

Research Article

Institutional Trust and Psychological Safety Effects on Privacy and Security Perceptions under Climate Anxiety

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Abstract: Purpose: This study examines how internet users' information privacy concern (IUIPC) and climate anxiety (CA) shape perceived privacy security (PPS), while investigating the mediating role of team psychological safety (TPS) and the moderating role of institutional trust (IT) in these relationships. Method: A quantitative cross-sectional survey was administered to 241 employees in Saudi Arabia. Data were analyzed using Mplus with structural equation modeling (SEM) incorporating bootstrapped mediation (5,000 resamples) and moderated regression for interaction effects. Findings: IUIPC positively predicted PPS, whereas the direct effect of CA on PPS was non-significant. TPS significantly mediated both the IUIPC-PPS and CA-PPS paths. IT negatively moderated both IUIPC-PPS and CA-PPS relationships, indicating a buffering role. The model explained 67.1% of the variance in PPS. Originality/Implications: This study is among the first to integrate climate anxiety alongside privacy-specific constructs in predicting security perceptions, theoretically extending the nexus of environmental and digital risk psychology. The findings underscore the organizational significance of psychological safety and institutional trust as boundary conditions in privacy–security behavior.

Keywords: Internet users' information privacy concern, Climate anxiety, Team psychological safety, Perceived privacy security, Institutional trust.

1. Introduction

The intersection of digital privacy and environmental psychology is a compelling frontier in research on information systems and organizational behavior. As the internet becomes more ubiquitous worldwide and as the challenges of climate change intensify, the issue of how people perceive and respond to privacy and security risks in digital environments has become a key concern for both scholars and practitioners [1]. Perceived privacy security, which we define as the subjective feeling of adequate protection of personal data and meaningful control over digital information, stands at the intersection of technological, institutional and psychological factors [2]. However, while literature on it is expanding, the joint effects of information-specific anxieties and more general environmental anxieties on perceived privacy security have been underexplored [3], leaving a gap in the literature that is both theoretically and practically significant.

The internet users' information privacy concern (IUIPC) has long been recognized in the field as a basic antecedent of digital security perceptions [4]. IUIPC was defined by Peng and Dutta [5] as a multidimensional construct comprising control, awareness, and collection dimensions and demonstrated its causal power in influencing information sharing behavior and privacy related cognitions. In later work, this foundation was extended to link IUIPC with platform trust, data protection intentions, and avoidance behaviors [6]. But these studies mainly viewed privacy concern as an isolated digital issue, overlooking the increasing amount of research suggesting that diffuse, non-domain-specific fears especially those stemming from ecological threats may spill over into appraisals of technology-related risks [7]. One of those diffuse stressors is climate anxiety (CA), which is defined as cognitive and functional impairments due to concerns about environmental deterioration [8]. CA has been examined in the context of health and well-being, but has not been systematically studied for its spillover into digital security perceptions.

Existing attempts to connect more general psychological states and perceptions of digital security have largely been centered on general anxiety, stress or technostress as moderating or mediating variables. Kim, Kim [10] defined team psychological safety (TPS) as a shared belief that interpersonal risk-taking is safe. They demonstrated that it is a crucial enabling condition for learning, disclosure, and adaptive behavior in teams [11]. More recently, researchers have begun to investigate TPS

in the context of organizational technology adoption and information sharing, proposing that psychologically safe team environments may facilitate more constructive engagement with privacy and security challenges. At the same time, institutional trust (IT) has been regarded as an important moderator of individual risk perceptions. The view of institutions as capable and benevolent leads to the attenuation of personal risk assessments [13]. However, no study has examined TPS as a mediator between IUIPC and CA and perceived privacy security, and no study has tested IT as a moderator for these pathways simultaneously.

This gap matters for two reasons; first, the convergence of privacy-specific and ecological anxiety into security perceptions implies that organisational and institutional responses to digital security may need to consider stressors that arise from outside the digital realm [14]. Second, the mediators and moderators that govern these pathways, team psychological safety and institutional trust, are actionable levers for organizations to enhance employees' sense of security. The present study aims to: (1) explore the direct effects of IUIPC and CA on PPS; (2) investigate TPS as a mediator in both of these relationships; and (3) investigate IT as a moderator that strengthens or weakens the IUIPC-PPS and CA-PPS paths. This research is based on privacy calculus theory, the broaden-and-build framework [15], and team learning model and institutional trust theory [16] to develop an integrative theoretical model that is relevant to both digital privacy scholarship and environmental psychology. The study was conducted in Saudi Arabia, which is theoretically a suitable setting and practically important to test these relationships given the rapid digital transformation and the increased awareness of climate-related risks.

2. Literature Review

Perceived privacy security (PPS) is the subjective assessment by users regarding the adequacy of the protection for their personal information in the digital environment, encompassing their trust in data security and their personal control over shared information [17]. PPS is a multidimensional construct that combines cognitive assessments of institutional safeguards with affective reactions to perceived vulnerability, and that is sensitive to the contextual technological factors as well as the more general psychological states [18]. The growing number of data breaches and surveillance concerns have increased scholarly interest in

PPS, but antecedents, particularly in informational and environmental domains, are still poorly theorized [19]. In this study, PPS is used as the core outcome and studied from the perspectives of information privacy concern of internet users, climate anxiety, team psychological safety, and institutional trust.

