SEXUALITY+TIME+ SEXUALITY+TIME

Note. Test for covariance matrix homogeneity assumption

This test indicates if the covariance assumption is met or not. The p-value ie., 0.277 is greater than 0.05, indicating that there is no significant difference between the groups' covariance matrices. Hence, the covariance matrix homogeneity assumption has been met.

**Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness
in Indian Students**

Table 6: Multivariate tests

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.965	1675.236 ^b	2.000	123.000	<.001
	Wilk's Lambda	.035	1675.236 ^b	2.000	123.000	<.001
	Hotelling's trace	27.240	1675.236 ^b	2.000	123.000	<.001
	Roy's Largest Root	27.240	1675.236 ^b	2.000	123.000	<.001
Sexuality	Pillai's Trace	.058	.923	8.000	248.000	.498
	Wilk's Lambda	.943	.923 ^b	8.000	246.000	.498
	Hotelling's trace	.061	.923	8.000	244.000	.498
	Roy's Largest Root	.052	1.617 ^c	4.000	124.000	.174
Time	Pillai's Trace	.641	1.299	90.000	248.000	.060
	Wilk's Lambda	.458	1.307 ^b	90.000	248.000	.056
	Hotelling's trace	.971	1.316	90.000	248.000	.052
	Roy's Largest Root	.629	1.734 ^c	45.000	124.000	.009
Sexuality+Time	Pillai's Trace	.597	1.077	98.000	248.000	.322
	Wilk's Lambda	.492	1.068 ^b	98.000	246.000	.339
	Hotelling's trace	.851	1.060	98.000	244.000	.356
	Roy's Largest Root	.446	1.129 ^c	49.000	124.000	.292

a. Design: Intercept+SEXUALITY+TIME+SEXUALITY+TIME

b. Exact Statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level

Note. Analysis of multivariate effect of independent variables on the combined dependent variables

The p-values for the independent variables are greater than 0.05, indicating that the independent variables have no statistically significant multivariate effect on the combined dependent variables. This means that the differences in the means of the dependent variables between the groups defined by the independent variables are insufficient to be considered statistically significant.

Table 7: Test of Between-Subjects Effects

Source	Depenent Variable	Type III Sum Squares	df	Mean Square	F	Significance
Correlated Model	Forgiveness	5473.199	98	55.849	1.23	.098
	Satisfaction	5782.915	98	59.009	1.077	.347
Intercept	Forgiveness	131540.264	1	131540.264	3012.028	<.001
	Satisfaction	26395.886	1	26395.886	481.689	<.001
Sexuality	Forgiveness	166.346	4	41.586	.952	.436
	Satisfaction	217.885	4	54.471	.994	.413

**Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness
in Indian Students**

Source	Depeent Variable	Type III Sum Squares	df	Mean Square	F	Significance
Time	Forgiveness	3110.466	45	69.121	1.583	.025
	Satisfaction	2615.531	45	58.123	1.061	.390
Sexuality*Time	Forgiveness	2236.384	49	45.640	1.045	.413
	Satisfaction	2967.365	49	60.558	1.105	.325
Error	Forgiveness	5415.285	124	43.672	-	-
	Satisfaction	6795.022	124	54.799	-	-
Total	Forgiveness	506131.0	223	-	-	-
	Satisfaction	108583.0	223	-	-	-
Corrected Total	Forgiveness	10888.48	222	-	-	-
	Satisfaction	12577.94	222	-	-	-

Note. Test indicating if there are significant differences between the means of a group

The intercept of sexuality and time orientation is less than 0.05, indicating that there is a statistically significant effect of the interception on forgiveness levels and life satisfaction.

With regards to sexuality, the p- value is greater than 0.05 for forgiveness (0.436) and life satisfaction (0.413) indicating that there is no statistically significant effect of sexuality on forgiveness levels and life satisfaction respectively. Additionally, with regards to time perception, the p- value is less than 0.05 for forgiveness (0.025) and greater for life satisfaction (0.413) indicating that there is a statistically significant effect of sexuality on forgiveness levels and but not on life satisfaction respectively.

