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Understanding viewer support in video game streaming: key insights into donation drivers

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The rise of video game streaming (VGS) platforms has transformed how audiences' engagement with content and support creators through voluntary donations. This study examines the psychological and relational factors that influence donation intentions among Chilean Millennials and Centennials, drawing on the Stimulus–Organism–Response (S–O–R) theoretical framework. We conceptualize parasocial relationships and social presence as social stimuli that shape affective and cognitive organismic states—enjoyment, loyalty, trust, and satisfaction—which, in turn, influence the intention to donate. Data were collected via an online survey ($N = 401$) and analyzed using partial least squares structural equation modeling (PLS–SEM). The findings reveal that parasocial relationships significantly influence all four organismic states, while social presence impacts enjoyment, loyalty, and satisfaction but not trust. Among the organismic variables, only loyalty and satisfaction significantly predicted donation intentions. The model explains 33.7% of the variance in donation behavior. These results suggest that affective connection and relational satisfaction are stronger drivers of financial support than enjoyment or trust. This study contributes to the literature by applying and validating the S–O–R model in a Latin American context and highlighting the central role of relational engagement in technology-mediated donation behavior on VGS platforms.

KEYWORDS

streaming, intention to donate, streamers, videogames, gaming

1 Introduction

The exponential growth of digital platforms has significantly transformed how people engage in entertainment. One of the most disruptive innovations is video game streaming (VGS), a form of participatory media that enables viewers to watch others play games in real time while interacting via chat, emojis, subscriptions, or financial contributions. This shift reflects broader sociotechnical changes in how individuals consume media, relate to content creators, and form digital communities (Guan et al., 2022; Lim et al., 2020). In the first quarter of 2022 alone, Twitch.tv users generated over 6 billion hours of streamed content watched (Statista, 2022), with other platforms such as YouTube Live, Facebook Live, TikTok, and Douyu, which exhibit similar patterns of growth.

One of the most salient dynamics in this environment is the emergence of voluntary monetary donations from viewers to streamers, often in the form of virtual gifts or direct financial transfer. These donations are not driven by transactional necessity but rather by affective, social, and symbolic motivations (Bründl et al., 2023; Xi et al., 2024). Viewers may

donate to support streamers' work, gain visibility in the community, express admiration, or reinforce emotional bonds formed through parasocial relationships—unidirectional emotional connections with media figures (Leith, 2021; McLaughlin and Wohn, 2021). Additionally, the affordances of live platforms, such as instant alerts, interactive chats, and gamified gifting systems, enhance social presence, creating a sense of immediacy and co-presence that further stimulates engagement (Aw et al., 2025; Johnson and Woodcock, 2019).

Research in this area has gained momentum in the recent years. For example, Lin (2021) made important contributions by demonstrating how emotional attachment influences donation behavior in the VGS. However, there remains an opportunity to expand this line of inquiry by situating these interactions within a structured theoretical framework and exploring different cultural and geographical contexts. Recent studies have emphasized the need to consider not only individual-level emotions but also technological affordances and contextual cues that shape donation dynamics (Xu et al., 2021b; Yoganathan et al., 2021). To address these gaps, this present study adopts the Stimulus–Organism–Response (S–O–R) model (Li et al., 2022; Li and Peng, 2021) to examine how social and technological stimuli influence donation intentions in VGS contexts. Within this framework, parasocial relationships and social presence function as external stimuli that influence internal experiential states, such as enjoyment, trust, or user connection, which in turn shape behavioral responses, such as the intention to donate. This theoretical lens has proven effective in explaining consumer behavior across digital environments but remains underutilized in live-streaming donation research (Aw et al., 2025; Wulf et al., 2020). Moreover, while most existing studies have focused on samples from Asia, North America, or Europe, Latin American audiences—particularly in Chile—remain largely underrepresented in the literature despite the region's rapid growth in streaming engagement (Merry and Whitfield, 2025). Understanding how users from this context relate to streamers and what motivates their financial support can offer valuable insights for platform developers, content creators, and scholars.

Accordingly, this study aims to analyze how social-relational and experiential variables, such as parasocial relationships and social presence, influence the intention to donate in video game streaming contexts based on the Stimulus–Organism–Response (S–O–R) model. Specifically, it explores how these external social stimuli affect organismic variables related to the user experience, how those variables in turn influence the intention to donate, and how this theoretical structure performs when tested empirically using data from Latin American viewers through partial least squares structural equation modeling (PLS-SEM).

2 Literature review

2.1 Virtual gifting in live streaming platforms

Virtual gifting has become a core monetization mechanism in live-streaming platforms, particularly in the context of video game streaming. Unlike fixed-fee subscriptions, these donations are voluntary, often spontaneous, and socially visible, serving both as expressions of appreciation and as performance of affiliation within the streaming community (Johnson and Woodcock, 2019;

Yoganathan et al., 2021). Through paid digital items or symbolic financial transfers, viewers offer support to streamers while simultaneously seeking recognition, entertainment, and social connections.

Recent research has emphasized that gifting behaviors are shaped by complex emotional and social dynamics. In a recent comprehensive study, Xi et al. (2024) found that streamers' emotional expressiveness—particularly positive emotions such as happiness and surprise—significantly increases viewers' willingness to donate, especially among loyal or high-engagement audiences. Their findings suggest that emotional cues act as social signals that trigger affective alignment and motivate actions. The influence of emotional display is further amplified by real-time feedback mechanisms (e.g., alerts and animations), reinforcing the performative dimension of gifting behavior. To complement this perspective, Aw et al. (2025) proposed a multidimensional model of gift-giving motivation that highlighted factors such as streamer attractiveness, perceived authenticity, quality of interaction, and community-based rewards. Their framework underscores how gifting in live streaming is not merely a functional transaction, but a symbolic act embedded in social presence, platform affordances, and relational intimacy. Gamified features built into the platforms, such as leaderboard rankings, tiered gifts, and animated alerts, also incentivize gifting by increasing visibility and fostering competition or prestige (Johnson and Woodcock, 2019). These affordances transform donation into a socially rewarding experience, creating a feedback loop between user engagement and platform-mediated social recognition (Ruotsalainen, 2022).

