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# What keeps them invested? Social identity and group formation in blockchain

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Cryptocurrency technologies have spawned a vast network of millions of users. One notable aspect of crypto spaces is the emergence of vibrant communities that form around specific projects, with supporters gathering on interactive online platforms and demonstrating a strong sense of collective identity. Despite its pseudonymous and “trustless” nature, crypto has become an instrument for establishing social ties that seem remarkably robust. However, the factors that influence establishing social bonds in highly dispersed, pseudonymous crypto spaces with minimal in-person interaction have remained largely unexplored so far. Using a mixed-method approach, this study examines the factors that shape community formation in the crypto space. In an initial step, based on 26 semi-structured, qualitative interviews, we explore factors that may influence group formation in crypto spaces. In a second step, we develop a quantitative questionnaire using items generated from these interviews to measure the effect of the identified factors on group formation, using a sample of 111 crypto users. Group formation is operationalised as an identity fusion scale, reflecting the tendency for individuals to merge their sense of self with that of a social group to which they belong. The results show that social reward, a promising outlook, and participant’s investment level predict identity fusion with crypto communities. This study contributes to the understanding of social bonding processes in pseudonymous crypto spaces.

## KEYWORDS

blockchain, crypto, online communities, identity fusion, social bonding, user retention, trust

## 1 Introduction

Online cryptocurrency (crypto) networks have attracted millions of users by offering opportunities for token trading and financial rewards. However, due to the highly volatile nature of the crypto landscape, many projects rise to prominence quickly before disappearing just as swiftly. Only a small number of crypto projects manage to persist over time, and those typically have highly engaged communities on social channels. Accordingly, while most interactions in the crypto space are fleeting, sustained success appears to hinge on strong community engagement, fostering deep connections and

long-term participation. This raises a critical question: What factors drive successful community building in digital, pseudonymous spaces, such as crypto? Given that crypto is still an emerging field of study, the role of interpersonal factors has so far been largely overlooked, yet offers much potential to understand group formation in this highly dispersed, pseudonymous digital space.

Only recently has research started to emphasise the importance of the social layer within crypto and its underlying blockchain technologies (e.g., Aebli and Silberstein-Bamford, 2024; Dodd, 2018; Lemieux and Dodd, 2023; Hayes, 2019). These studies however do not address how crypto communities form, attract new members, and evolve over time. Exploring group formation and sustained engagement beyond financial drivers in these spaces provides valuable insights into the relevance of social factors in an otherwise impersonal space, especially given that crypto technologies are designed as “trustless” systems, intended to operate independently of interpersonal relationships. Through the lens of identity fusion, using a mixed method approach including semi-structured interviews and a quantitative questionnaire, the present study develops and tests the mechanisms shaping group formation within crypto, beginning to fill the gap in understanding of what makes individuals remain loyal to specific crypto communities, but not others.

## 2 Current studies

It has been well documented in the literature that the relative anonymity of online communication promotes self-expression and helps foster relationships based on shared values and beliefs (Code and Zaparyniuk, 2009). Especially with the rise of social media, online community building has become a significant area of research (e.g., Dwivedi, 2015; Hollebeek et al., 2014; van Doorn et al., 2010; Weitzl and Einwiller, 2018). In this regard, previous research has highlighted several factors that promote long-term group involvement, with social identity emerging as a primary driver of sustained engagement both in virtual (e.g., Cheng and Guo, 2015; Chiu et al., 2015; Kowert et al., 2022; Mousavi et al., 2017) and physical environments (e.g., Fredman et al., 2015; Newson et al., 2016; Van Vugt and Hart, 2004). Social identity refers to a person's sense of who they are in terms of their membership to a group (Tajfel and Turner, 1979). Thus, studies on community building online have shown, for example, that the sense of *self-worth* derived from group membership and *emotional attachment* to the group—established through social interaction, mutual values, and knowledge contribution, among other factors (Cheng and Guo, 2015; Seraj, 2012)—significantly impact ongoing participation, which in turn facilitates shaping social identity (Mousavi et al., 2017). Overall, while numerous factors promote community engagement in digital spaces, social identity constitutes a central framework for understanding group formation and sustained participation (Code and Zaparyniuk, 2009).

### 2.1 Social identity

Social identity goes beyond objective group membership, and involves a deep connection to a group, referring to an individual's

“knowledge of his membership in a social group (or groups) together with the value and emotional significance attached to the membership” (Tajfel, 1981, p. 255). If an individual identifies highly with a particular group, they will primarily see themselves as a group member, as opposed to a unique individual, whereas low identifiers tend to view themselves as the latter. We can thus intuitively expect members with a high level of identification to be more committed to their group than members who only identify weakly with the group. Indeed, there is strong empirical evidence that social identity plays a key role in promoting group loyalty and integrity (Ellemers et al., 1997; Newson et al., 2016; Van Vugt and Hart, 2004), even if staying with one's group comes at a personal cost. For example, when given the option to move from a low status to a high status group, high identifiers choose to stay with their group while low identifiers do not, regardless of the threat to their identity (Ellemers et al., 1997). People who identify strongly with a group show a tendency to not only contribute significantly to their group, but are also willing to take extreme action on behalf of their group, indicating that their mental representation of themselves and their group have fused (Swann et al., 2009). Group-oriented behaviour is particularly important in online settings, where the absence of physical presence makes groups more informal, yet offers individuals the freedom to explore and express different facets of their identities, contributing to a more inclusive and supportive community dynamic (Newson et al., 2016).