DISCUSSION

The findings of this study indicate that there is a statistically significant effect of interception of sexuality and time orientation on life satisfaction and satisfaction. There are no viable studies that explore this interceptive relationship and their effect, however, many studies explore the effect of these independent variables individually on the dependent variables. For instance, Mroz and Lasota (2024) attempt to explore the mediating role of time perspective among Polish adults. They found that a particular time perspective - past negative - has a mediating role on forgiveness and other factors taken into account which are meaning in life and gratitude. Additionally, Taysi, Curun, and Boysan (2017) discovered that forgiveness was negatively correlated with a present-oriented time view and favorably correlated with a future-oriented time perspective. Similarly, there are studies examining how sexuality affects life satisfaction with usually queer communities presenting a lower level of life satisfaction (Gomez et.al., 2021, Bartram, 2023).

However, there are no observed differences between life satisfaction and forgiveness levels between heterosexual and queer communities. The finding can be due to the fact that many

Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

of the respondents belong to the same demographic location with educational qualification and might have a common support system which can result in a decrease in experienced prejudice increasing the levels of life satisfaction. This is an indication that support systems and good education can decrease discrimination faced by minority communities.

A study by Remafedi et.al. (1992) explores how different demographic factors such as age, ethnicity, religion and socio-economic status affect one's certainty and expression of sexual orientation. Considering our survey is undertaken by a younger age group of secure socio-economic status, it can explain these findings as the youngsters of our generation are more aware and understanding of the struggles of the minority communities. This understanding and awareness can foster a safe accepting environment as compared to the harmful spaces filled with prejudice. Hence, our findings can also be the result of the specific demographics chosen by us and of those who majorly filled the survey.

These findings have strong implications for promoting sexual orientation awareness along with understanding of time perspective in educational settings with a comprehensive strategy. Understanding the differences in life experiences is crucial to develop an effective strategy to bridge the gap between the two communities. Our study establishes that interception of independent variables affects the dependent variables, however, it is not clear in which it does so. Future research studies can focus on this aspect, looking in depth at all 5 different time perspectives: past-positive, past-negative, future, present-hedonistic and present-fatalistic and at the same time, focusing on different kinds of sexual orientation to understand how different pairs of the two categories affect our dependent variables. Further research is needed to identify the underlying explanations for the way the interception of the two independent variables is different from the effect produced by independent variables alone. It can also focus on related factors such as social support, economic security and mental health status to truly assess life satisfaction.

CONCLUSION

The aim of the study was to find out if sexuality and time perception affect life satisfaction and forgiveness in queer and heterosexual communities. The hypotheses stated that levels of forgiveness and life satisfaction were less in queer community members with present time orientation. The sample consisted of 223 individuals aged 18-25.

The survey consisted of Zimbardo Time Perspective Inventory, Forgiveness Scale and Satisfaction with Life Scale. The subjects were chosen based on the inclusion and exclusion criterias using convenience sampling method. The data was analyzed using SPSS.

The Multivariate analysis of variance (MANOVA) helped in regression analysis and to find out the effect of the dependent variables (sexuality and time perception) and independent variables (life satisfaction and forgiveness). The results showed that there is a significant effect of the interception of sexuality and time perception on life satisfaction and forgiveness, however, the independent variables alone do not seem to have an effect. No differences in levels of life satisfaction and forgiveness were found between heterosexual and queer communities which can be explained by respondents' demographics.

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Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Agnihotri, S., Chaudhary, J. & Thomas, P. (2024). Interaction Effect of Time Perception and Sexual Orientation on Life Satisfaction and Forgiveness in Indian Students. *International Journal of Indian Psychology*, 12(4), 386-397. DIP:18.01.037.20241204, DOI:10.25215/1204.037