While most studies have focused on East Asian or North American audiences, recent contributions call for a broader geographic validation. For example, Merry and Whitfield (2025) emphasized the need to examine gifting cultures in underexplored contexts such as Latin America, where streaming practices are rapidly expanding. This study contributes to this goal by exploring how gifting behavior operates in a Chilean sample of VGS viewers, with particular attention paid to emotional, social, and technical factors previously identified in the literature.

In summary, the literature reveals that virtual gifting behavior is shaped by a convergence of emotional, social, and technological elements, such as streamer expressiveness, parasocial bonds, interactive affordances, and symbolic community norms. However, despite the growing body of empirical insights, these factors are often analyzed in isolation, lacking a coherent theoretical structure that explains how they interact to influence viewers' decision-making. To address this, the present study adopts the Stimulus–Organism–Response (S–O–R) model, a well-established framework in consumer and media psychology, to conceptualize how external social stimuli give rise to internal experiential states that ultimately drive donation intention in the live-streaming context.

2.2 Stimulus–organism–response (S–O–R)

The stimulus–organism–response (S–O–R) framework, originally developed by Mehrabian and Russell (1974), has been widely adopted in consumer behavior research to explain how environmental stimuli influence internal states (organisms) and subsequent behavioral responses. In the context of digital and live streaming environments, this model offers a robust structure for understanding how features of

the streaming platform and interactions with streamers affect user engagement behaviors such as virtual gifting and donations.

Recent studies have successfully applied the S-O-R model to explore consumer behavior on live streaming platforms. For example, [Li and Peng \(2021\)](#) employed the S-O-R model to investigate how characteristics of streamers and live scenes function as stimuli that trigger emotional attachment and flow experience, representing the organism, which in turn influences users' intention to send virtual gifts. Similarly, [Li et al. \(2022\)](#) examined impulse buying in live streaming commerce by conceptualizing the platform's interactive and media-rich environment as stimuli, and users' affective and cognitive reactions as organismic states that predict purchase behavior.

In this study, we draw upon the S-O-R model to conceptualize parasocial relationships and perceived social presence as stimuli emerging from streamer-viewer and viewer-viewer interactions. These stimuli are hypothesized to evoke a set of internal evaluations such as emotional resonance, perceived authenticity, and reciprocal expectations, which we categorize under the organism component. These internal states are expected to influence viewers' responses, operationalized as their intention to donate to the streamer.

This application is supported by existing literature, which underscores that stimuli in live streaming contexts include not only technical affordances of the platform but also social cues and affective elements ([Li and Peng, 2021](#); [Xue et al., 2020](#)). The organism dimension has been modeled through constructs such as flow ([Li and Peng, 2021](#)), emotional engagement ([Xu et al., 2021a](#)), and perceived social presence ([Lin, 2021](#)), whereas responses typically involve continued use, loyalty, or economic behaviors such as gifting ([Aw et al., 2025](#); [Li et al., 2022](#); [Xi et al., 2024](#)).

In alignment with this theoretical grounding, our study uses the S-O-R framework not to test mediational pathways per se, but to conceptually organize the role of social and psychological mechanisms that link perceived streamer and community characteristics to behavioral outcomes. This allows for a more holistic understanding of donation intention in the unique environment of video game live-streaming platforms.

2.3 Intention to donate

Donations within live streaming platforms, particularly in the context of video game streaming, diverge significantly from traditional philanthropic behavior. While [Bekkers and Wiepking \(2011\)](#) define donating as a financial contribution to aid others outside one's immediate circle, motivations in digital environments appear to be more complex and context-specific. Altruism, although conceptually present, is not always a decisive factor in donation intent. Nor is status seeking necessarily predictive, as studies have shown it to be largely irrelevant in this domain ([McVittie et al., 2006](#)). Instead, user behavior on streaming platforms is often shaped by relational and experiential elements embedded in the media environment.

In video game live streaming, viewers' intention to donate is often influenced by emotional proximity and relational dynamics between viewers and streamers. They are nurtured through frequent interactions, perceived authenticity, and social affordances of the platform ([Li and Yu, 2020](#)). Viewers may perceive their financial contributions as a way to reinforce these bonds or gain symbolic recognition from the streamer and the wider e-community ([Bründl et al., 2023](#); [Jodén and Strandell, 2022](#)).

This dynamic reflects the social exchange logic, wherein viewers derive emotional value, visibility, or perceived closeness in return for monetary support ([Cropanzano and Mitchell, 2005](#)).

Moreover, recent studies emphasize the importance of relational variables such as loyalty and satisfaction as stronger predictors of donation behavior than hedonic enjoyment or baseline trust ([Lin, 2021](#); [Xu et al., 2021a](#)). These insights challenge earlier assumptions and highlight the need to examine donation behavior as a socially embedded and emotionally driven action. In particular, sustained engagement, perceived reciprocity, and attachment to the streamer emerged as crucial drivers of the intention to donate ([Aw et al., 2025](#); [Wang et al., 2024](#); [Xi et al., 2024](#)).

Hence, this study focuses on how the interplay of parasocial relationships and social presence with affective and relational constructs such as loyalty and satisfaction ultimately leads to donation intention. Understanding these mechanisms is vital for platforms and streamers to develop sustainable monetization strategies and foster deeper audience engagement.

2.4 Parasocial relationships

Parasocial relationships (PSRs) refer to perceived one-sided emotional bonds that media users develop with content creators, often in the absence of reciprocal communication. In live streaming environments, these relationships are intensified by performative intimacy and continuous self-disclosure enacted by streamers, which fosters a sense of familiarity and closeness among viewers ([Leith, 2021](#); [McLaughlin and Wohn, 2021](#)). This perceived closeness can lead viewers to regard streamers as friends or confidants, particularly when their names are mentioned, donations are acknowledged, or questions are answered during the stream ([Jodén and Strandell, 2022](#)).

Streaming platforms such as Twitch and YouTube Live actively support these dynamics by enabling real-time interactions and by providing social cues that reinforce the illusion of reciprocity. This emotional connection is not only enduring, but also predictive of multiple psychological and behavioral outcomes relevant to the donation process ([McLaughlin and Wohn, 2021](#)). Several empirical studies have confirmed that parasocial bonds increase affective engagement and lead to enhanced viewer experiences, particularly in terms of enjoyment, trust, loyalty, and satisfaction ([Hu et al., 2017](#); [Lin, 2021](#); [Xu et al., 2021a](#)).

