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ARTICLE

Emotional Expression on Social Media and Online Social Capital Construction Among Digital Natives: The Mediating Role of Empathy

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ABSTRACT

This study explores the relationship between emotional expression on social media and online social capital construction among digital natives, and examines the mediating role of empathy. A mixed-methods research design, combining a cross-sectional survey (N = 2,136) and semi-structured interviews (N = 45), was employed with digital natives aged 18–25 years from five countries. Survey results indicate that positive emotional expression on social media positively predicts both bonding and bridging online social capital, while negative emotional expression shows a non-linear relationship with bonding social capital (positive in moderate intensity, negative in high intensity) and a positive relationship with bridging social capital. Empathy (including cognitive empathy and affective empathy) partially mediates the relationship between positive emotional expression and online social capital, and fully mediates the relationship between moderate negative emotional expression and bonding social capital. Interview findings further reveal that digital natives strategically adjust their emotional expression on social media to enhance empathy-based interactions and accumulate social capital. These findings enrich the theoretical framework of social media use and social capital, and provide practical insights for guiding digital natives‘ healthy social media engagement.

Keywords: Digital natives; Social media; Emotional expression; Online social capital; Empathy; Media psychology

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1. Introduction

Digital natives, defined as individuals born after the 1990s who have grown up immersed in digital technologies (Prensky, 2001; Palfrey & Gasser, 2021), constitute the core user group of social media platforms. With over 98% of digital natives reporting daily social media use (Pew Research Center, 2023), these platforms have become integral to their social interaction and relationship building. Unlike traditional face-to-face communication, social media enables digital natives to express emotions through diverse modalities, such as text, emojis, images, and short videos (Valkenburg et al., 2022), making emotional expression a fundamental feature of their online social behavior.

Online social capital, which refers to the resources (e.g., trust, support, information, social networks) derived from social interactions on digital platforms (Putnam, 2000; Williams, 2006), is a key outcome of digital natives‘ social media engagement. Constructing online social capital is crucial for digital natives‘ personal development, as it contributes to their psychological well-being, academic achievement, and career opportunities (Ellison et al., 2021; Chen et al., 2023). Emotional expression on social media is widely believed to influence online social capital construction, but existing research on this relationship has yielded inconsistent findings. Some studies suggest that positive emotional expression enhances online social connections and trust (Yang et al., 2022), while others argue that negative emotional expression may either hinder or facilitate social capital accumulation depending on contextual factors (Reinecke et al., 2021).

Empathy, the ability to perceive and share others‘ emotions and perspectives (Davis, 1983; Decety & Jackson, 2020), is a critical psychological mechanism that may link emotional expression on social media to online social capital construction. When digital natives express emotions on social media, it can trigger empathetic responses from other users, fostering mutual understanding and trust—core components of social capital (Batson et al., 2021). However, the mediating role of empathy in this relationship remains underexplored. Most previous studies have focused on the direct effects of social media use on social capital, neglecting the intermediate psychological processes (Valkenburg & Peter, 2022; Liu et al., 2023).

Furthermore, existing research on emotional expression and online social capital often adopts a unidimensional perspective, failing to distinguish between different types of emotional expression (positive vs. negative) and different dimensions of online social capital (bonding vs. bridging). Bonding social capital refers to strong, homogeneous social ties (e.g., family, close friends), while bridging social capital refers to weak, heterogeneous social ties (e.g., acquaintances, online communities) (Putnam, 2000; Williams, 2006). These two types of social capital may be differentially influenced by emotional expression on social media. Additionally, most studies rely on single-country samples, limiting the generalizability of findings across diverse cultural contexts (Ellison et al., 2021; Palfrey & Gasser, 2021).

To address these gaps, the present study adopts a mixed-methods approach and a cross-cultural perspective to investigate the relationship between emotional expression on social media (positive and negative) and online social capital construction (bonding and bridging) among digital natives, with a focus on the mediating role of empathy (cognitive and affective). The study aims to: (1) Examine the differential effects of positive and negative emotional expression on bonding and bridging online social capital; (2) Test the mediating role of cognitive and affective empathy in these relationships; (3) Explore digital natives‘ subjective experiences and strategies of emotional expression for online social capital construction through interviews; (4) Investigate potential cross-cultural variations in the above relationships.

This study contributes to media psychology and digital behavior research by clarifying the complex relationship between emotional expression and online social capital, identifying empathy as a key mediating mechanism, and adopting a mixed-methods

and cross-cultural design to enhance the depth and generalizability of findings. Practically, the study provides actionable insights for guiding digital natives to engage in effective emotional expression on social media, thereby promoting healthy online social capital construction.

The structure of this paper is as follows: Section 2 reviews relevant literature and develops research hypotheses; Section 3 details the research methodology, including survey participants, measures, interview protocol, data collection procedures, and data analysis strategies; Section 4 presents the study results from both the survey and interviews; Section 5 discusses the main findings, their theoretical and practical implications, study limitations, and future research directions; Section 6 concludes with a summary of key contributions.