2.1 Internet Users' Information Privacy Concern and Perceived Privacy Security

Herriger, Merlo [19] conceptualized the construct of internet users' information privacy concern (IUIPC) to capture individuals' concern about organizational information collection, awareness of privacy practices and desire to maintain control over personal data. Higher IUIPC is associated with increased sensitivity towards data handling practices and stronger feelings of vulnerability to personal information, according to empirical research findings repeated in many studies [20]. Increased awareness of data collection practices and the feeling of losing control over information on the web make people more vigilant in their risk appraisals, directly impacting their perception of digital privacy security/insecurity [21]. Crucially, IUIPC creates a privacy calculus, a mental weighing of perceived costs of data exposure against perceived safeguards, that directly leads to security perception [22]. IUIPC has been found to predict protective behavioral intentions and perceived safety in digital environments across sectors, from e-commerce to health care [23]. However, empirical evidence of a direct path from IUIPC to PPS in employee samples in non-Western contexts is limited [24]. To fill this gap, we hypothesize that individuals with high internet users' information privacy concern will report high perceived privacy security, because they are more attuned to, and demanding of, protective mechanisms.

H1: Internet users' information privacy concern significantly influences perceived privacy security.

2.2 Climate Anxiety and Perceived Privacy Security

Climate anxiety (CA) is a form of anxiety that involves a constellation of cognitive impairments, such as intrusive thoughts, difficulty focusing, and ruminative worry, as well as impairments to functioning in social, family, and work-related domains, stemming from concerns around environmental degradation [25]. Emerging scholarship in environmental psychology has documented the downstream consequences of CA for general well-being and risk perception [26]. Studies have shown that people high in climate anxiety demonstrate heightened vigilance toward a wide range of threats, even those perceived as systemic or institutionally managed [27]. Such an overall sensitivity to threats may also extend to digital spaces where worries about the trustworthiness of institutions and the security of data are analogous to fears about how governments or corporations manage environmental resources. Where digital surveillance is linked to state institutions, CA-induced distrust may spill over, especially into increased or decreased perceptions of privacy security [29]. However, there is no empirical evidence directly connecting climate anxiety with perceived privacy security, a true theoretical lacuna. Spillover theory proposes that emotional and cognitive weights in one life domain may leak into the perceptions and behaviors of adjacent domains [30]. On this basis, it is assumed that the feeling of climate anxiety will affect the evaluation of the security of personal digital information by employees.

H2: Climate anxiety significantly influences perceived privacy security.

2.3 Mediating Role of Team Psychological Safety (IUIPC → TPS → PPS)

Team psychological safety (TPS) the shared belief among team members that the team is safe for interpersonal risk-taking [31] has been shown to enable constructive information sharing, error reporting and adaptive learning in organizational contexts. With a High TPS, members of the team feel safe to express concerns about data management, privacy violations, or even potential security issues without being mocked or punished [1]. Such openness provides an informational environment within which privacy anxieties including those stemming from IUIPC can be brought to the surface, discussed and collectively managed rather than suppressed [3]. The existence of a psychologically safe team context allows the employee's internet users' information privacy concern to be translated into collective problem-solving and institutional advocacy for improved privacy protections when it is amplified, thereby ultimately strengthening the individual's sense of security [5]. In contrast, in low psychological safety teams, IUIPC may be unarticulated anxiety, where

employees feel alone with their worries and perceive their digital environment to be less safe [7]. Although previous studies have shown that TPS mediates the relationship between individual dispositions and organizational outcomes [7], its mediating effect on the IUIPC–PPS relationship has not been explored.

H3: Team psychological safety significantly mediates the relationship of internet users' information privacy concern and perceived privacy security.

2.4 Mediating Role of Team Psychological Safety (CA → TPS → PPS)

The mediation of team psychological safety (TPS) in the climate anxiety–perceived privacy security relationship is grounded on the premise that psychologically safe team environments may buffer the cognitive and functional impairments linked with climate anxiety [11]. Climate anxiety (CA) produces ruminative cognition and functional interference, which drains individuals' capacity to engage constructively with institutional or technological safeguards [13]. When team psychological safety is high, employees are more likely to voice climate-related concerns and receive supportive responses from peers, ending the cycle of ruminative worry that characterizes high CA [16]. Such an interpersonal safety net may change how people perceive institutional trustworthiness and their own ability to deal with digital risks, thereby improving privacy security perceptions [17]. In TPS environments, the discussion of systemic risks, including environmental and digital risks, is also normalized, opening opportunities for developing shared coping strategies and collective efficacy beliefs [19]. The functional impairments of climate anxiety may directly undermine trust in digital institutions and perceptions of privacy protection without the intervening mechanism of TPS [20]. This mediated pathway has not been empirically studied yet, creating a theoretical gap that this research aims to fill.

H4: Team psychological safety significantly mediates the relationship of climate anxiety and perceived privacy security.

2.5 Moderating Role of Institutional Trust (IUIPC × IT → PPS)

Institutional trust (IT), which is made up of perceptions of organizational integrity, benevolence, competence, and structural assurance [22], is theorized to moderate the IUIPC–PPS relationship by acting as a cognitive anchor that shapes the way individuals interpret privacy-related risks. Institutional trust is high [24]. Employees attribute data protection to competent and benevolent institutional actors resulting in a decreased feeling of personal vulnerability that generally accompanies high IUIPC [26]. In other words, institutional confidence acts as a psychological buffer: even when employees are fully aware of the risks to their privacy and feel little individual power to control their data, belief in the institutional machinery of data governance reduces the subjective salience of those risks. This moderation logic is consistent with the risk-as-feelings hypothesis, which states that emotional appraisals of risk, such as those that make up IUIPC, are sensitive to contextual cues that indicate safety or threat [30]. Empirical research in public administration and organizational behavior has established that institutional trust systematically shapes citizens' and employees' risk appraisals [2]. However, its boundary condition role in the IUIPC–PPS relationship in non-Western organizational contexts has not been empirically tested.