First, viewers who perceive a stronger parasocial connection often report higher levels of enjoyment because these bonds enhance the immersive and emotionally gratifying aspects of the streaming experience ([Kim and Song, 2016](#); [Xu et al., 2021a](#)). Second, loyalty, expressed as repeated viewing or long-term commitment to a streamer, has been linked to PSRs since emotional closeness fosters habitual engagement and channel attachment ([Lin, 2021](#)). Third, trust in the streamer is often developed through repeated exposure and perceived authenticity, even without face-to-face interactions ([Hu et al., 2017](#); [McLaughlin and Wohn, 2021](#)). Finally, PSRs are associated with increased satisfaction because viewers tend to evaluate the overall experience more positively when they feel emotionally connected to the content creator ([Hu et al., 2017](#)).

In this study, parasocial relationships are conceptualized as external social stimuli that influence organismic states in the S-O-R framework. Based on prior findings, we hypothesize the following.

H1: Parasocial relationships positively affect enjoyment.

H2: Parasocial relationships positively affect loyalty.

H3: Parasocial relationships positively affect trust.

H4: Parasocial relationships positively affect satisfaction.

2.5 Social presence

Social presence refers to the degree to which individuals perceive others as real and emotionally accessible in a mediated environment (Biocca et al., 2003). On live streaming platforms, this construct captures the sense of being together with the streamer and fellow viewers, even in the absence of physical co-location. As a core affordance of interactive media, social presence contributes to feelings of immediacy, mutual awareness, and psychological connection (Chen and Liao, 2022; Li et al., 2022).

Social presence theory highlights three key dimensions: coexistence (awareness of others' presence), psychological connection (emotional engagement and empathy), and behavioral involvement (interaction and participation) (Biocca et al., 2003; Garrison et al., 2000). These dimensions are especially salient in live-streaming contexts, where users engage in real-time communication through chats, reactions, donations, or shared rituals that reinforce the perception of social proximity (Leith, 2021; Xue et al., 2020).

Social presence has been shown to influence multiple user responses in digital and media-rich environments. First, it enhances enjoyment by fostering an immersive and emotionally stimulating experience (Lin, 2021). When users feel that they are participating in a shared interactive space, they tend to derive greater pleasure from the content. Second, loyalty is strengthened by repeated affective involvement: viewers are more likely to return to streams where they feel emotionally connected to others (Lin, 2021). Third, trust is built through real-time cues, perceived authenticity, and a sense of closeness to the streamer (Aw et al., 2025; Xi et al., 2024). Finally, satisfaction emerges as a positive overall evaluation of the experience, which is influenced by how the user feels within the social and emotional dynamics of the stream (Xi et al., 2024). Accordingly, in this study, social presence was conceptualized as a stimulus within the S-O-R framework and was, expected to elicit favorable organismic states related to affective, attitudinal, and cognitive outcomes. Thus, we propose the following hypotheses:

H5: Social presence positively affects enjoyment.

H6: Social presence positively affects loyalty.

H7: Social presence positively affects trust.

H8: Social presence positively affects satisfaction.

2.6 Enjoyment

The concept of enjoyment refers to the extent to which a system or platform is perceived as intrinsically pleasurable and independent

of any functional or utilitarian outcome (Davis et al., 1992). In the context of live streaming, enjoyment emerges from emotional engagement, entertainment value, and immersive experiences that capture user attention and foster continued interaction (Li and Peng, 2021; Lin, 2021).

Enjoyment is considered a central hedonic motivation that influences user behaviors across digital entertainment platforms. Specifically, in the domain of video game streaming (VGS), enjoyment arises from real-time interactions, humorous or skillful content delivery, and the affective atmosphere created by the streamer and community (Li et al., 2022; Lim et al., 2020). Events such as the “hype train,” which celebrates donation milestones and amplifies communal enthusiasm, exemplify how enjoyment is constructed and socially reinforced (Jodén and Strandell, 2022). According to Lin (2021), enjoyment positively influences users' attitudes toward virtual gift-giving on live-streaming platforms. This is supported by evidence from studies that show that enjoyment fosters emotional attachment and enhances the perceived value of the donation experience (Li and Peng, 2021; Yu et al., 2018). Moreover, flow theory suggests that when users are immersed and emotionally gratified during a stream, they are more likely to engage in supportive actions, such as gifting or donating (Li and Peng, 2021).

However, it is important to note that some empirical findings, including those from the current study, suggest that enjoyment may act as a necessary but insufficient condition for donation behavior. That is, while enjoyment keeps users engaged, it may require complementary emotional or relational drivers (e.g., loyalty or satisfaction) to convert enjoyment into financial support (Harris and Goode, 2004; McLaughlin and Wohn, 2021). Thus, we propose the following hypothesis:

H9: Enjoyment directly and positively affects the intention to donate in a video game stream.

2.7 Loyalty

Consumer loyalty has traditionally been defined as the intention to maintain a relationship with a brand or an organization over time (Zeithaml et al., 1996). In conventional retail environments loyalty can be cultivated through physical experiences and direct service encounters, in online and digital contexts, particularly in live streaming environments, loyalty must be constructed through mediated interactions, often driven by emotional, aesthetic, and communal cues (Afsar et al., 2010; Ju and Cho, 2020).

Loyalty plays a key role in predicting continued engagement and financial support in video game streaming (VGS). Viewers often develop loyalty toward content creators based on their unique characteristics, authenticity, interaction style, and content quality (Ju and Cho, 2020). Such loyalty mirrors phenomena observed in celebrity fandoms or brand engagement, where repeated exposure and emotional connection foster sustained behavioral commitment (Huang et al., 2021; Ma et al., 2022). These loyal relationships are further reinforced through nostalgia and long-term parasocial interactions, as fans re-encounter familiar creators, including retired celebrities who maintain relevance via social platforms and live content (Ma et al., 2022).

Emotional attachment has tangible implications. Loyal viewers are more likely to express gratitude and appreciation by subscribing to or donating, especially when they perceive the streamer as a continuous source of meaningful entertainment and social connections (Kim and Kim, 2023). Several studies confirm that loyalty not only enhances viewer retention, but also positively predicts donation behavior (Lin, 2021; McLaughlin and Wohn, 2021). In fact, compared to enjoyment or trust, loyalty is a more robust predictor of financial contributions in live streaming environments as it reflects a deeper, sustained commitment (Jodén and Strandell, 2022; Ju and Cho, 2020).