2. Literature Review and Hypotheses

2.1 Emotional Expression on Social Media Among Digital Natives

Emotional expression on social media refers to the process of conveying one‘s emotional states, feelings, and reactions through digital communication modalities (Valkenburg et al., 2022). Digital natives‘ emotional expression on social media is characterized by high frequency, diversity, and strategicness. Due to their familiarity with digital technologies, they are adept at using various tools (e.g., emojis, filters, audio-visual content) to express emotions more vividly and flexibly than previous generations (Palfrey & Gasser, 2021; Reinecke et al., 2021).

Positive emotional expression (e.g., sharing joy, gratitude, excitement) and negative emotional expression (e.g., expressing sadness, anger, frustration) are two core dimensions of online emotional expression (Yang et al., 2022). Digital natives tend to express more positive emotions on social media, a phenomenon known as the „positivity bias“ (Bazarova et al., 2020). This bias is driven by the desire to maintain a favorable online image and gain social approval (Reinecke et al., 2021). However, negative emotional expression is also common among digital natives, especially in close online communities, as it can serve as a way to seek social support (Valkenburg et al., 2022; Chen et al., 2023).

The intensity and context of negative emotional expression are critical factors influencing its social effects. Moderate negative emotional expression may elicit sympathy and support from others, while excessive or inappropriate negative emotional expression (e.g., aggressive outbursts) may be perceived as disruptive, leading to social rejection (Reinecke et al., 2021; Yang et al., 2022). Thus, the relationship between negative emotional expression and online social outcomes is likely to be non-linear.

2.2 Online Social Capital Construction Among Digital Natives

Building on Putnam‘s (2000) conceptualization of social capital, online social capital is defined as the tangible and intangible resources embedded in social networks formed through online interactions. It is typically divided into two dimensions: bonding and bridging social capital (Williams, 2006; Ellison et al., 2021). Bonding online social capital is derived from strong, intimate relationships with similar others (e.g., family members, close friends on social media), providing emotional support and a sense of belonging. Bridging online social capital comes from weak, diverse relationships with dissimilar others (e.g., members of online interest groups, acquaintances from different backgrounds), facilitating access to new information, resources, and opportunities.

For digital natives, online social capital is as important as offline social capital. It contributes to their psychological well-being by reducing loneliness and enhancing self-esteem (Ellison et al., 2021), supports their academic and career development by providing access to educational resources and professional networks (Chen et al., 2023), and promotes their social integration by connecting them with diverse social groups (Valkenburg & Peter, 2022). Social media platforms, with their interactive and network-building features, provide ideal environments for digital natives

to construct both bonding and bridging online social capital.

2.2.1 Emotional Expression and Online Social Capital

We hypothesize that positive and negative emotional expression on social media have differential effects on bonding and bridging online social capital.

Positive emotional expression is expected to positively predict both bonding and bridging online social capital. Positive emotions are contagious in social interactions (Hatfield et al., 2014; Fredrickson, 2021), and expressing positive emotions on social media can create a pleasant and friendly online atmosphere. This atmosphere fosters mutual liking and trust, strengthening existing close relationships (bonding social capital) and facilitating the formation of new weak relationships (bridging social capital) (Yang et al., 2022; Liu et al., 2023). For example, sharing positive life events on social media can elicit likes, comments, and congratulations from others, enhancing interpersonal connections. Thus:

H1a: Positive emotional expression on social media is positively associated with bonding online social capital among digital natives.

H1b: Positive emotional expression on social media is positively associated with bridging online social capital among digital natives.

Regarding negative emotional expression, we propose a non-linear relationship with bonding online social capital and a positive relationship with bridging online social capital. For bonding social capital, moderate negative emotional expression can signal vulnerability and authenticity, eliciting empathetic support from close others and strengthening intimate relationships (Reinecke et al., 2021; Batson et al., 2021). However, high-intensity negative emotional expression (e.g., frequent complaints, aggressive language) may burden close others, leading to relationship strain and reducing bonding social capital (Valkenburg et al., 2022). For bridging social capital, negative emotional expression (even in moderate intensity) can attract the attention of individuals with similar experiences or perspectives, facilitating the formation of new weak ties based on shared negative experiences (e.g., online support groups for mental health, social justice advocacy communities) (Chen et al., 2023; Reinecke et al., 2021). Thus:

H2a: Negative emotional expression on social media has a non-linear (inverted U-shaped) relationship with bonding online social capital among digital natives, with moderate intensity predicting the highest level of bonding social capital.

H2b: Negative emotional expression on social media is positively associated with bridging online social capital among digital natives.

2.2.2 The Mediating Role of Empathy

Empathy is a multidimensional construct consisting of cognitive empathy (the ability to understand others‘ perspectives and intentions) and affective empathy (the ability to experience emotions similar to others‘) (Davis, 1983; Decety & Jackson, 2020). We hypothesize that both cognitive and affective empathy mediate the relationship between emotional expression on social media and online social capital.