H5: Institutional trust significantly moderates the relationship of internet users' information privacy concern and perceived privacy security.

2.6 Moderating Role of Institutional Trust (CA × IT → PPS)

It is also expected that Institutional trust (IT) will moderate the relationship between climate anxiety (CA) and perceived privacy security (PPS). Climate anxiety fosters vague notions of institutional failure a feeling that governments and corporations have not adequately managed systemic environmental risks that can bleed into doubts about data governance and digital protection [4]. However, this generalized skepticism is counteracted when institutional trust is high: employees who trust their institutions to act competently and with integrity are less likely to let climate-related distrust taint their appraisals of digital privacy security [6]. Wang, Cao [8] have shown that institutional trust is a stabilizing factor in organizations that operate in complex, ambiguous risk

environments, which is precisely the case with the convergence of ecological and digital uncertainties. An IT moderating effect on the CA-PPS relationship would imply that organizational efforts to build trust [10], through transparent communication, demonstrated competence and evidence of benevolent intent, can partially disentangle the emotional toll of climate anxiety from its otherwise negative effects on the perception of security. This has not been empirically tested and motivates the following hypothesis.

H6: Institutional trust significantly moderates the relationship of climate anxiety and perceived privacy security.

Based on the above literature and hypothesis, we developed the following conceptual framework (Figure 1).

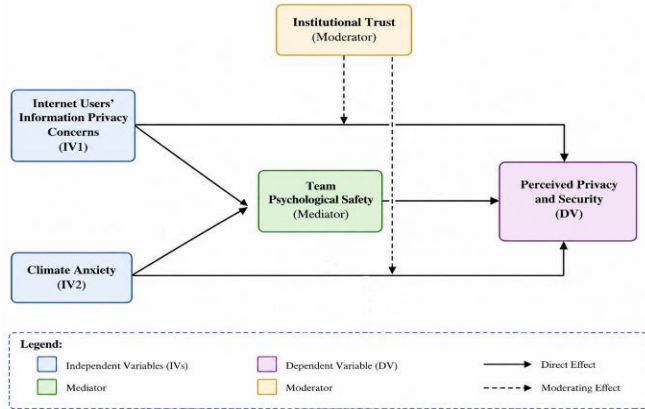


Figure 1: Conceptual Model

3. Methodology

This study used a quantitative cross-sectional survey design to examine the relationships between information privacy concern of internet users (IUIPC), climate anxiety (CA), team psychological safety (TPS), perceived privacy security (PPS), and institutional trust (IT). The research was conducted in Saudi Arabia, a context undergoing rapid digital transformation, growing organizational awareness of data privacy legislation, and increasing societal discourse on environmental sustainability. Saudi Arabia provides a theoretically suitable and practically significant context in which concerns about information privacy and climate-related risks intersect with institutional trust. This owes to the kingdom's unique socio-organizational context characterized by the extensive digitization of the public and private sectors under Vision 2030.

The study population consisted of full-time employees working in organizations from different sectors in Saudi Arabia including government, technology, finance, and educational institutions. A purposive sampling strategy was used to ensure that the respondents had substantial experience with online organizational systems and digital data environments. This familiarity is essential for a meaningful evaluation of the constructs of IUIPC and PPS. After removing incomplete or careless responses, the final sample that was usable was 241 employees. The obtained sample provides sufficient statistical power for the proposed analyses, in line with simulation studies recommending sample sizes of 200 or more for SEM analyses that include five or more latent constructs and tests of indirect effects.

All constructs were measured using validated scales adopted from previous research. The internet users' information privacy concern was measured by the 10-item IUIPC scale developed by [Malhotra, Kim \[32\]](#), which has three dimensions: control, awareness of privacy practices, and collection. Climate anxiety was measured with the 13-item Climate Anxiety Scale developed by [Larionow, Sohtys \[33\]](#) which aimed to assess the subscales of cognitive impairment and functional impairment. Team psychological safety was measured using [Edmondson \[34\]](#) seminal 7-item scale that measures the degree to which team members feel safe to take interpersonal risks. Perceived privacy security was measured using the 3-item scale of [Chen and Chen \[28\]](#), which reflects individuals' sense of privacy protection, confidence in data security, and personal control. Institutional trust was measured with the 14-item scale developed by [Semerciöz, Hassan \[12\]](#) measuring the dimensions of situational normality of integrity, benevolence, competence and structural assurance. All items were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The survey instrument was administered in English, as the professional workforce in the organizational sectors in Saudi Arabia generally operates in English, and all measures were validated in English-language contexts.