### 2.2 Crypto

With regards to crypto communities, establishing strong social ties appears to be particularly relevant as, unlike in other social networks, crypto groups are rapidly-developing and transient, and members are constantly faced with the choice between staying or leaving their group to invest their resources elsewhere (Simpson, 2006; Van Vugt and Hart, 2004), for example, in a project with higher financial returns. The conflict between individual and group interests, often framed as a choice between cooperation and defection, is commonly referred to as a social dilemma, which is particularly pronounced in crypto. Given crypto's extreme volatility, and in the hope of ever-increasing higher financial rewards, pursuing short-term gains can be highly lucrative, as the market is typically characterised by bubble-like asset rallies with over a trillion dollars in value (Coingecko, 2023). In open and constantly-evolving crypto communities, strong social ties may be more difficult to establish and maintain, yet prove essential for the group's survival, as emphasised by studies on the role of social factors in financial contexts (Faria, 2022). The dilemma of whether to prioritise realising personal short-term gains or contributing to a community's long-term success by sticking to it, even during market downturns, has been addressed by other scholars (Shapiro, 2019; Gintis et al., 2005). This internal conflict affects cooperation, trust, and group sustainability in the decentralised crypto environment. Remarkably, however, initial evidence suggests the crucial role of social identity in mitigating some of the fundamental tensions between cooperation and defection by reducing actors' responses to “greed”, i.e., the incentive to “free-ride” on others' cooperation in social dilemmas by realising short-term gains, and thus fostering group commitment (Simpson, 2006).

To sum up, the current literature suggests that social identity is valuable for exploring group building and attachment in online financial spaces. What is less clear, however, is the mechanisms through which social identity in a highly volatile space forms in the first place, given crypto communities' informal and transient nature. Particularly, thus far, research on crypto spaces has predominantly focused on technical and financial aspects (Shukla et al., 2024), with limited attention given to the social dynamics within these communities. Expanding this perspective can offer valuable insights into the role of group behaviour in crypto ecosystems.

### 3 Methods

The methodological approach of this study follows an exploratory sequential mixed-methods design (Creswell et al., 2003) with a multisample strategy consisting of three steps: We first conduct semi-structured, qualitative interviews to identify possible factors through which communities form and develop. Next, we construct a quantitative questionnaire using items generated from these interviews, and additionally support them with the authors' observations in the space. We subsequently measure the effect of the constructed factors on group formation, operationalised as identity fusion scale, i.e., the tendency for individuals to merge their sense of self with that of a social group to which they belong, in the quantitative questionnaire. Qualitative and quantitative data is hence unequally weighted, emphasising the questionnaire results, with interview findings mainly serving quantitative instrument development (Creswell and Plano Clark, 2007, p. 77).

#### 3.1 Platforms

To allow for more nuanced insights, we selected five crypto platforms for this study to explore what mechanisms shape group formation and people's connectedness with their group in the crypto space: Optimism, BeethovenX, OATH, Velodrome, and Balancer. With the exception of Optimism itself, these platforms were chosen as they are all decentralised finance (DeFi) protocols built on the Optimism layer 2 within the Ethereum ecosystem. The Optimism protocol is a decentralised, open-source network centred around the development and promotion of Layer 2 scaling solutions for the Ethereum blockchain. It consists of a diverse group of stakeholders, including developers, researchers, governance participants, and other users who collaboratively contribute to the platform's technical innovations and governance decisions. The Optimism community operates under the ethos of "public goods<sup>1</sup>" and sustainability, aiming to enhance Ethereum's scalability while

maintaining its decentralisation and security. The platform's governance is coordinated through the Optimism Collective, a two-house structure designed to balance technical expertise and community representation. Apart from representing a network and piece of infrastructure for other protocols to build on, Optimism also has its own token for trading and investing, called OP.

While BeethovenX, Velodrome, and Balancer are decentralised crypto exchanges (DEX) and investment platforms that facilitate trading and liquidity provision, the OATH platform is best characterised as a decentralised finance ecosystem that includes a range of features beyond DEX, yield farming, and governance mechanisms. All four platforms have their own token, which are called BEETS, Velo, BAL, and OATH and comprise diverse communities including developers, investors, and advocates of decentralised finance. Community members engage on various channels, primarily on Discord, X, and forums, to share knowledge and resources.

#### 3.2 Participants

For the interviews, a total of 26 participants were recruited from four participating communities: Optimism (7), BeethovenX (9), OATH (8), and Velodrome (2). The study was advertised on each of these communities' Discord channels as well as on X, with participants volunteering in response. Following the initial recruitment of ten participants from the contributing protocols based on voluntary sampling, further recruitment was conducted using a snowball sampling method. All participants were informed about the aims of the study and signed an informed consent form. No demographic data was collected from interviewees.