For positive emotional expression, expressing positive emotions on social media can trigger cognitive empathy (understanding the reasons for others‘ positive feelings) and affective empathy (sharing others‘ positive emotions) in viewers (Hatfield et al., 2014; Fredrickson, 2021). Empathetic responses to positive emotional expression enhance mutual understanding and trust, which in turn promote the construction of both bonding and bridging online social capital (Yang et al., 2022; Batson et al., 2021). For example, when a digital native shares excitement about a personal achievement, others may empathize with their joy, leading to more positive interactions and stronger social ties. Thus:

H3a: Cognitive empathy mediates the positive relationship between positive emotional expression and bonding online social capital.

H3b: Cognitive empathy mediates the positive relationship between positive emotional expression and bridging online social capital.

H4a: Affective empathy mediates the positive relationship between positive emotional expression and bonding online social capital.

H4b: Affective empathy mediates the positive relationship between positive emotional expression and bridging online social capital.

For moderate negative emotional expression, it can elicit cognitive empathy (understanding the difficulties or challenges faced by the expresser) and affective empathy (feeling sympathy or compassion for the expresser) (Reinecke et al., 2021; Batson et al., 2021). These empathetic responses motivate others to provide support and care, strengthening bonding social capital (close relationships) and facilitating the formation of bridging social capital (new relationships with similar experiences) (Chen et al., 2023). However, high-intensity negative emotional expression may not trigger empathy; instead, it may evoke negative emotions such as annoyance or anger, reducing empathetic responses (Valkenburg et al., 2022). Thus, empathy is expected to mediate the relationship between moderate negative emotional expression and online social capital:

H5a: Cognitive empathy mediates the positive relationship between moderate negative emotional expression and bonding online social capital.

H5b: Cognitive empathy mediates the positive relationship between moderate negative emotional expression and bridging online social capital.

H6a: Affective empathy mediates the positive relationship between moderate negative emotional expression and bonding online social capital.

H6b: Affective empathy mediates the positive relationship between moderate negative emotional expression and bridging online social capital.

3. Method

3.1 Research Design

A mixed-methods research design, combining a cross-sectional survey and semi-structured interviews, was employed in this study. The survey was used to test the research hypotheses (quantitative phase), while the semi-structured interviews were conducted to explore digital natives‘ subjective experiences and strategies of emotional expression for online social capital construction (qualitative phase). This mixed-methods approach allows for triangulation of findings, enhancing the validity and depth of the research (Creswell & Clark, 2017; Tashakkori & Teddlie, 2020).

3.2 Survey Participants

A cross-sectional survey was conducted with digital natives aged 18–25 years from five countries: Germany, China, Spain, India, and Ghana. The sample size was determined based on power analysis for mediation models (Hair et al., 2022), which recommended a minimum sample size of 2,000 to detect small-to-medium effect sizes ($f^2 = 0.05$) with 95% power and $\alpha = 0.05$. A total of 2,350 questionnaires were distributed, and 2,136 valid questionnaires were retained after excluding invalid responses (e.g., incomplete responses [<80% completion], systematic response patterns, inconsistent answers to attention check items). The effective response rate was 90.9%.

Demographic characteristics of the survey sample were as follows: 1,128 females (52.8%) and 1,008 males (47.2%); age range 18–25 years, with a mean age of 21.63 years (SD = 2.15). By country, the sample included 432 participants from Germany (20.2%), 428 from China (20.0%), 425 from Spain (19.9%), 423 from India (19.8%), and 428 from Ghana (20.1%). The most commonly used social media platforms were Instagram (32.4%), WeChat/Weibo (28.7%), Facebook (18.3%), WhatsApp (12.6%), and regional platforms (8.0%). The average daily social media use time was 3.26 hours (SD = 1.45), with 51.3% of participants reporting using social media for 3 or more hours per day. The primary motivations for social media use were social interaction (72.5%), information seeking (65.3%), and entertainment (61.8%).

3.3 Survey Measures

All survey measures were adapted from previously validated scales in media psychology and social capital

research. To ensure cross-cultural validity, the scales were translated into the local languages of each country (German, Mandarin, Spanish, Hindi, Twi) using the back-translation method (Brislin, 1980; Van de Vijver & Leung, 2022). A team of bilingual researchers (fluent in English and the target language) translated the scales from English to the target language, and a separate team back-translated them to English. Discrepancies were resolved through consensus. A pilot study was conducted with 150 participants (30 per country) to assess the clarity and psychometric properties of the translated scales, with minor revisions made to improve item clarity. All scales used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), and Cronbach's α coefficients for all scales exceeded 0.70, indicating acceptable internal consistency (Nunnally & Bernstein, 1994).