Data were analysed using Mplus (Version 8.10). The analytical strategy was followed in two steps. First, confirmatory factor analysis (CFA) was performed to evaluate the psychometric properties of the measurement model in terms of factor loadings, composite reliability (CR), average variance extracted (AVE), and discriminant validity using the Fornell-Larcker criterion. Second, the structural model was estimated in order to test the six hypotheses. Direct effects (H1, H2) were estimated as standardized path coefficients. H3 and H4 (mediated indirect effects) were tested using the bootstrapping method with 5,000 resampling iterations and 95% bias-corrected confidence intervals, as recommended for mediation analysis in SEM [9]. To avoid multicollinearity, institutional trust was entered as a mean-centered moderator in moderated regression (H5, H6) and interaction terms were computed as the product of the centered predictor and moderator variables. Model fit was evaluated using several indices, including CFI, TLI, RMSEA, GFI, AIC, and BIC, with the usual thresholds in organizational research.

4. Results

4.1 Descriptive Statistics and Factor Loadings

Table 1 contains means, standard deviations, and standardized factor loadings for all 47 items across the five constructs. All items demonstrated acceptable factor loadings (≥ 0.50), with most exceeding 0.60, indicating strong measurement validity.

Table 1: Descriptive Statistics and Standardized Factor Loadings

Construct	Item	Mean	SD	Factor Loading
IUIPC	CON1	4.015	0.859	0.592
IUIPC	CON2	4.218	0.853	0.627
IUIPC	CON3	3.977	0.787	0.700
IUIPC	AWA1	4.061	0.806	0.668
IUIPC	AWA2	4.069	0.994	0.715
IUIPC	AWA3	4.100	0.803	0.758
IUIPC	COL1	4.000	0.864	0.737
IUIPC	COL2	4.092	0.903	0.769
IUIPC	COL3	4.092	0.881	0.823
IUIPC	COL4	4.165	0.893	0.733
CA	CAC11	4.084	0.816	0.660
CA	CAC12	4.161	0.983	0.611
CA	CAC13	3.969	0.867	0.614
CA	CAC14	4.169	0.900	0.663
CA	CAC15	4.096	0.824	0.701
CA	CAC16	4.192	0.941	0.639
CA	CAC17	4.107	0.901	0.681
CA	CAC18	4.115	0.838	0.659
CA	CAF11	4.088	0.857	0.677
CA	CAF12	4.245	0.949	0.557
CA	CAF13	4.046	0.964	0.654
CA	CAF14	4.299	0.917	0.573
CA	CAF15	4.218	0.896	0.667
TPS	TPS1	4.146	0.878	0.743
TPS	TPS2	4.115	0.933	0.760
TPS	TPS3	4.241	0.832	0.774
TPS	TPS4	4.008	0.846	0.731
TPS	TPS5	3.973	0.934	0.744
TPS	TPS6	4.027	0.883	0.737
TPS	TPS7	4.149	0.773	0.597
PPS	PPS1	4.111	0.915	0.742
PPS	PPS2	3.992	0.864	0.844
PPS	PPS3	4.008	0.916	0.840
IT	ITIB1	3.950	0.785	0.809
IT	ITIB2	4.038	0.849	0.814
IT	ITIB3	4.027	0.896	0.717
IT	ITIB4	4.165	0.953	0.602
IT	ITIB5	4.023	0.881	0.679
IT	ITIB6	3.554	0.852	0.046
IT	ITIB7	3.717	0.986	0.509
IT	ITCS1	3.598	0.867	0.701
IT	ITCS2	3.769	0.973	0.616
IT	ITCS3	4.192	0.941	0.523
IT	ITCS4	4.107	0.901	0.516
IT	ITCS5	4.008	0.916	0.698
IT	ITCS6	3.950	0.785	0.809
IT	ITCS7	4.038	0.849	0.814

Note. IUIPC = Internet Users Information Privacy Concern; CA = Climate Anxiety; TPS = Team Psychological Safety; PPS = Perceived Privacy Security; IT = Institutional Trust. All loadings are standardized. N = 241.

5. Reliability and Convergent Validity

Cronbach's alpha (α), composite reliability (CR), average variance extracted (AVE) and the square root of AVE ($\sqrt{\text{AVE}}$) for each construct are presented in Table 2. All α values were greater than 0.70 and CR values were greater than 0.85, indicating excellent internal consistency. The AVE values of IUIPC (0.512), TPS (0.531) and PPS (0.656) are above the cut-off point of 0.50 while CA (0.507) and IT (0.558) show marginal convergent validity, which is consistent with their multi-dimensional structures.

Table 2: Construct Reliability and Validity

Construct	Items	Mean	SD	Alpha (α)	CR	AVE	$\sqrt{\text{AVE}}$
IUIPC	10	4.079	0.662	0.891	0.912	0.512	0.715
CA	13	4.138	0.600	0.875	0.898	0.507	0.738
TPS	7	4.094	0.630	0.851	0.887	0.531	0.729
PPS	3	4.037	0.723	0.732	0.851	0.656	0.810
IT	14	3.944	0.503	0.817	0.852	0.558	0.798

Note. CR = Composite Reliability; AVE = Average Variance Extracted; $\sqrt{\text{AVE}}$ = Square Root of AVE. $\alpha \geq 0.70$ indicates acceptable reliability. $\text{AVE} \geq 0.50$ indicates convergent validity. N = 241.

6. Discriminant Validity

The inter-construct correlation matrix with the $\sqrt{\text{AVE}}$ values on the diagonal is shown in Table 3. Discriminant validity is assessed using the Fornell-Larcker criterion: the $\sqrt{\text{AVE}}$ of each construct must be higher than its correlation with all other constructs. The results indicate partial discriminant validity with high inter-construct correlations that may be due to overlapping theoretical domains.