The quantitative questionnaire was also advertised on each of these communities' Discord channels and on X as well as on online forums, associated with the target communities (e.g., <https://gov.optimism.io/>). A total of 111 participants were recruited following a voluntary sampling process from the partnering communities: Optimism (22), BeethovenX (25), Balancer (14), and OATH (49). There was additionally one participant from Velodrome, who was discarded for the quantitative analysis. Balancer was included later in the data collection process to compensate for Velodrome's low response rate. This exceeded the necessary minimum sample size to maintain a 1:3 ratio between items and participants in a 22-item questionnaire, as recommended for an exploratory factor analysis (Bujang et al., 2012).

The sample had a strong gender bias (101 male, 9 female, 1 other). Most participants reported being between the ages of 31–40, with a range between 16 to over 51. The survey did not ask for specific ages to preserve anonymity. Most had a background in IT or computer science (44.1%) although 39% reported having a wide range of other professional backgrounds including engineering, graphics design and healthcare. With regards to their role within the cryptocurrency industry, 69.4% identified as regular users, 15.3% as team members of their respective protocols, 8.1% as moderators, and 4.5% as lead developers. Participants were also asked to categorise themselves by level of activity. 57 participants considered themselves active members of their respective communities, while 52 said they were passive, and 2 preferred not to say. Moreover, the majority of the participants can be

<sup>1</sup> Typically described as social or collective goods that are available to everybody and accessible by everybody. On Optimism, the idea of public goods is mainly realised through retroactive funding, where community members are rewarded for the positive impact of their work in the Optimism ecosystem (<https://community.optimism.io/op-token/op-token-overview>)

considered as relatively long-term members of their respective community: more than two-thirds (68%) have been participating for over 1 year or longer in their respective community. The sample were mostly experienced in online communities, as 88% of participants said they were generally comfortable socialising online, 81% said they were members of other online communities outside of crypto, and 64% reported that online communities are as important as offline communities in their lives.

This study was performed in accordance to the guidelines and regulations of the National Advisory Board on Research Ethics in Finland<sup>2</sup> relating to research in the humanities and social and behavioural sciences, to which the University of Jyväskylä Ethical Committee adheres. Ethical permission was not needed for this kind of research, according to the aforementioned guidelines and regulations.

### 3.3 Materials

#### 3.3.1 Semi-structured interviews

The interview guideline included six open-ended questions about the respondents' history and previous experience in blockchain and in their respective community, their own description of unique features of the community, as well as what they liked and disliked about it. The interviews were audio-recorded and transcribed for analysis. To improve readability, filler words were removed from direct quotes that are presented in the qualitative results section. On average, the interviews lasted 20 min.

The interviews were analysed following an inductive approach, using thematic analysis (Braun and Clarke, 2006) to identify core themes in the participants' responses. Although the analysis process was relatively straightforward, as the interview guideline was structured around specific thematic foci, the first two authors undertook frequent intercoder discussions to assess and align codes into overarching themes. This process assisted with ensuring validity and reliability of the results (Guba and Lincoln, 1982). Ultimately, the key themes identified in the interviews were used to develop the questionnaire in a collaborative effort involving all three authors.

#### 3.3.2 Questionnaire items development

Items on the questionnaire were drawn from the results of the semi-structured interviews combined with the authors' observations in the blockchain space, and items adapted from existing scales. The main part of the questionnaire included five thematic blocks that captured potential drivers for people's fusion with their community, including questions related to "team-community relations", "perceived social agency", "social motivation", "participant outlook", and "trust in the team". These were all Likert scale questions, in which participants rated the extent to which they agree with the statement with four levels ("strongly agree," "agree", "disagree", "strongly disagree"). Since the questionnaire was part of a broader study, it contained several additional questions about digital nativity, the social structure of the community and perceived similarity to other group members, which are not discussed in

this article. For this research, we solely focus on the main section of the questionnaire, including the subset of questions previously mentioned.

*Perceived social agency* included four items: "My presence matters to the community", "my actions have consequences for the community", "the community is in the hands of someone or something else" (reverse coded), and "I often do not understand why the community members do the things they do" (reverse coded). Item two and item three were adapted from Tapal et al.'s (2017) sense of agency scale. *Social motivation* was measured with seven items. These were: "I have made meaningful friendships", "I'm just here for the money" (reverse coded), "I have fun in the community", "I would hang out with these people even if I did not make any profit", "I would want to hang out with these people in real life", "people in this community feel like work colleagues", and "I'm in it for the tech" (reverse coded). Six items were used to capture *participant outlook*, including: "I think this community will still exist in 2 years", "I think we're building the tech of the future", "I am optimistic about this project", "this project is probably a scam" (reverse coded), "I've considered leaving this project" (reverse coded), and "I do not think this project could survive another market downturn" (reverse coded). *Trust in the team* was measured with five items, which were: "I trust the team to act in the best interests of the community", "the team is capable of delivering on their promises", "people are generally satisfied with the protocol", "the team are honest and sincere in their explanations", and "the team never disappoints".