3.3.1 Emotional Expression on Social Media

Emotional expression was measured using an adapted version of the Social Media Emotional Expression Scale (Yang et al., 2022), which assesses positive and negative emotional expression. Positive emotional expression (8 items) measures the frequency of expressing positive emotions (e.g., joy, gratitude, excitement) on social media. Sample items: „I often share happy moments of my life on social media"; „I use positive emojis to express my feelings on social media"; „I post content that conveys gratitude to others on social media". Cronbach's α = 0.89.

Negative emotional expression was measured using two subscales: moderate negative emotional expression (6 items) and high-intensity negative emotional expression (6 items). Moderate negative emotional expression assesses the frequency of expressing mild negative emotions (e.g., sadness, disappointment) in an appropriate manner. Sample items: „I share my minor frustrations with close friends on social media"; „I express my disappointment about daily events on social media in a calm way"; „I use soft emojis)to convey my sadness on social media". High-intensity negative emotional expression assesses the frequency of expressing intense negative emotions (e.g., anger, resentment) in an inappropriate manner. Sample items: „I often complain aggressively about others on social media"; „I use offensive language to express my anger on social media"; „I post content that criticizes or attacks others intensely on social media". Cronbach's α = 0.87 (moderate) and 0.88 (high-intensity).

3.3.2 Online Social Capital

Online social capital was measured using an adapted version of the Online Social Capital Scale (Williams, 2006; Ellison et al., 2021), which assesses bonding and bridging online social capital. Bonding online social capital (7 items) measures resources derived from close online relationships. Sample items: „I can rely on my close friends on social media for emotional support when I am in trouble"; „My family members on social media often help me solve problems in my life"; „I feel a strong sense of belonging to the small social groups I participate in on social media". Cronbach's α = 0.86.

Bridging online social capital (7 items) measures resources derived from weak online relationships. Sample items: „I can get new information or ideas from acquaintances on social media"; „Members of online interest groups I join often provide me with useful resources"; „Social media helps me connect with people from different backgrounds who can offer new opportunities". Cronbach's α = 0.85.

3.3.3 Empathy

Empathy was measured using an adapted version of the Interpersonal Reactivity Index (Davis, 1983; Decety & Jackson, 2020), which assesses cognitive and affective empathy. Cognitive empathy (6 items) measures the ability to understand others' perspectives. Sample items: „I can easily understand the feelings and thoughts of others when they post emotional content on social media"; „I can put myself in others' shoes when I see their emotional expressions on social media"; „I can figure out why others feel a certain way based on their social media posts". Cronbach's α = 0.84.

Affective empathy (6 items) measures the ability to share others' emotions. Sample items: „I feel happy when I see others sharing positive moments on social

media“; „I feel sad for others when they express sadness on social media“; „I experience the same emotions as others when I read their emotional posts on social media“. Cronbach‘s α = 0.83.

3.3.4 Covariates

Based on previous research (Ellison et al., 2021; Valkenburg & Peter, 2022), the following covariates were included in the analyses: gender (1 = female, 0 = male), age (continuous), daily social media use time (1 = <1 hour, 2 = 1–2 hours, 3 = 2–3 hours, 4 = ≥3 hours), primary motivation for social media use (1 = social interaction, 2 = information seeking, 3 = entertainment, 4 = creative expression), and country (dummy-coded with Germany as the reference group). These variables were controlled for to isolate the unique effects of emotional expression and empathy on online social capital.

3.4 Interview Protocol

Semi-structured interviews were conducted to explore digital natives‘ subjective experiences and strategies of emotional expression for online social capital construction. A purposive sampling strategy was used to select interview participants who represented different genders, ages, and countries (9 participants per country, totaling 45 participants). The interview protocol included four main sections: (1) Experiences of emotional expression on social media (e.g., „What types of emotions do you usually express on social media? Why?“); (2) Perceptions of the relationship between emotional expression and online social relationships (e.g., „How do you think your emotional expression on social media affects your online friendships or social networks?“); (3) The role of empathy in online emotional interactions (e.g., „Have you ever had empathetic interactions with others due to emotional expression on social media? How did it affect your relationship?“); (4) Strategies of emotional expression for online social capital construction (e.g., „Do you adjust your emotional expression on social media to build better relationships? If yes, what strategies do you use?“). Each interview lasted 30–40 minutes and was audio-recorded with participants‘ consent.

3.5 Data Collection Procedures

The study was approved by the Institutional Review Boards (IRBs) of all participating universities (Ludwig-Maximilians-Universität München IRB#: 2023-0612; Peking University IRB#: 2023-0345; University of Barcelona IRB#: 2023-0278; University of Mumbai IRB#: MU/IRB/2023-068; University of Ghana IRB#: UG/IRB/2023-049). Prior to data collection, informed consent was obtained from all survey and interview participants.

Survey data were collected online via Qualtrics between July 2023 and November 2023. Participants were recruited through school-based recruitment (universities and colleges), community youth centers, and online social media groups to ensure sample diversity. No incentives were provided to avoid potential response biases. Interview data were collected face-to-face or via video conferencing (for participants in remote areas) during the same period. After each interview, the audio recordings were transcribed verbatim, and the transcripts were reviewed and verified by two researchers to ensure accuracy.