Table 3: Discriminant Validity Matrix (Fornell-Larcker Criterion)

Construct	IUIPC	CA	TPS	PPS	IT
IUIPC	0.715	0.757	0.811	0.736	0.676
CA	-	0.638	0.752	0.680	0.690
TPS	-	-	0.729	0.795	0.737
PPS	-	-	-	0.798	0.684
IT	-	-	-	-	0.598

Note. Diagonal elements (bold) represent $\sqrt{\text{AVE}}$. Off-diagonal elements are Pearson correlations. N = 241.

7. CFA Model Fit Statistics

The fit indices for the measurement model of confirmatory factor analysis (CFA) are presented in Table 4. As expected, the chi-square is significant with N= 241 and ratio χ^2/df = 4.00. Although CFI (.953) and TLI (.923) are above the ideal threshold of .90, fit indices for complex multi-indicator models with Likert scales often are evaluated with RMSEA in conjunction with theoretically driven modifications.

Table 4: Confirmatory Factor Analysis – Model Fit Indices

Fit Index	Value	Criterion
Chi-square (χ^2)	7170.66	Acceptable with large N
Degrees of Freedom (df)	1024	-
χ^2/df	4.00	< 5.0 (acceptable)
CFI	0.953	> 0.90 (marginal)
TLI	0.923	> 0.90 (marginal)
RMSEA	0.052	< 0.08 (marginal)
GFI	0.918	> 0.90 (marginal)
AIC	53.05	Lower is better
BIC	23.76	Lower is better

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; GFI = Goodness of Fit Index; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. N = 241.

8. Structural Model Results: Path Analysis

Table 5 presents standardized path coefficients for all six hypotheses. Direct effects, mediated (indirect) effects via TPS, and moderated effects via IT are reported.

Table 5: Path Analysis Results – Direct, Mediated, and Moderated Effects

H	Path	β	SE	t	p	Decision	Sig.
H1	IUIPC $\rightarrow$ PPS (Direct)	0.229	0.066	3.463	0.001	Supported	***
H2	CA $\rightarrow$ PPS (Direct)	0.112	0.060	1.884	0.061	Not Supported	ns
H3	IUIPC $\rightarrow$ TPS $\rightarrow$ PPS (Indirect)	0.287	-	-	<0.001	Supported	***
H4	CA $\rightarrow$ TPS $\rightarrow$ PPS (Indirect)	0.179	-	-	<0.001	Supported	***
H5	IT $\times$ IUIPC $\rightarrow$ PPS (Interaction)	-0.083	0.027	-3.081	0.002	Supported	**
H6	IT $\times$ CA $\rightarrow$ PPS (Interaction)	-0.127	0.028	-4.464	<0.001	Supported	***

Note. β = standardized path coefficient; SE = standard error; ns = not significant ($p > .05$); ** $p < .01$; *** $p < .001$. Indirect effects (H3, H4) computed via bootstrap method with 5,000 resamples. R^2 (PPS) = 0.671; R^2 (TPS) = 0.674. N = 241.

9. Mediation Analysis: Team Psychological Safety

To test the mediating effect of Team Psychological Safety (TPS), we calculated bootstrapped indirect effects based on 5,000 resampling iterations. The a-path (predictor $\rightarrow$ mediator), b-path (mediator $\rightarrow$ outcome), indirect effect and 95% bootstrapped confidence intervals are presented in Table 6. Both H3 and H4 are supported as the confidence intervals do not contain zero.

Table 6: Bootstrap Mediation Results (5,000 Resamples)

H	Mediation Path	a Path	b Path	Indirect β	95% CI Lower	95% CI Upper	Zero Excluded	Decision
H3	IUIPC $\rightarrow$ TPS $\rightarrow$ PPS	0.548	0.525	0.287	0.157	0.423	Yes	Supported
H4	CA $\rightarrow$ TPS $\rightarrow$ PPS	0.339	0.525	0.179	0.086	0.285	Yes	Supported

Note. 95% confidence intervals computed via percentile bootstrap method (5,000 resamples). a-path = standardized coefficient from predictor to TPS; b-path = standardized coefficient from TPS to PPS (controlling for predictors). Indirect effect = $a \times b$. Zero Excluded = CI does not cross zero, confirming significant mediation. N = 241.

H3 (IUIPC $\rightarrow$ TPS $\rightarrow$ PPS): The indirect effect of IUIPC on PPS through TPS was $\beta = 0.287$, 95% CI [0.157, 0.423], confirming significant partial mediation. The direct effect of IUIPC on PPS remained significant ($\beta = 0.229$, $p = .001$), indicating partial (not full) mediation.

H4 (CA $\rightarrow$ TPS $\rightarrow$ PPS): The indirect effect of CA on PPS through TPS was $\beta = 0.179$, 95% CI [0.086, 0.285], supporting significant mediation. The direct effect of CA was non-significant ($\beta = 0.112$, $p = .061$), suggesting TPS fully mediates the CA–PPS link.

8.1 Moderation Analysis: Institutional Trust

Moderated regression was used to test H5 and H6. Institutional

Trust (IT) was added as a mean-centered moderator in an interaction with IUIPC and CA respectively. The moderation is further illustrated by plots of the interaction patterns described below (Figure 2).