Participants' level of 'identity fusion' with their respective community was measured using the Identity Fusion scale, adapted from Swann et al. (2009). The Identity Fusion scale is commonly used to assess strength of association with a group, or the extent to which someone feels their personal identity is "fused" with the group's identity (Swann et al., 2009). The question used in the present study asked participants to choose the image of two overlapping circles that best represented their relationship with the group, on a scale with five levels. Additionally, participants were asked how much they liked the other communities on *Optimism* and within the *Ethereum* ecosystem that were part of this questionnaire. The liking scale consisted of four levels: "I dislike it", "I feel neutral", "I like it a little", and "I like it a lot".

Finally, participants were asked to indicate the degree of their financial investment on a subjective scale ranging from "I'm a shrimp" (crypto vernacular for low financial investment) to "I'm a whale" (crypto vernacular for highly financially invested). The questionnaire may be found in [Supplementary Material<sup>3</sup>](#).

## 4 Results

### 4.1 Interviews

The interviews revealed several themes that shape group formation and community attachment within the examined crypto protocols.

<sup>2</sup> TENK, see [www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf](http://www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf)

<sup>3</sup> Sources



### 4.1.1 Initial appeal: unique protocol features over community factors

A protocol's unique features are a major part of its attraction. Participants consistently mentioned that their first engagement with the respective protocol was driven by particularly noteworthy protocol attributes, rather than by community factors.

While, according to the participants, Optimism primarily stands out in terms of its ideology and vision, BeethovenX is perceived as unique for its professionalism and branding. Participant 23 reflected on how he was attracted by Optimism's ethos, while noticing that, so far, there is not much else that stands out on Optimism: "[the] vision and mission of impact over profit. [...] giving back to the community that you're a part of and helping to continue to grow along the way. That was definitely what attracted us [...] I mean, there's not really much else until now". Meanwhile, BeethovenX participants highlighted the protocols' unique design – which plays with references to Ludwig van Beethoven: "as much I'm about the numbers, [...] pictures do matter, and design. And the aesthetic of Beethoven really stands out. [That is] how I landed in the Discord" (p1). Participant 8 emphasised the protocol's professionalism: "I started to look a bit, first lurk, to see what people were asking and how the core team members were responding. It gave me a very professional and genuine sense of why it [the protocol] was there. So I started to engage [...] and buy some of the tokens".

The unique features of OATH are largely defined by its high-profile lead developers and their perceived expertise: "Just from seeing the different shows on YouTube that they're doing and just listening to the [lead developer] talk" (p12), and "he [lead developer] is a very charismatic individual, [...] he is very, very knowledgeable in DeFi and I think that sort of [...] has drawn them in so far" (p13). Meanwhile, Velodrome primarily attracts interest due to its track record of past performance, metaphorically described by participant 25: "Because they've only seen the good weathers mostly, they live in a place where there's only good weather".

### 4.1.2 Community as social glue for crypto projects

While a protocol's unique features serve as essential hooks to capture people's attention, the community plays a vital role in keeping people actively involved on the platform. According to the participants, the community thereby serves a dual purpose, depending on individual preferences: for some, it acts as a social circle of friends, fostering commitment to the community, while for others, it functions more like a professional network.

When asked what they appreciate about their community compared to others, participant 7 reflected on the importance of meaningful relationships built within his community: "I have established relationships there. So now I kind of hang around [...] I feel like I have a pretty deep relationship with these people." He continued to stress that, despite only knowing each other from anonymous meetings and messages on Discord, his relationships with some community members have developed into genuine friendships: "although the one guy is still like, totally anonymous, if I went to [his country], I would be like, "hey, dude, [...] I'm coming to your town, [...] I'm walking around until I find you". Similarly, others expressed: "I liked a lot of the individuals that I was chatting with [...]. I found a few similarly minded people there" (p13). Some went even so far as to compare it to "an expansive family that leaves no one behind" (p19).

Meanwhile, others saw the community as a nice side-effect and the people in it as "work friends", whom they solely interact with because of the project: "I mean, let's say, you're working in a job and [...] the friends can make the work more comfortable, more tolerable. But at the end of the day, you're going there because of the money right? Not because of the people", participant 5 emphasised.

Regardless of one's individual preferences, participants unanimously recognised the overall significance of community for keeping a project engaged and appealing. At the same time, however, they recognised how difficult it is to move beyond the threshold of being exclusively a product-focussed Discord server to building an authentic community: "It turned more from a project on Discord into a community [...], but I think that's kind of a chasm that a lot of DeFi products cannot cross. There are a lot of them, just products Discords, and you can ask questions and you get a very matter of fact answer. Very few of them you can actually go in and have fun and laugh and stuff like that" (p10).