Moreover, empirical results from recent studies highlight loyalty as a critical determinant of donation intention, even more so than hedonic factors. This suggests that, while enjoyment or trust may keep audiences engaged, it is a loyal commitment that drives them to act financially in support of the streamer (Kim and Kim, 2023; Lin, 2021; McLaughlin and Wohn, 2021). We propose the following hypotheses:

H10: Loyalty directly and positively affects intention to donate in video game streaming.

2.8 Trust

Trust refers to the belief that another party, such as a streamer, is competent, reliable, and has the viewer's best interests (Gefen et al., 2003). In the context of live streaming, trust functions as a psychological mechanism that reduces the perceived risks associated with financial exchange in virtual environments (Benedictus, 2011; Schlosser et al., 2006). Viewers who perceive streamers as trustworthy are more likely to believe that their donations will be appreciated, ethically handled, and reciprocated emotionally or socially, which can reinforce engagement and repeated gifting behaviors (Lin, 2021; Yu et al., 2018).

Trust is particularly relevant in parasocial interactions, where one-sided relationships are built on consistent exposure and self-disclosure by streamers. As noted by Tsai and Men (2017) and Fu et al. (2019), parasocial closeness nurtures credibility and emotional bonds, increasing the likelihood that viewers will exhibit prosocial behaviors, such as financial support. In this sense, trust may function as a key antecedent to donation intention, especially on platforms where streamers actively cultivate a sense of reliability and community through transparency, consistency, and responsiveness.

Moreover, emotional engagement fostered by trust may help reduce psychological distance between viewers and streamers, promoting a sense of social obligation or affinity that motivates monetary support. This dynamic is supported by Lin (2021) findings, in which trust was shown to significantly influence virtual gift donation intention in live-streaming apps. Accordingly, we propose the following hypotheses:

H11: Trust directly and positively affects the intention to donate in video game streaming.

2.9 Satisfaction

Satisfaction reflects the overall evaluative judgment of users regarding their experience with the streamer and live-streaming

sessions (Lim and Kim, 2011). In the context of video game streaming, satisfaction is not only derived from the gameplay content, but also from the perceived quality of interaction, emotional connection, and recognition received from the streamer (Ju and Cho, 2020; McLaughlin and Wohn, 2021). Prior studies suggest that the satisfaction of viewers is significantly enhanced when streamers acknowledge donations in visible and personalized ways, creating a sense of appreciation and reinforcing the reciprocal nature of the exchange (Jodén and Strandell, 2022; Ma et al., 2022).

Unlike transactional e-commerce scenarios, satisfaction in live streaming environments is often rooted in affective dimensions, such as enjoyment, emotional engagement, and social bonds. When viewers are satisfied with the content and interpersonal dynamics during the stream, they are more likely to express gratitude through financial support such as virtual gifting or donations (Francioni et al., 2021; Li and Peng, 2021). This behavior can be interpreted through the lens of the social exchange theory, in which satisfaction acts as a key driver of prosocial behaviors and continued engagement (Cropanzano and Mitchell, 2005). Accordingly, we propose the following hypothesis:

H12: Satisfaction directly and positively affects intention to donate in video game streaming.

In Figure 1, the proposed model, grounded in the Stimulus–Organism–Response (S–O–R) framework, examines how two key social stimuli, parasocial relationships and social presence, shape internal affective and attitudinal states, namely enjoyment, loyalty, trust, and satisfaction. These organismic responses are, in turn, hypothesized to influence viewers' behavioral intentions to donate to video game streamers.