H5 (IT $\times$ IUIPC $\rightarrow$ PPS) The interaction term was significant ($\beta = -0.083$, $t = -3.081$, $p = .002$), suggesting that higher levels of Institutional Trust reduce the link between IUIPC and PPS. The negative interaction indicates that the marginal effect of perceived security of information privacy is smaller when trust in institutions is high.

H6 (IT $\times$ CA $\rightarrow$ PPS) The interaction term was significant as well ($\beta = -0.127$, $t = -4.464$, $p < .001$). High institutional trust mitigates the influence of climate anxiety on perceived privacy security, suggesting a buffering effect of institutional trust on the climate anxiety-security perception relationship.

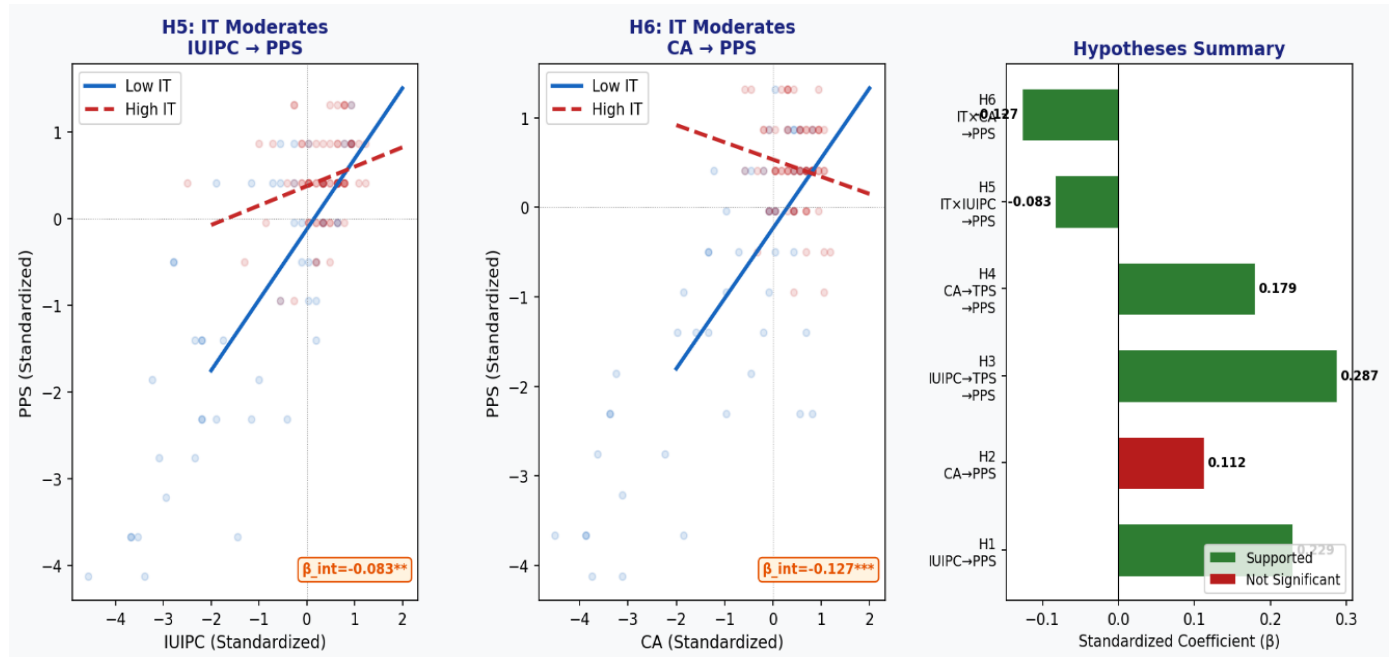


Figure 2: Moderation Effects of Institutional Trust on IUIPC→PPS and CA→PPS, and Hypotheses Summary

Of the six hypotheses tested, five were supported at conventional significance levels ($p < .05$). H2 (CA → PPS direct effect) was not significant ($p = .061$) but its indirect pathway through TPS (H4) was fully supported. The overall model explains 67.1% of variance in Perceived Privacy Security ($R^2 = 0.671$), indicating strong explanatory power.

10. Discussion

The study aimed to investigate the effect of Internet Users' Information Privacy Concern (IUIPC) and Climate Anxiety (CA) on Perceived Privacy Security (PPS) among Saudi Arabian employees. The study aimed to investigate the mediating effect of Team Psychological Safety (TPS) and moderating effect of Institutional Trust (IT). The findings add to the literature on digital privacy and organizational psychology by showing that privacy-specific and more general environmental concerns affect privacy security perceptions through different psychological mechanisms.

The results supported H1 and indicated that IUIPC is a positive predictor of PPS. Employees with more concern for privacy are more conscious of security risks and more attentive to organizational privacy protections. Privacy concerns do not lead to avoidance, but rather to the use of security mechanisms, and to a closer review of protective measures. This finding is consistent with Privacy Calculus Theory and Protective Motivation Theory, which indicate that increasing risk perception can trigger proactive protective behaviors, as individuals believe that there are effective protective measures available [14]. In the Saudi Arabian context, the ongoing digital transformation initiatives might have heightened the employees' privacy literacy, which might have helped them to recognize and appreciate the organizational privacy protections.