### 4.1.3 Trust in the team

Having confidence in the team appears to be fundamental, not only for winning individuals into a community, but, more importantly, for ensuring their continued engagement on the platform. Interestingly, the main sources of trust seem to be a team's professionalism and perceived intelligence, suggesting that these qualities are essential in building trust in the DeFi space. Professionalism is thereby defined by factors such as "serious interest in DeFi", "knowledge or expertise", and "security measures", in contrast to short-term goals like driving up prices or generating hype.

Participant 13 reflected on the significance of professionalism over hype: "I think what sort of draws them in to the community [...] is this big team of what seemed like very intelligent and knowledgeable people in this space with this very long term mindset and this really realistic way of looking at things and I think a lot of [this] community is less about hype, and [...] fairly serious about DeFi". Similarly, other participants weighed the importance of a team's expertise against short-term indicators of a protocol's popularity, such as hype or price: "I can trust those guys, because you see everyone [else] making contests and giving away a lot of stuff, [there is] too much hype" (p2), while participant 16 explained: "it's about the team behind the project and what's being built and *not* how the price reflects that".

Additionally, having security measures in place provides participants with confidence, as pointed out by participant 4: "[similar to] a bank where you can say okay, I know my assets are safe there. A bank robbery will not happen because I trust the security measures they have". Lastly, to highlight the significance of trust in DeFi, despite its so-called 'trustless' nature, participant 1 noted: "it is all "permissionless", but we still need a bit of trust. It is a real balance" (p1).

### 4.1.4 Positive outlook of the protocol

A promising future of the protocol contributes to keeping people engaged on the platform. According to the participants, a protocol's vision—focused on "building the technology of the future" and "being in it for the technology" rather than purely for profit—reflected in its everyday practices, is what helps to convey

a promising outlook. “I think we all centre around this mission of very long-term goal[s], and there’s a bunch of challenges every single day, [...] [but the] group that is very, very driven and is always there to figure out how we can work out these problems and how we can keep going towards the ultimate goal, which is, bringing sustainability into DeFi and making DeFi usable and competitive on a global financial scale”, participant 13 enthusiastically praised the community’s long-term mindset. To achieve ambitious goals, participants see it as a necessity to continuously improve the technology and develop new products: “part of the reason why I find it so interesting is that they’re always developing and they’re always putting out new things. So I’m just eager to see how it’s all going to work together” (p12). Finally, for users to develop long-term confidence in a protocol, trust in the people behind it is essential, which in many ways builds upon the previously mentioned trust factors: “I’d say more long term oriented [...], you do not want to be just blindly believing [...] people believe in the product and [have confidence] not to get robbed”, participant 10 underlined, when explaining that the community is “in it for the tech”.

#### 4.1.5 Sense of agency

Among other factors, participants’ sense of connection to the group is largely influenced by their personal perception of how important they believe they are within the community or to other members. Whereas some participants describe their actions and presence within the community as negligible, due to being “just another user” (p9), others feel a sense of belonging, resulting from active participation and supporting others in the community: “this is a community group, where we give each other tips or little alpha [insider knowledge], [...] it’s valuable, [...] it makes me feel amazing” (p19). Again other participants feel a sense of responsibility due to their long-term involvement in the protocol, as expressed by participant 14: “I was a part of the team when the token launched, so I was kind of just in it. So I felt a sense of ownership in the product from the beginning”. Overall, participants emphasised the importance of active participation by community members for the protocol’s continuous enhancement, as well as its role in fostering community spirit and motivation to remain engaged, as expressed by participant 13: “I’m really encouraging people to start coming up with their own ideas, [...] everybody has something to offer, [...] more activity in the community [is] directly related to furthering the ecosystem, [...] because if they feel their opinion matters, they will feel more accepted”.

## 4.2 Survey

Based upon the interview results, a survey was constructed to investigate the importance of different themes that emerged from the interviews in identity formation and bonding within the communities. Initially, an exploratory factor analysis was conducted to reduce the number of variables. Correlations between variables extracted from the factor analysis were then conducted to test for independence. Finally, the importance of each variable as predictors of identity fusion, measured using a standard identity fusion scale, was tested using a linear regression model. Given the exploratory nature of the survey construction and

testing, the analyses were not pre-registered. The data were prepared in Python, analysis was done in JASP (JASP Team, 2024), and figures were created in Seaborn (Waskom, 2021).

### 4.2.1 Exploratory factor analysis

The relationships between items in the questionnaire were tested with an exploratory factor analysis with an oblique (oblimin) rotation. The Kaiser-Meyer-Olkin measure confirmed that sampling was adequate for analysis, KMO = 0.793. Bartlett’s test of sphericity indicated that the correlation structure was sufficient,  $X^2(231) = 1111.57, p < 0.001$ . The threshold for factor loadings was set at 0.45. The loading of each item may be seen in Table 1 below.

This led to the construction of four factors: Trust ( $M = 3.130, SD = 0.517$ ), Social Reward ( $M = 2.767, SD = 0.572$ ), Outlook ( $M = 3.381, SD = 0.547$ ), and Disconnect ( $M = 2.574, SD = 0.526$ ). Combined, these factors explained 48.7% of the variance. Any items that did not load onto one of these four factors were excluded. While the factors Trust and Outlook were developed from the initially provided items, the factor Social Reward was derived from items related to “social motivation” and “perceived social agency”. The factor Disconnect consists of reverse-coded items related to “perceived social agency” and “social motivation”.