3.6 Data Analysis Strategies

3.6.1 Quantitative Data Analysis

Quantitative data analysis was conducted using SPSS 28.0 and AMOS 26.0. The following analytical steps were implemented: (1) Descriptive statistics: Means, standard deviations, and frequencies were calculated for all variables to describe the sample characteristics and variable distributions. Normality was assessed using Shapiro-Wilk tests and visual inspection of histograms; no significant deviations from normality were observed. (2) Correlation analysis: Pearson correlation coefficients were computed to examine bivariate relationships between variables, identifying potential multicollinearity. (3) Hypothesis testing for direct effects: Hierarchical multiple regression analyses were conducted to test the direct effects of positive and negative emotional expression on bonding and bridging online social capital, controlling for covariates. For

the non-linear relationship (H2a), a quadratic term of moderate negative emotional expression was added to the regression model. (4) Mediation analysis: Structural equation modeling (SEM) was used to test the mediating role of cognitive and affective empathy, using the bootstrap method (5,000 bootstrap samples) to assess the significance of indirect effects. (5) Cross-cultural analysis: Multigroup SEM was conducted to explore potential cross-cultural variations, with chi-square difference tests used to compare the fit of unconstrained and constrained models.

3.6.2 Qualitative Data Analysis

Qualitative data analysis was conducted using thematic analysis (Braun & Clarke, 2022). The following steps were implemented: (1) Familiarization: Researchers read and re-read the interview transcripts to become familiar with the data. (2) Coding: Initial codes were generated by coding the transcripts line by line. (3) Theme development: Codes were grouped into potential themes based on their similarities and relationships. (4) Theme refinement: Themes were reviewed and refined to ensure they were distinct, coherent, and representative of the data. (5) Reporting: Themes were described and interpreted, with illustrative quotes from participants included to support the findings. Two researchers independently coded the data, and discrepancies were resolved through discussion and consensus to ensure inter-coder reliability (Cohen‘s kappa = 0.86, indicating good reliability).

4. Results

4.1 Quantitative Results

4.1.1 Descriptive Statistics and Correlation Analysis

Descriptive statistics for the main variables are presented below: Positive emotional expression (M = 3.78, SD = 0.85), moderate negative emotional expression (M = 2.96, SD = 0.92), high-intensity negative emotional expression (M = 1.87, SD = 0.76), bonding online social capital (M = 3.45, SD = 0.88), bridging online social capital (M = 3.21, SD = 0.91), cognitive empathy (M = 3.52, SD = 0.83), affective empathy (M = 3.48, SD = 0.84).

Correlation analyses revealed the following key relationships (all $p < 0.001$ unless otherwise noted): Positive emotional expression was significantly positively correlated with bonding online social capital ($r = 0.46$) and bridging online social capital ($r = 0.42$). Moderate negative emotional expression was significantly positively correlated with bonding online social capital ($r = 0.38$) and bridging online social capital ($r = 0.33$). High-intensity negative emotional expression was significantly negatively correlated with bonding online social capital ($r = -0.29$) and not significantly correlated with bridging online social capital ($r = 0.08$, $p > 0.05$). Cognitive empathy was significantly positively correlated with positive emotional expression ($r = 0.41$), moderate negative emotional expression ($r = 0.35$), bonding online social capital ($r = 0.52$), and bridging online social capital ($r = 0.47$). Affective empathy showed similar correlation patterns to cognitive empathy: positive correlations with positive emotional expression ($r = 0.43$), moderate negative emotional expression ($r = 0.37$), bonding online social capital ($r = 0.54$), and bridging online social capital ($r = 0.49$). No significant multicollinearity was detected, as all variance inflation factors (VIF) were below 2.3 (Hair et al., 2022).

4.1.2 Direct Effects of Emotional Expression on Online Social Capital

Hierarchical multiple regression analyses (controlling for covariates) confirmed the direct effects of emotional expression on online social capital:

For bonding online social capital: Step 1 (covariates) explained 11% of the variance ($F = 23.45$, $p < 0.001$). Step 2 (adding positive emotional expression and moderate negative emotional expression) explained an additional 22% of the variance ($\Delta F = 312.67$, $p < 0.001$). Positive emotional expression had a significant positive effect ($\beta = 0.32$, $p < 0.001$), confirming H1a. Moderate negative emotional expression had a significant positive effect ($\beta = 0.25$, $p < 0.001$). Step 3 (adding the quadratic term

of moderate negative emotional expression and high-intensity negative emotional expression) explained an additional 5% of the variance ($\Delta F = 78.92$, $p < 0.001$). The quadratic term of moderate negative emotional expression was significant and negative ($\beta = -0.18$, $p < 0.001$), indicating an inverted U-shaped relationship between moderate negative emotional expression and bonding online social capital. High-intensity negative emotional expression had a significant negative effect ($\beta = -0.21$, $p < 0.001$), confirming H2a.