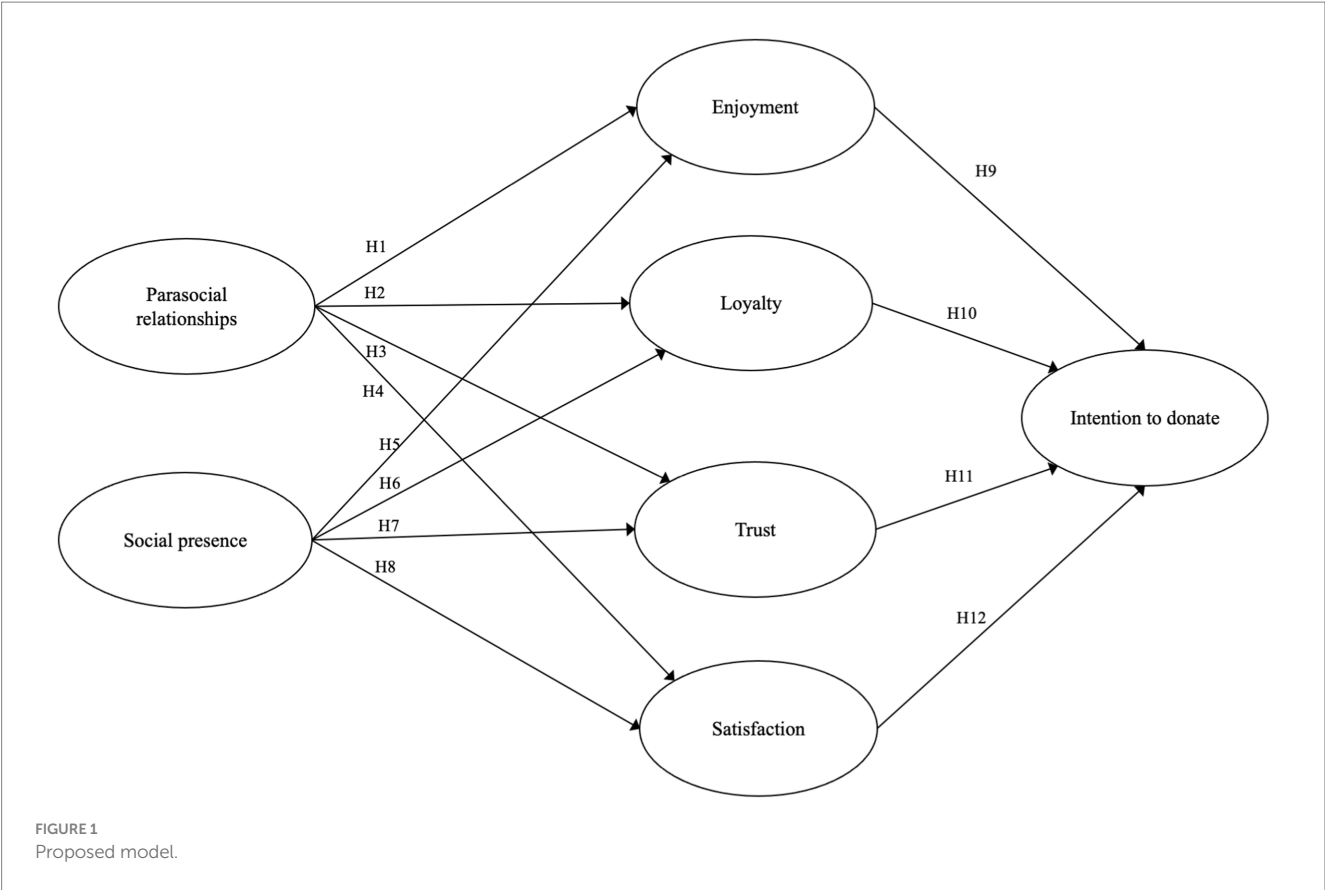
3 Methodology

3.1 Sampling and pre-test

To collect data for this study, an online survey was administered in Chile between September and November 2022. The primary objective was to explore the behavioral and psychological factors associated with virtual gift donation among viewers of video game streaming (VGS). The inclusion criteria focused on Chilean millennials (born between 1980 and 1995) and centennials (born in 1996 and later), consistent with prior studies on digital platform use (Ong et al., 2024). Respondents were required to have access to the Internet and watch video game streams regularly.

Participants were recruited through national online video game forums and social media. To ensure alignment with the study's objectives, only respondents within the specified generational cohorts (Millennials and Centennials) who reported watching video game streams with some regularity, defined as at least 1 h per week, were retained for analysis. Prior to full deployment, a pre-test was conducted with 20 participants to refine the item wording and assess the survey flow. Minor adjustments were made based on feedback to enhance clarity and usability.

After eliminating incomplete and invalid responses, a total of 401 valid responses were obtained. The final sample comprised participants with diverse demographic profiles. The breakdown of the respondents is presented in Table 1. It is important to note that the



sample included a higher proportion of male respondents (65.1%), which aligns with previous research documenting a male-dominated audience in the VGS ecosystem (Kim and Kim, 2023; Lin, 2021; Statista, 2022). While this distribution reflects existing demographic trends, gender imbalance is acknowledged as a potential limitation that may affect the generalizability of the findings.

3.2 Measurement scales

The measurement scales used in this study were adapted from Lin (2021), who used well-established instruments from prior research: social presence (Lim et al., 2015), parasocial relationships (Rubin and Perse, 1986), trust (Gefen et al., 2003), enjoyment (Van Der Heijden, 2003), and donation intention. Each item was revised to reflect the context of video game live streaming. All psychological constructs were assessed using a 7-point Likert scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). Sociodemographic variables such as age, gender, and weekly hours of streaming were measured using categorical or ordinal response formats tailored to each item.

3.3 Statistical tools

Structural Equation Modeling (SEM) is a widely used family of statistical techniques in the business and social sciences because of its ability to model latent constructs, account for measurement errors, and test complex theoretical frameworks simultaneously (Gudergan

TABLE 1 Sample characteristics.

Variables	Category	Frequency	Percentage
Gender	Female	125	31.17%
	Male	261	65.09%
	Other	4	1.00%
	I prefer not to answer	11	2.74%
Age	18–22 years old	238	59.35%
	23–27 years old	117	29.18%
	28–32 years old	30	7.48%
	33–37 years old	14	3.49%
	Over 42 years old	2	0.50%
Hours per week dedicated to streaming	Less than an hour	95	23.69%
	1–2 h	129	32.17%
	3–4 h	71	17.71%
	More than 5 h	53	13.22%
	None	53	13.22%

et al., 2008; Henseler et al., 2016). There are two main approaches to SEM: covariance-based SEM (CB-SEM) and variance-based SEM, commonly referred to as partial least squares SEM (PLS-SEM).

CB-SEM relies on the estimation of model parameters using an empirical variance–covariance matrix and is typically preferred when

the goal is theory confirmation, particularly in models based on reflective constructs and where data meet strict assumptions of normality and sample size. By contrast, PLS-SEM constructs latent variable scores as linear composites of observed indicators and estimates the path coefficients based on these proxies (Henseler et al., 2016; Voorhees et al., 2016). This approach is particularly suited for exploratory research, theory development, and complex models involving numerous constructs and indicators. One of the key advantages of PLS-SEM is its flexibility in terms of sample size, data distribution, and the specification of measurement models, including both reflective and formative indicators. Given these strengths, PLS-SEM was selected for the present study because of the model's complexity, inclusion of second-order constructs, and predictive orientation of the analysis.

The model evaluation was conducted in two stages: (1) assessment of the measurement model to verify reliability and validity and (2) assessment of the structural model to examine the hypothesized relationships among the constructs. Both stages were conducted using SmartPLS 4 software (Ringle et al., 2022).

4 Results

4.1 Measurement model evaluation

The measurement model was assessed according to established guidelines (Fornell and Larcker, 1981; Henseler et al., 2016; Wright et al., 2012) using reliability, convergent validity, and discriminant validity criteria. Cronbach's alpha, a measure of internal consistency reliability, relies on standardized factor loadings, latent variable measurement errors, and error variances (Henseler et al., 2016; Sarstedt et al., 2017). Composite reliability was also evaluated, reflecting the internal consistency among the items measuring a specific construct (Fornell and Larcker, 1981).

Average variance extracted (AVE) assessment determined if the first factor accounted for over half of the variance, eliminating the possibility of a secondary, equally important factor (Henseler et al., 2016). Validity and reliability were ensured if Cronbach's alpha (CA) exceeded 0.7, composite reliability surpassed 0.7 (CR and Rho_A) (Henseler et al., 2016), and factor loadings, and AVE were above 0.7 and 0.5, respectively (Chin, 1998; Fornell and Larcker, 1981). The results are presented in Table 2.