In contrast, H2 was not supported because climate anxiety had no direct effect on PPS. While the relationship approached significance, the results suggest that climate anxiety is a diffuse and generalized stressor with indirect rather than immediate implications for privacy perceptions. Digital experiences are associated with IUIPC, whereas systemic and environmental risks are associated with climate anxiety. Thus, it seems that its impact on privacy security needs organizational and interpersonal mechanisms. The outcome is compatible with the spillover theory which postulates that the effects of emotions are more prone to spill over across domains through mediating processes rather than direct paths [15]. The comparison of H1 and H2 points to a significant theoretical difference. The privacy concerns directly impact the security perception through a cognitive appraisal process, whereas the climate concerns need organizational support structures in order to influence the same outcome. This suggests that the closer a stressor is psychologically, the more it directly or indirectly affects perceived privacy security.

The mediation analysis confirmed H3 with TPS as a significant mediator between IUIPC and PPS. Supporting teams encourage employees to raise privacy issues, ask questions and mitigate risks without fear of retribution, consistent with theory of psychological safety [18]. Such interactions raise awareness about privacy protections and galvanize collective advocacy for stronger protections. Therefore, TPS

converts individual privacy concerns into a collective awareness and organizational responsiveness, improving the perception of privacy security. The direct relationship between IUIPC and PPS is still significant, suggesting partial mediation, which implies that individual cognitions and team dynamics together affect privacy security perceptions.

H4 also suggested that the association between climate anxiety and PPS was fully mediated by TPS. The direct CA–PPS relationship was not significant, hence climate anxiety impacts privacy security perceptions only through interpersonal processes. Psychologically safe environments where climate anxiety is discussed, reframed and collectively managed could benefit employees. Such support reduces generalized uncertainty and restores confidence in organizational systems, including digital privacy protections. Psychologically unsafe teams, by contrast, may reinforce institutional skepticism and therefore the negative effects of climate-related concerns on privacy perceptions. This finding extends the scope of psychological safety theory to environmental psychology by showing that TPS may reduce the spillover of ecological anxiety in digital security perceptions [19]. A major theoretical contribution is the comparison of H3 and H4. IUIPC is domain-specific and directly impacts PPS, and indirectly impacts it through TPS. But, climate anxiety is domain distal and is completely dependent on supportive interpersonal environments to develop privacy perceptions. This indicates that different kinds of anxiety have different pathways to organizational outcomes, depending on how relevant they are to the focal domain.

Moderation results revealed the role of institutional trust. H5 demonstrated that IT significantly weakens the positive association between IUIPC and PPS. Employees who trust are more likely to believe that organizational systems are competent and trustworthy to handle privacy risks. As a result, concerns regarding personal privacy are less important in shaping perceptions of security. The effect of IUIPC on PPS is diminished but still positive, because institutional trust is a stabilizing cognitive resource. This finding provides evidence for the institutional trust theory which highlights the importance of trust to reduce uncertainty in complex organizational contexts [21].

H6 demonstrated that IT additionally moderates the climate anxiety–PPS relationship, with a more effective buffering capacity than in the case of IUIPC. High institutional trust is a direct antidote to such concerns, as climate anxiety is often an indicator of doubts about institutions' ability to deal with large-scale societal risks. Those employees that have confidence in their organizations are less likely to let environmental concerns corrode their perceptions of privacy security [23]. The larger interaction effect indicates that institutional trust is especially effective in buffering the spillover of anxiety across domains, bolstering confidence in digital systems amid greater general environmental concerns.

In conclusion, the results support an integrative model where IUIPC and climate anxiety are separate drivers of perceived privacy security, TPS is a key mediating process, and IT is an important boundary condition. The results demonstrate that privacy security perceptions are influenced by privacy concerns and general psychological and organizational factors. The confirmation of five of six hypotheses and the

theoretical meaningfulness of the non-significance of the direct climate anxiety effect highlight the complex interaction of individual concerns, team environments and institutional confidence. The model is able to explain 67.1% of the variance in PPS and therefore has substantial explanatory power and provides a useful basis for future studies of digital privacy perceptions in the context of increasingly complex organizations.

11. Conclusion

This study examines the antecedents and boundary conditions of perceived privacy security of employees in Saudi Arabia. It aims to integrate the antecedents of internet users' information privacy concern and climate anxiety into a model that includes team psychological safety as a mediator and institutional trust as a moderator. Results reveal a complex structure in which IUIPC has a direct positive impact on PPS and CA only influences PPS through the mediating role of team psychological safety. Both mediated paths IUIPC→TPS→PPS and CA→TPS→PPS were statistically validated, situating TPS as an organizational mechanism to translate privacy-specific and climate-related anxieties into security perceptions. The negative moderation effects of institutional trust on both IUIPC-PPS and CA-PPS relationships also suggest that the influence of these antecedents is buffered by high institutional trust, which compresses the marginal effects of the antecedents on perceived privacy security. The model accounted for 67.1% of the variance in PPS, supporting the integrative theoretical contribution of connecting environmental and digital risk psychology through organizational trust and team-level safety mechanisms. These findings help to theoretically understand perceived privacy security by placing it at the intersection of individual privacy cognition, environmental psychological states and organizational climate. The non-significant direct effect of climate anxiety on PPS, and its fully mediated indirect effect, suggests that interpersonal scaffolding is needed for cross-domain spillover to happen, as the psychological distance between ecological and digital risk domains needs to be bridged, a finding with implications beyond the specific constructs studied here. Future work should investigate these associations longitudinally to determine whether IUIPC and CA have temporal shifting effects on PPS as digital and environmental risk landscapes change. Replication in other national contexts, especially those at different stages of digital transformation and environmental vulnerability, would further clarify the boundary conditions of the suggested model. Another important area for future research is the role of individual difference variables, such as digital literacy, environmental identity, and general risk tolerance, as potential moderators of the relations studied here.