For bridging online social capital: Step 1 (covariates) explained 10% of the variance ($F = 21.36$, $p < 0.001$). Step 2 (adding positive emotional expression and moderate negative emotional expression) explained an additional 18% of the variance ($\Delta F = 245.78$, $p < 0.001$). Positive emotional expression had a significant positive effect ($\beta = 0.28$, $p < 0.001$), confirming H1b. Moderate negative emotional expression had a significant positive effect ($\beta = 0.22$, $p < 0.001$), confirming H2b. Adding high-intensity negative emotional expression did not significantly increase the explained variance ($\Delta F = 2.15$, $p > 0.05$), and its effect was non-significant ($\beta = 0.06$, $p > 0.05$).

4.1.3 Mediating Role of Empathy

SEM results (using bootstrap method with 5,000 samples) revealed the mediating role of cognitive and affective empathy:

For the relationship between positive emotional expression and bonding online social capital: The direct effect was significant ($\beta = 0.21$, $p < 0.001$), and the indirect effects through cognitive empathy ($\beta = 0.12$, 95% CI [0.09, 0.15]) and affective empathy ($\beta = 0.13$, 95% CI [0.10, 0.16]) were significant. This indicates that cognitive and affective empathy partially mediate the relationship, confirming H3a and H4a.

For the relationship between positive emotional expression and bridging online social capital: The direct effect was significant ($\beta = 0.18$, $p < 0.001$), and the indirect effects through cognitive empathy ($\beta = 0.10$, 95% CI [0.07, 0.13]) and affective empathy ($\beta = 0.11$, 95% CI [0.08, 0.14]) were significant. Thus, cognitive and affective empathy partially mediate the relationship, confirming H3b and H4b.

For the relationship between moderate negative emotional expression and bonding online social capital: The direct effect was non-significant ($\beta = 0.07$, $p > 0.05$), and the indirect effects through cognitive empathy ($\beta = 0.09$, 95% CI [0.06, 0.12]) and affective empathy ($\beta = 0.10$, 95% CI [0.07, 0.13]) were significant. This indicates that cognitive and affective empathy fully mediate the relationship, confirming H5a and H6a.

For the relationship between moderate negative emotional expression and bridging online social capital: The direct effect was non-significant ($\beta = 0.06$, $p > 0.05$), and the indirect effects through cognitive empathy ($\beta = 0.08$, 95% CI [0.05, 0.11]) and affective empathy ($\beta = 0.09$, 95% CI [0.06, 0.12]) were significant. Thus, cognitive and affective empathy fully mediate the relationship, confirming H5b and H6b.

4.1.4 Cross-Cultural Analysis

Multigroup SEM analyses revealed minimal cross-cultural variations. The direct and mediating effects were generally consistent across the five countries. The only minor variation was in the strength of the relationship between positive emotional expression and bridging online social capital, which was strongest in China ($\beta = 0.32$) and India ($\beta = 0.31$), and slightly weaker in Germany ($\beta = 0.25$), Spain ($\beta = 0.26$), and Ghana ($\beta = 0.27$). However, chi-square difference tests indicated that these variations were not statistically significant (all $p > 0.05$), suggesting that the patterns of relationships are generally universal across the five cultural contexts.

4.2 Qualitative Results

Thematic analysis of the interview data identified four main themes related to emotional expression on social media and online social capital construction among digital natives:

4.2.1 Strategic Emotional Expression for Online Relationship Building

Most interview participants reported adjusting their emotional expression on social media to build

and maintain online relationships. They tended to express more positive emotions in public social media spaces (e.g., Instagram feeds, Weibo) to create a favorable online image and attract social approval. As one participant from Germany noted: „I usually post happy things like travel photos or achievements on my Instagram feed because it makes people like me more and want to interact with me.“ In contrast, they expressed moderate negative emotions in private or semi-private spaces (e.g., WeChat groups, WhatsApp chats with close friends) to seek support without damaging their public image. A participant from China stated: „I share my frustrations with my close friends in a WeChat group instead of on my public Weibo. They can understand and support me, which makes our relationship closer.“

4.2.2 Empathy as a Catalyst for Online Social Capital Accumulation

Participants widely recognized that empathy plays a key role in converting emotional expression into online social capital. When they expressed positive emotions, the empathetic responses (e.g., likes, congratulatory comments) from others strengthened their existing relationships and helped them form new connections. A participant from Spain said: „When I posted about my graduation on Facebook, many people commented with kind words and shared my joy. Some of my acquaintances even reached out to me for career advice, which helped me expand my professional network.“ When they expressed moderate negative emotions, empathetic support from others enhanced mutual trust and intimacy. A participant from Ghana noted: „I shared that I was stressed about my exams on a university group chat, and many classmates offered to share study materials and study with me. This not only helped me with my exams but also made me feel part of the group.“

4.2.3 Negative Consequences of High-Intensity Negative Emotional Expression

All participants reported that high-intensity negative emotional expression (e.g., aggressive complaints, personal attacks) had negative effects on their online social relationships. Such expression often led to conflict, social rejection, and a loss of social capital. A participant from India stated: „I once posted an angry comment criticizing a teacher on a university forum, using harsh language. Many people thought I was unreasonable and unfollowed me. Some of my classmates even avoided interacting with me afterwards.“ Participants emphasized that they actively avoided high-intensity negative emotional expression to protect their online social capital.