Discriminant validity was examined by ensuring statistical differences between pairs of theoretically distinct constructs using the Fornell-Larcker criterion (Fornell and Larcker, 1981; Henseler et al., 2016; Sarstedt et al., 2017) (Table 3) and heterotrait-monotrait (HTMT) ratio (Voorhees et al., 2016) (Table 4). The Fornell-Larcker criterion required the square root of AVE to surpass inter-construct correlations, while the HTMT values needed to be below 0.9 (Henseler et al., 2016). Adequate discriminant validity was demonstrated when both the criteria were met.

4.2 Structural model evaluation

After confirming the adequacy of the measurement model, we evaluated the structural model. The proposed structural model was evaluated using standardized root mean squared error (SRMR), path

loadings, and R^2 values. The SRMR is considered an appropriate indicator for assessing the global fit of the model, with values below 0.09 indicating adequate model fit (Henseler et al., 2016). In this study, the SRMR value was 0.065, indicating a good overall fit for the structural model. To test the hypotheses, the PLS-bootstrap technique was employed, incorporating 10,000 subsamples, recommended by Streukens and Leroi-Werelds (2016). Table 5 presents the results of the hypotheses, and Figure 2 illustrates the model structure and its explanatory power.

Table 5 summarizes the results of hypothesis testing based on the structural model evaluation. Among the 12 hypotheses, nine were supported and three were not. Specifically, all four hypotheses related to parasocial relationships were supported: Parasocial relationships positively influenced enjoyment (H1, $\beta = 0.554$, $p < 0.001$), loyalty (H2, $\beta = 0.631$, $p < 0.001$), trust (H3, $\beta = 0.669$, $p < 0.001$), and satisfaction (H4, $\beta = 0.670$, $p < 0.001$). Similarly, three of the four hypotheses involving social presence were supported: Social presence significantly predicted enjoyment (H5, $\beta = 0.240$, $p < 0.001$), loyalty (H6, $\beta = 0.202$, $p < 0.001$), and satisfaction (H8, $\beta = 0.160$, $p < 0.001$). However, its effect on trust (H7) is not statistically significant ($\beta = 0.063$, $p = 0.149$).

Satisfaction had a significant positive effect on intention to donate (H12, $\beta = 0.312$, $p < 0.001$), as did loyalty (H10, $\beta = 0.244$, $p < 0.001$). By contrast, enjoyment (H9) and trust (H11) did not significantly predict donation intention, with non-significant path coefficients ($\beta = 0.056$, $p = 0.341$ and $\beta = 0.028$, $p = 0.701$, respectively). These results highlight satisfaction and loyalty as the most robust predictors of donation behavior in the context of video game streaming. In addition to hypothesis testing, the model's explanatory power was assessed using R^2 values for each endogenous construct. The results showed that enjoyment was explained by 52.2% of the variance, loyalty by 59.0%, trust by 50.2%, and satisfaction by 60.1%. The final dependent variable, intention to donate, was explained by 33.7% of the variance. These values indicate moderate-to-substantial predictive accuracy across most constructs (Hair et al., 2017).

5 Discussion

This study examined the psychological and social mechanisms underlying donation intention in video game streaming (VGS) contexts by applying the Stimulus–Organism–Response (S-O-R) framework. Based on a Chilean sample of Millennial and Centennial viewers, the model proposed and tested the effects of parasocial relationships (PSRs) and social presence (SP) as stimuli that influence internal experiential states (enjoyment, loyalty, trust, and satisfaction) which in turn shape the intention to donate. The empirical results from the PLS-SEM analysis confirm the overall validity of the theoretical structure, supporting nine out of 12 hypotheses and highlighting significant relationships among the model's components.

These findings strongly support the role of PSRs as powerful social stimuli. Significant positive effects were found for enjoyment (H1), loyalty (H2), trust (H3), and satisfaction (H4), consistent with prior studies showing that streamer self-disclosure and audience identification enhance affective and cognitive engagement (Lin, 2021; McLaughlin and Wohn, 2021; Xu et al., 2021a, 2021b). For example, Xu et al. (2021a, 2021b) found that streamers' emotional appeal fosters loyalty and content immersion, while Lin (2021) highlighted how

TABLE 2 Reliability and validity of the variables.

Variable	Item	All
Parasocial relationships (PSRs)	All: AVE: 0.599 CR: 0.899 CA: 0.866 Rho_A: 0.866	
	My favourite streamer makes me feel comfortable as if I were with a friend	0.804
	I perceive my favourite streamer as a down-to-earth and genuine individual	0.738
	I look forward to seeing my favourite streamer in their next broadcast	0.798
	If my favourite streamer appeared in another live stream, I would watch that broadcast	0.788
	My favourite streamer seems to understand the kind of things I want to know	0.764
	If I came across a story or news item about my favourite streamer, I would read or watch it	0.749
Social presence (SP)	All: AVE: 0.596 CR: 0.815 CA: 0.661 Rho_A: 0.676	
	When I watch a live stream, I feel that many people are watching at the same time	0.728
	When I watch a live stream, I feel like I am watching the game with friends	0.844
	When I watch a live stream, I feel like I am physically communicating with others	0.739
Enjoyment (E)	All: AVE: 0.852 CR: 0.958 CA: 0.942 Rho_A: 0.943	
	I found my visit to the live streaming platform interesting	0.893
	I found my visit to the live streaming platform entertaining	0.936
	I found my visit to the live streaming platform enjoyable	0.929
	I found my visit to the live streaming platform great	0.934
Loyalty (L)	All: AVE: 0.641 CR: 0.877 CA: 0.813 Rho_A: 0.813	
	I will continue watching the streamers I follow	0.753
	I will watch other streamers if they are recommended by the streamer I follow	0.789
	I would recommend the streamer I follow to other people	0.818
	I will expand my viewing of other types of streaming if the streamer I follow participates in them	0.839
Trust (T)	All: AVE: 0.781 CR: 0.935 CA: 0.907 Rho_A: 0.910	
	I feel that the streamer I usually follow is honest	0.899
	I feel that the streamer I usually follow is trustworthy	0.908
	I feel that the streamer I usually follow cares about the viewers	0.864
	I feel that the streamer I usually follow would provide me with good service	0.864
Satisfaction (S)	All: AVE: 0.827 CR: 0.935 CA: 0.895 Rho_A: 0.898	
	In general, I am satisfied with the overall experience that streamers provide	0.899
	Watching a live stream is a delightful experience	0.914
	I am completely satisfied with the streaming experience provided by the streamers I follow	0.915
Intention to Donate scales in streaming (ID)	All: AVE: 0.901 CR: 0.965 CA: 0.945 Rho_A: 0.946	
	I will most likely make monetary donations to the streamers I follow	0.949
	I would consider making future monetary donations to the streamers I follow	0.945
	I intend to make monetary donations to the streamers I follow	0.954

PSRs promote satisfaction and donation intention even more than enjoyment. These results suggest that the quality of the streamer-viewer relationship may be more influential than content characteristics alone.