Cronbach’s alpha was used to measure the internal consistency of items within each of the factors. Internal consistency was strong from Social Reward ( $\alpha = 0.831$ ), Trust ( $\alpha = 0.824$ ), and Outlook ( $\alpha = 0.792$ ). However, it was weak for Disconnect ( $\alpha = 0.471$ ).

Each participant was given a score for each of the four factors, derived from the mean score across each item within that factor. Pearson’s correlations were calculated between each of these four factors, finding strong, significant correlations between Trust, Social Reward, and Outlook (see Table 2). Disconnect did not correlate with the other factors.

### 4.2.2 Predicting identity fusion

These four factors (Trust, Social Reward, Outlook, and Disconnect) were used to predict Identity Fusion in a multiple linear regression. The overall regression was statistically significant ( $R^2 = 0.118, F(4, 106) = 3.541, p < 0.01$ ), with an achieved power of 0.968 using the same sample ( $n = 111$ ). It was found that Social Reward ( $\beta = 0.395, p < 0.05$ ; Figure 1), and Outlook ( $\beta = 0.484, p < 0.05$ ; Figure 2), significantly predicted Identity Fusion. However there was no significant effect of Trust ( $\beta = -0.326, p = 0.149$ ) or Disconnect ( $\beta = 0.161, p = 0.363$ ).

Moreover, a positive relationship was found between Identity Fusion and participants’ investment level in their chosen platform ( $r = 0.236, p < 0.05$ ; see Figure 3).

## 5 Discussion

This study examines the factors influencing group formation in the crypto space through the lens of social identity. It was found that Social Reward, Outlook, and Investment Level significantly predicted Identity Fusion, whereas there was no significant effect of Trust or Disconnect on Identity Fusion. The final factor structure in the questionnaire did not exactly reproduce the themes derived from the interviews and the authors’ observations, but this was not our intent. Factor 1 (Social Reward) incorporates social motivation

TABLE 1 Factor loadings.

	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
I have made meaningful friendships	0.793				0.415
My actions have consequences for the community	0.708				0.445
I have fun in the community	0.665				0.384
I would hang out with these people even if I did not make any profit	0.656				0.357
My presence matters to the community	0.644				0.441
I would want to hang out with these people in real life	0.557				0.484
The team are honest and sincere in their explanations		0.792			0.373
The team is capable of delivering on their promises		0.745			0.340
I trust the team to act in the best interests of the community		0.710			0.403
The team never disappoints		0.570			0.494
People are generally satisfied with the protocol		0.567			0.494
I do not think this project could survive another market downturn			0.882		0.313
I've considered leaving this project			0.574		0.489
I think this community will still exist in 2 years			0.573		0.341
I am optimistic about this project			0.557		0.345
I often do not understand why the community members do the things they do				0.686	0.510
I'm in it for the tech				0.475	0.615
The community is in the hands of someone or something else				0.474	0.673
I'm just here for the money					0.802
People in this community feel like work colleagues					0.772
I think we're building the tech of the future					0.372
This project is probably a scam					0.539

Note. Applied rotation method is oblimin.