4.2.4 Cross-Cultural Similarities and Minor Differences in Emotional Expression Strategies

Participants from all five countries reported similar emotional expression strategies, such as prioritizing positive expression in public spaces and moderate negative expression in private spaces. The only minor cross-cultural difference was in the intensity of emotional expression: participants from individualistic cultures (Germany, Spain) tended to express emotions more openly, while those from collectivistic cultures (China, India, Ghana) were more cautious about expressing negative emotions in public to maintain group harmony. However, this difference did not alter the core relationship between emotional expression, empathy, and online social capital.

5. Discussion

5.1 Main Findings

The present study adopts a mixed-methods and cross-cultural approach to investigate the relationship between emotional expression on social media and online social capital construction among digital natives, and the mediating role of empathy. The key findings are summarized as follows:

First, positive emotional expression on social media positively predicts both bonding and bridging online social capital. This is consistent with previous research (Yang et al., 2022; Liu et al., 2023) and supports the „positivity bias“ perspective, which suggests that positive emotional expression creates a friendly online atmosphere that fosters social

connections and trust. The qualitative findings further confirm that digital natives strategically use positive emotional expression to build a favorable online image and attract social interaction, thereby accumulating social capital.

Second, negative emotional expression has a non-linear (inverted U-shaped) relationship with bonding online social capital and a positive relationship with bridging online social capital. Moderate negative emotional expression enhances bonding social capital by signaling authenticity and eliciting empathetic support from close others, while high-intensity negative emotional expression reduces bonding social capital by causing relationship strain. Moderate negative emotional expression also promotes bridging social capital by facilitating connections with individuals who share similar negative experiences. This finding resolves the inconsistency in previous research by highlighting the importance of the intensity and context of negative emotional expression (Reinecke et al., 2021; Valkenburg et al., 2022).

Third, empathy (cognitive and affective) plays a mediating role in the relationship between emotional expression and online social capital. Cognitive and affective empathy partially mediate the relationship between positive emotional expression and online social capital, indicating that positive emotional expression directly enhances social capital while also triggering empathetic responses that further strengthen social connections. For moderate negative emotional expression, empathy fully mediates the relationship with online social capital, suggesting that the positive effect of moderate negative emotional expression on social capital is entirely dependent on empathetic interactions. This confirms the critical role of empathy as a psychological mechanism linking emotional expression to social capital construction (Batson et al., 2021; Decety & Jackson, 2020).

Fourth, the patterns of relationships between emotional expression, empathy, and online social capital are generally consistent across the five cultural contexts. Minor cross-cultural differences in the intensity of emotional expression do not alter the core mechanisms, suggesting that these relationships are relatively universal. This enhances the generalizability of the study‘s findings and supports the cross-cultural validity of the theoretical framework.

5.2 Theoretical Implications

The present study makes several important theoretical contributions to media psychology and digital behavior research:

First, it enriches the literature on emotional expression and online social capital by adopting a multidimensional perspective. By distinguishing between positive and negative (moderate vs. high-intensity) emotional expression and between bonding and bridging online social capital, the study provides a more nuanced understanding of their relationships. The finding of an inverted U-shaped relationship between moderate negative emotional expression and bonding social capital extends previous linear models and highlights the complexity of negative emotional expression‘s effects on social capital.

Second, it identifies empathy as a key mediating mechanism linking emotional expression on social media to online social capital construction. Previous research has focused on the direct effects of social media use on social capital, neglecting intermediate psychological processes (Valkenburg & Peter, 2022; Liu et al., 2023). By demonstrating that cognitive and affective empathy mediate the relationship between emotional expression and social capital, the study fills this gap and contributes to the development of a more comprehensive theoretical model of online social capital formation.

Third, it extends the concept of social capital to the digital context for digital natives. By focusing on digital natives, a group that has grown up with social media, the study provides insights into the unique features of their online social capital construction. The findings suggest that digital natives‘ emotional expression strategies on social media are tailored to accumulate both bonding and bridging social capital, reflecting the integration of online and offline social lives in the digital age.

Fourth, the cross-cultural consistency of the findings enhances the theoretical generalizability of the relationships between emotional expression, empathy, and online social capital. Previous research on online social capital has often been limited to single-country samples (Ellison et al., 2021; Palfrey & Gasser, 2021). By demonstrating consistent patterns across diverse cultural contexts (individualistic and collectivistic), the study provides evidence that the psychological mechanisms underlying these relationships are relatively universal, strengthening the theoretical validity of the findings.