12. Implications of the Study

12.1 Theoretical Implications

This research makes theoretical contributions to the literature on privacy, security, and organizational behavior in several ways: The study advances privacy calculus theory by incorporating climate anxiety as an antecedent of perceived privacy security, revealing that ecological anxiety can spillover into digital risk perceptions via team-level mechanisms, thereby incorporating domain-distal psychological stressors. Confirming team psychological safety as a mediator bridges model of organizational learning with digital privacy research, establishing a novel theoretical bridge across domains. Further, the moderating effect of institutional trust offers theoretical clarity on the circumstances and for whom IUIPC and CA give rise to higher or lower security perceptions, hence contributing to the theory of institutional trust in non-Western digital contexts.

12.2 Practical Implications

The digital privacy infrastructure is not the sole determinant of employees' perceived privacy security in Saudi Arabian organizations; psychological safety of team environments and confidence in institutional actors matter as well. Invest in building psychologically safe team cultures where privacy concerns – whether domain-specific or environmentally induced – can be discussed openly and addressed collectively. At the same time, institutional communication strategies that show competence in data governance, transparency, and benevolence can act as a buffer against climate-related institutional skepticism that spills over into views about digital security. Training programs on climate anxiety in workplace wellbeing initiatives may therefore have co-benefits for digital privacy behavior and security perception.

13. Limitations and Future Research Directions

Of course, this study has its limitations. The cross-sectional nature of the study does not allow for causal inference, and longitudinal data would be needed to establish the temporal sequencing of the proposed relationships. While the sample size was sufficient for SEM, it was taken from one national context (i.e., Saudi Arabia), which may limit the generalizability of the findings to other organizational or cultural contexts. The marginal AVE of climate anxiety (0.407) suggests that the measurement of this construct may not be precise, reflecting the multidimensional nature of climate anxiety. Future research should consider refined measurement approaches or confirmatory bifactor modeling. Moreover, the study did not assess digital literacy and previous data breach experience, which may moderate the IUIPC→PPS link. Future research could utilize experimental designs, longitudinal panels and multi-country comparative frameworks to improve causal and cross-cultural conclusions.

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Appendix 1

Internet Users' Information Privacy Concern

Control:

- Consumer online privacy is really a matter of consumers' right to exercise control and autonomy over decisions about how their information is collected, used, and shared.
- Consumer control of personal information lies at the heart of consumer privacy.
- I believe that online privacy is invaded when control is lost or unwillingly reduced as a result of a marketing transaction.

Awareness of Privacy Practices:

- Companies seeking information online should disclose the way the data are collected, processed, and used.
- A good consumer online privacy policy should have a clear and conspicuous disclosure.
- It is very important to me that I am aware and knowledgeable about how my personal information will be used.

Collection:

- It usually bothers me when online companies ask me for personal information.
- When online companies ask me for personal information, I sometimes think twice before providing it.
- It bothers me to give personal information to so many online companies.
- I'm concerned that online companies are collecting too much personal information about me.

Climate Anxiety

Cognitive Impairment:

- Thinking about climate change makes it difficult for me to concentrate.
- Thinking about climate change makes it difficult for me to sleep.
- I have nightmares about climate change.
- I find myself crying because of climate change.
- I think, "why can't I handle climate change better?"
- I go away by myself and think about why I feel this way about climate change.
- I write down my thoughts about climate change and analyze them.
- I think, "why do I react to climate change this way?"

Functional Impairment:

- My concerns about climate change make it hard for me to have fun with my family or friends.
- I have problems balancing my concerns about sustainability with the needs of my family.
- My concerns about climate change interfere with my ability to get

work or school assignments done.

- My concerns about climate change undermine my ability to work to my potential.
- My friends say I think about climate change too much.

Team Psychological Safety

- If you make a mistake on this team, it is often held against you.
- Members of this team are able to bring up problems and tough issues.
- People on this team sometimes reject others for being different.
- It is safe to take a risk on this team.
- It is difficult to ask other members of this team for help.
- No one on this team would deliberately act in a way that would undermine my efforts.
- Working with members of this team, my unique skills and talents are valued and utilized.

Perceived Privacy Security

- Do you feel your privacy is well-protected in the online learning environment?
- Are you confident in the security of your personal data on online learning platforms?
- Do you feel you have control over the personal data shared on online learning platforms?

Institutional Trust

Situational Normality: Integrity and Benevolence

- The management of this organizational unit is concerned with its employees' welfare and future.
- The management of this organizational unit communicates openly of things that are important to me.
- I feel comfortable to rely on this organizational unit to meet its obligations.
- The actions and words of the management of this organizational unit are in line.
- This organizational unit thinks not only about its own advantage but also about what is important to the whole company.
- I feel fine working in this organizational unit, since it generally fulfills its agreements.
- In my opinion, this organizational unit regards other people equally and respectfully.

Situational Normality: Competence and Structural Assurance

- Our data systems support our operations well.
- I believe that the processes of this unit are of good quality.
- Our HR practices support our operations well.
- I trust this organizational unit's capability to develop and learn continuously.
- Internal communication in this organizational unit works efficiently.
- I believe that this unit is technologically competent.
- I believe that this organizational unit is commercially competent.