Social presence is also a relevant stimulus that influences enjoyment (H5), loyalty (H6), and satisfaction (H8), in line with studies showing that SP enhances feelings of co-viewing and community (Kim and Song, 2016; Leith, 2021). However, the absence of a significant link between SP and trust (H7) contrasts with prior findings (Aw et al., 2025; Xi et al., 2024) where real-time interactivity bolstered credibility perceptions. A possible explanation lies in the cultural context; in Latin American audiences, trust may depend more

on sustained relational cues or personal familiarity than on transient indicators of presence, a notion aligned with Harris and Goode (2004).

Contrary to many S-O-R-based studies (e.g., Li and Peng, 2021), enjoyment did not significantly predict donation intentions (H9). This outcome aligns with Lin (2021), who also found that, despite high entertainment value, enjoyment alone did not lead to gift-giving behavior. Lin suggested that frequent donors may expect reciprocal interaction from streamers, and unmet expectations can reduce donation willingness despite enjoying the content. Similarly, in our study, hedonic pleasure seems to serve as a threshold variable that is essential for continued viewing but is not sufficient to trigger financial reciprocity.

Trust also failed to significantly predict donation intention (H11), diverging from the findings in e-commerce and philanthropic contexts (Gefen et al., 2003; Francioni et al., 2021). This may reflect the normalized implicit trust embedded in long-term streamer-viewer interactions. Once a baseline of trust is established via PSRs, its marginal effect on financial behavior could diminishes. Hou et al. (2021) also found that, in non-commercial donation settings, interpersonal trust did not significantly affect behavioral intention when users lacked institutional guarantees or feedback mechanisms.

Loyalty (H10) and satisfaction (H12) emerged as the strongest predictors of donation intention, echoing the findings of Ju and Cho (2020) and McLaughlin and Wohn (2021), where sustained commitment and personal fulfilment significantly drove prosocial behavior. For instance, Ma et al. (2022) demonstrated how nostalgic parasocial bonds promote long-term loyalty in Korean pop streaming, a pattern mirrored in VGS.

6 Implications

This study advances the theoretical understanding of donation behavior in video game streaming by applying and empirically validating the stimulus-organism-response (S-O-R) framework in a Latin American context. While the S-O-R model has been widely used in e-commerce and livestream commerce (Li et al., 2022; Xu et al., 2021a, 2021b), its application to donation behavior in VGS remains underexplored, particularly outside Asia. By confirming the roles of parasocial relationships and social presence as stimuli, and by identifying loyalty and satisfaction as key organismic predictors of donation intention, this study provides a structured explanation for how affective and relational dynamics translate into economic behavior on streaming platforms.

Moreover, the non-significant effects of trust and enjoyment challenge prior assumptions about the universality of these constructs as behavioral antecedents. This divergence invites further examination of contextual moderators, such as cultural norms of reciprocity, emotional expression, or the platform's reward infrastructure, that might shape these relationships. As such, the findings contribute to refining the S-O-R model by suggesting that in VGS settings, social and relational bonds outweigh cognitive evaluations or hedonic gratifications in motivating financial support.

From a practical perspective, the results underscore the central role of relational and emotional strategies in fostering monetization. Streamers and platform developers should focus on enhancing long-term viewer loyalty and perceived satisfaction, rather than relying solely on entertainment value or trust-building mechanisms. For example, developing rituals of acknowledgment (e.g., shoutouts, badges, donation leaderboards) and promoting continuity (e.g., regular streaming schedules and nostalgic callbacks) can strengthen parasocial bonds and reinforce loyalty-driven donations.

The study also highlights the limited influence of enjoyment and trust as direct predictors of donation, suggesting that even highly entertaining or credible streamers may not translate their appeal into financial support without cultivating a deeper relational commitment. Therefore, training programs for

TABLE 3 Discriminant validity.

	T	E	ID	Lo	SP	PSRs	S
T	0.884						
E	0.617	0.923					
ID	0.466	0.463	0.949				
L	0.672	0.649	0.521	0.800			
SP	0.460	0.568	0.494	0.576	0.772		
PSRs	0.707	0.696	0.550	0.751	0.593	0.774	
S	0.769	0.741	0.548	0.712	0.557	0.764	0.909

Fornell-Larcker criterion.

TABLE 4 Discriminant validity.

	T	E	ID	L	SP	PSRs
E	0.667					
ID	0.500	0.490				
L	0.775	0.727	0.592			
SP	0.586	0.712	0.624	0.781		
PSRs	0.796	0.770	0.607	0.885	0.770	
S	0.856	0.807	0.593	0.822	0.714	0.867

Heterotrait-Monotrait ratio criterion.

TABLE 5 Results of hypothesis.

Hypothesis	Path	Path coefficient	p-value	Result
H1	PSRs → E	0.554	0.000	Supported
H2	PSRs → L	0.631	0.000	Supported
H3	PSRs → T	0.669	0.000	Supported
H4	PSRs → S	0.670	0.000	Supported
H5	SP → E	0.240	0.000	Supported
H6	SP → L	0.202	0.000	Supported
H7	SP → T	0.063	0.149	Not supported
H8	SP → S	0.160	0.000	Supported
H9	E → ID	0.056	0.341	not supported
H10	L → ID	0.244	0.000	Supported
H11	T → ID	0.028	0.701	Not supported
H12	S → ID	0.312	0.000	Supported

emerging streamers should emphasize audience interaction strategies, emotional authenticity, and community-building practices as key skills for long-term monetization.