5.3 Practical Implications

The findings of this study have important practical implications for digital natives, educators, social media platform developers, and policymakers:

For digital natives: The study provides guidance for effective emotional expression on social media to construct online social capital. Digital natives should prioritize positive emotional expression in public spaces to create a favorable online image. They can express moderate negative emotions in appropriate contexts (e.g., private groups with close friends) to seek support and strengthen relationships, but avoid high-intensity negative emotional expression that may damage social connections. Additionally, digital natives should cultivate empathy to enhance mutual understanding and trust in online interactions, thereby promoting social capital accumulation.

For educators: Schools and universities should integrate emotional intelligence and digital literacy education into the curriculum, focusing on teaching digital natives how to express emotions appropriately on social media and develop empathetic skills. Educational activities (e.g., role-playing, group discussions) can be designed to help digital natives understand the impact of different types of emotional expression on social relationships and learn strategies for effective online communication.

For social media platform developers: Platforms should design features that support positive emotional expression and empathetic interactions. For example, they can develop tools to help users express emotions in a healthy and appropriate manner (e.g., emotion guidance prompts, emojis with clear emotional connotations) and create algorithms that prioritize content that fosters empathy and positive social interactions. Platforms should also implement measures to curb high-intensity negative emotional expression (e.g., harmful content detection, warning systems) to maintain a positive online environment.

For policymakers: Policymakers should develop and implement policies to promote healthy social media use among digital natives. This includes supporting digital literacy and emotional intelligence education programs, regulating harmful content on social media platforms, and encouraging research on digital natives‘ online social behavior. Policymakers can also collaborate with civil society organizations to raise awareness about the importance of appropriate emotional expression and empathy in online interactions.

5.4 Limitations and Future Research Directions

Despite its contributions, the present study has several limitations that should be acknowledged, providing directions for future research:

First, the cross-sectional design of the survey limits the ability to establish causal relationships between variables. While the mediation analysis provides insights into the potential mechanism, it cannot confirm the direction of causality. For example, it is possible that online social capital also influences emotional expression and empathy. Future research should adopt longitudinal designs to track changes in variables over time and establish more robust causal inferences.

Second, the study relies on self-report measures for the survey, which may be subject to response biases (e.g., social desirability bias). Participants may overreport positive emotional expression and underreport high-intensity negative emotional expression to align with societal expectations. Future research could complement self-report data with

objective measures, such as behavioral tracking of social media content (e.g., content analysis of posts) and physiological measures of empathy (e.g., fMRI, skin conductance responses).

Third, while the interview sample provides in-depth insights, it is relatively small (45 participants) and may not be fully representative of all digital natives. Future research could conduct larger-scale qualitative studies or mixed-methods studies with more diverse samples to enhance the external validity of the qualitative findings.

Fourth, the study does not examine the role of social media platform type in the relationship between emotional expression and online social capital. Different platforms (e.g., Instagram, WeChat, Facebook) have distinct features and user cultures, which may influence emotional expression and social capital construction. Future research should explore how platform type moderates the relationships between variables.

Fifth, the study focuses on cognitive and affective empathy, but other dimensions of empathy (e.g., compassionate empathy, which involves a desire to help others) may also play a role in online social capital construction. Future research could expand the scope of empathy to include other dimensions and explore their unique mediating effects.

Sixth, the study does not explore potential moderating variables, such as personality traits (e.g., extraversion, neuroticism) or online social network size. These variables may influence the relationship between emotional expression and online social capital. For example, extraverted individuals may be more likely to express emotions on social media, and those with larger social networks may accumulate more bridging social capital. Future research should investigate these moderating variables to further clarify the boundary conditions of the relationships.

6. Conclusion

The present study systematically investigates the relationship between emotional expression on social media and online social capital construction among digital natives, and the mediating role of empathy, using a mixed-methods and cross-cultural design. The findings reveal that positive emotional expression positively predicts both bonding and bridging online social capital; negative emotional expression has an inverted U-shaped relationship with bonding online social capital and a positive relationship with bridging online social capital; and cognitive and affective empathy mediate these relationships. These patterns are generally consistent across diverse cultural contexts.

This study contributes to media psychology and digital behavior research by providing a nuanced understanding of the relationship between emotional expression and online social capital, identifying empathy as a key mediating mechanism, and enhancing the generalizability of findings through a cross-cultural mixed-methods design. Practically, the study provides actionable insights for digital natives to engage in effective emotional expression on social media, and for educators, platform developers, and policymakers to support digital natives‘ healthy online social capital construction.

Future research should build on these findings by adopting longitudinal designs, using mixed methods with objective measures, and exploring the role of platform type, additional empathy dimensions, and moderating variables. Overall, this study advances our understanding of how digital natives‘ emotional expression on social media shapes their online social capital, underscoring the importance of appropriate emotional expression and empathy in the digital age.

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