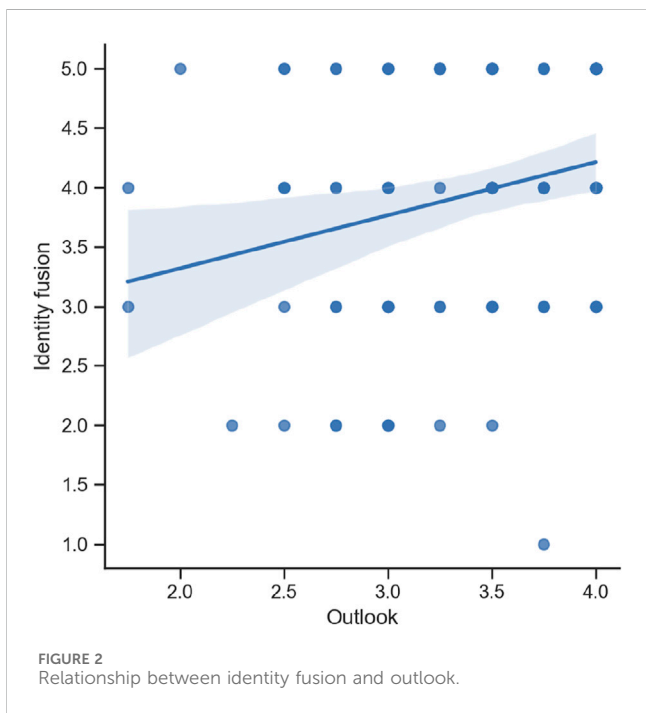
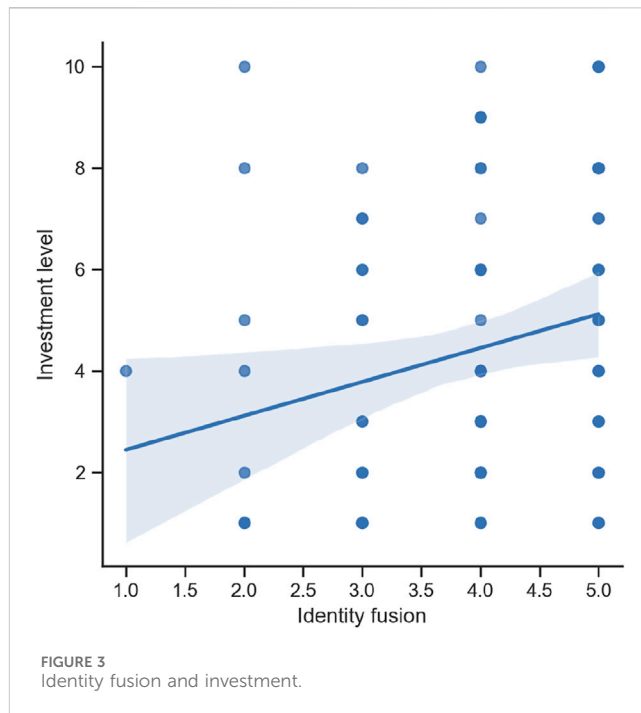
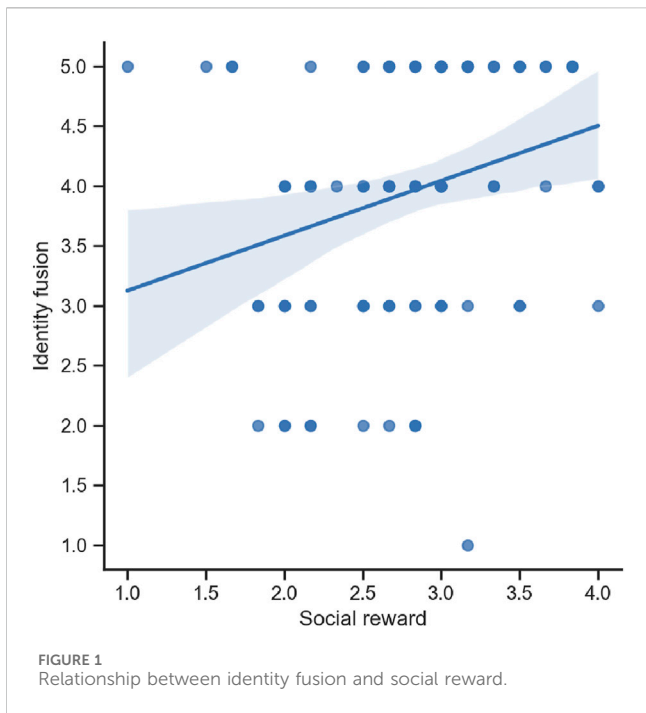
TABLE 2 Pearson's correlations.

Variable		Trust	Social Reward	Outlook	Disconnect
1. Trust	Pearson's r	—			
	p-value	—			
2. Social Reward	Pearson's r	0.343	—		
	p-value	<0.001	—		
3. Outlook	Pearson's r	0.581	0.332	—	
	p-value	<0.001	<0.001	—	
4. Disconnect	Pearson's r	0.071	0.078	0.029	—
	p-value	0.456	0.414	0.759	—

and perceived social agency, whereas factor 2 (Trust) matches trust in the team. Factor 3 (Outlook) comprises participant outlook and factor 4 (Disconnect) was produced based on reverse-coded items of factor 1, consisting of social motivation and perceived social agency.

Social Reward indicates that meaningful interpersonal relationships and the extent to which individuals perceive their

personal actions integrated and reflected in the community drives identity fusion with protocols. This highlights the importance of individuals feeling valued, finding like-minded people, and enjoying their participation in the community for user retention and predicting their level of attachment to the group. This finding supports previous studies on social identities indicating that



feelings of connectedness and perceived agency shape identity fusion with a group and foster group cohesion (Gómez et al., 2020; Gómez et al., 2011). Particularly the importance of self-esteem gained through community engagement confirms findings from previous studies on social identity in online communities (Cheng and Guo, 2015; Mousavi et al., 2017). Regardless of whether community is viewed as a beneficial side effect of crypto projects or as essential for their survival, meaningful interpersonal relationships are crucial for keeping individuals engaged and active within the community.

Social connectedness is thereby closely tied to how much individuals feel their presence impacts the group. For someone to develop a social identity, their self-perception is as important as how others perceive them.

Interestingly, despite crypto’s goal of replacing social structures with machine code (Nakamoto, 2009), this study confirms the crucial role of social mechanisms in building communities, which are essential for sustaining a crypto project. This insight supports previous literature emphasising the relevance of social relations underpinning crypto, like any money form (Dodd, 2014; 2018), and the community’s essential role in sustaining the value of a crypto project. To ensure a crypto project’s continued existence, strong communities of trust and confidence in the project are needed (Faria, 2022), especially when trying to establish an entirely new monetary system like crypto. Like other forms of money, crypto operates as a social contract that depends on mutual acceptance and a shared belief in its future value, supported by a community of users who accept it as such (Swartz, 2018).