Finally, for platform designers, enhancing features that stimulate satisfaction and loyalty, such as personalized content recommendations based on viewing history or tools that allow viewers to track and celebrate their engagement milestones, could reinforce the donation loop. These interventions are especially critical in emerging markets,

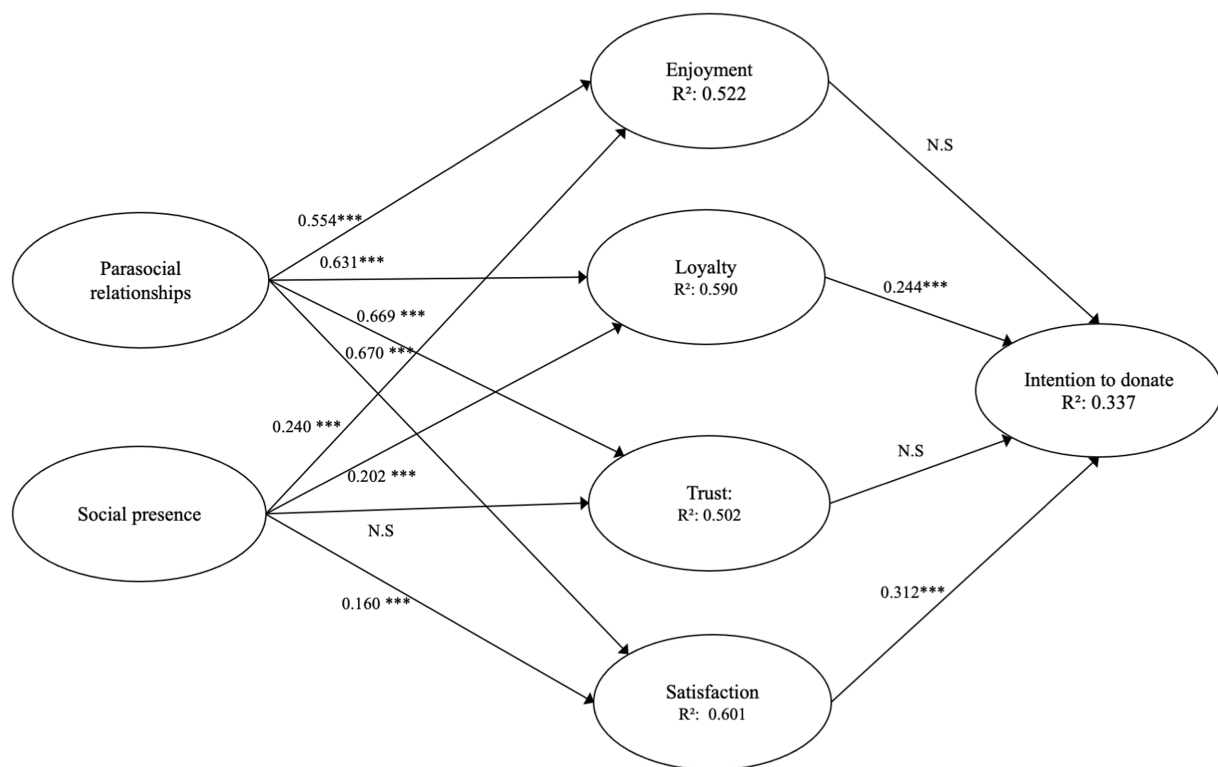


FIGURE 2
Model results. $^{***}p < 0.001$, N.S., not significant.

where cultural factors and trust dynamics may differ from those observed in dominant streaming geography.

7 Conclusion

This study aimed to deepen the understanding of donation behavior in video game streaming (VGS) by applying the Stimulus–Organism–Response (S–O–R) framework to a Latin American context. Drawing on a sample of Chilean Millennials and Centennials, the model evaluated how parasocial relationships and social presence, as social stimuli, shape internal experiential states (enjoyment, trust, loyalty, and satisfaction) that in turn influence the intention to donate. The findings confirm the overall validity of the theoretical model, with nine out of the 12 hypotheses supported. Parasocial relationships emerged as the most influential predictor across organismic variables, whereas satisfaction and loyalty were the strongest antecedents of donation intention.

These results provide theoretical and practical contributions. Theoretically, this study demonstrates that emotional and relational bonds, more than hedonic enjoyment or perceived trust, play a central role in monetized engagement in VGS contexts. Practically, the findings highlight the importance of streamers' long-term relationship-building efforts and platform affordances in enhancing satisfaction and loyalty.

Despite these contributions, this study has some limitations. First, the use of a cross-sectional survey and self-reported measures limits the ability to draw causal inferences and may introduce

social desirability or recall bias. For example, respondents might have overestimate their emotional attachment or donation intentions. Second, the study was geographically and demographically constrained to Chilean Millennials and Centennials. While this focus addresses a notable research gap, it limits the generalizability of the findings to other age groups or cultural contexts. Third, the model did not explore potential mediating or moderating effects between constructs, such as whether loyalty mediates the relationship between PSRs and donation intention or whether platform features condition the effects of social presence.

These limitations offer fertile ground for future research. To address the concerns of causality and behavioral validity, longitudinal or experimental designs could be implemented, ideally integrating behavioral metrics, such as actual donation frequency or engagement time from platform analytics. Expanding the demographic and cultural scope of the sample would allow for comparative analyses to examine whether the findings hold across other Latin American countries, Western or Asian contexts, and among other generational cohorts. Finally, future models could explore the inclusion of mediators (e.g., loyalty as a pathway between trust and donation) and moderators (e.g., gamification features, reward salience, or frequency of streamer–viewer interaction) to better capture the complexity of donation behavior in VGS environments.

In sum, this study provides a structured theoretical explanation for donation intention in VGS through the lens of the S–O–R model and opens new avenues for understanding the social and emotional mechanisms driving user monetization on streaming platforms.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Universidad Católica del Norte. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

JS-M: Visualization, Project administration, Writing – original draft, Formal analysis, Methodology, Data curation, Validation, Investigation, Supervision, Conceptualization, Writing – review & editing, Software. FC-N: Writing – review & editing, Formal analysis, Writing – original draft, Software, Data curation, Investigation, Conceptualization. DV-A: Validation, Data curation, Formal analysis, Methodology, Software, Conceptualization, Writing – original draft, Investigation, Writing – review & editing. NM-E: Writing – original draft, Investigation, Formal analysis, Methodology, Conceptualization, Data curation, Software. IA-T: Conceptualization, Software, Writing – original draft, Formal analysis, Data curation, Methodology, Investigation. JC-S: Conceptualization, Data curation, Software, Writing – original draft, Methodology, Formal analysis, Investigation.

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