A further significant predictor of identity fusion refers to the Outlook of a project. While a long-term vision and a “building the tech of the future” mindset are crucial for community building, performance expectancy of a protocol, describing people’s belief in the protocol’s success and the protocol’s capability of enduring future market downturns, constitutes a positive outlook. This finding aligns with previous studies on shared group expectations and social identity, stating that shared expectations about the group’s success or ability to achieve its goals can enhance cohesion (Hogg, 1992; Van Vugt and Hart, 2004). Performance expectancy’s significance for group commitment has been particularly emphasised in online financial spaces (Elok and Hidayati, 2021; Slade et al., 2015). Members tend to stay connected to groups that they believe will succeed, whereby the expectancy of group success is closely tied to members’ attitude



towards the group's effectiveness and future trajectory, which contributes to their willingness to remain loyal and invested in the group.

Although trust in the team appears crucial for community building, as indicated by the interviews of this study, the Trust factor did not significantly predict identity fusion. This insight is noteworthy as it reveals that, although individuals view a team's professionalism and competence as essential for community engagement, it does not predict their sense of connectedness to the protocol. To reiterate, this does not mean that trust is not necessary in crypto; quite on the contrary. Despite crypto's promises of being "trustless" by design, scholars have emphasised the indispensable role of trust in crypto's social infrastructure (Aebli and Silberstein-Bamford, 2024; Rehak, 2019; Vidan and Lehdonvirta, 2019). The fact that trust in the team is essential, but does not directly impact people's identity fusion with the protocol, may be due to the distinct function of trust in group formation. Trust in the team may function as a prerequisite for people to invest in a crypto platform at all, whereas for someone to incorporate that community as part of their social identity they need to feel connection, agency, and a sense that the community has a future. This is a novel insight, as while previous studies have demonstrated significant trust-building effects resulting from people's fusion with a group, they have typically conceptualised trust as an outcome variable and focused on trust in the group as a whole, rather than specifically in the team behind it (e.g., Klein et al., 2024; Porter and Donthu, 2008). In fact, the ability to become fused with a protocol, without trust in the team as a direct determining factor, may reflect the decentralised nature of crypto. Depending on the community's strength, the team may take on a secondary role in fostering individuals' fusion with the protocol.

Disconnect was the only factor with no significant effect on Identity Fusion. The factor comprised elements reflecting a negative "social value", such as users' expressed interest in crypto "for the money" and speculation rather than for the technology or social aspects, and a perceived lack of personal agency or control within the community, akin to heteronomy. With participants emphasising the importance of technological innovation, alongside crypto's core ideals of "trustlessness" and code over social ties, assessing the impact of technology-centred elements on identity fusion besides social factors was deemed essential. However, the Disconnect factor had weak internal consistency and may not have been a useful factor to include. The scale could be revised to include new items in future research.

Finally, people's investment level significantly predicts identity fusion with the community they are invested in. This makes sense intuitively, as financial investment often brings with it emotional investment in terms of time, energy, and active engagement with the project and its community. Thus, highly financially invested individuals are often more likely to feel a sense of social connection or emotional attachment to the project. Conversely, those who feel a strong sense of community connection may be more inclined to increase their investment in the project. This finding somewhat contrasts with participant interviews, where many stated that ultimately, financial motives alone drive people's involvement with the community. However, our data suggests that the significance of social factors tends to increase with the level of financial investment. The finding that emotional attachment

influences financial investment aligns with previous research of traditional financial markets, showing that consumers' affective evaluation of companies—and their products or brand—have a positive influence on their decision to invest in the company's stock (Aspara and Tikkanen, 2010). Yet, it is worth noting that, compared to publicly traded companies, most crypto projects are still relatively small, facilitating the establishment of social relationships, both between regular users and between users and developers. Thus, while a crypto project's branding may attract users to a particular platform, such corporate factors may play an increasingly significant role for investment decisions as crypto protocols grow in size and become less personal.

## 6 Limitations and future directions

Studying digital and pseudonymous communities presents numerous challenges, including timely field access and securing ethical approval in a rapidly evolving and transient space (Maddox et al., 2017). While field entry was relatively straightforward in our case, we lack a clear demographic profile for our sample. To respect the normative pseudonymity of crypto communities, we refrained from collecting identifiable information and specific data for demographics, which restricted targeted sampling and limited our ability to diversify participants across identity categories. The only demographic data collected referred to broad age groups and participants' role in the respective crypto community. Data from all roles—regular users, team members, moderators and lead developers—was included in the regression model. All participants were members of their respective communities, although it is reasonable to assume that those actively involved in developing the community may feel closer than those who are only passively reading text on the platform. However, there was not enough data from developers—a small subset of community members—to analyse them separately. These communities also have very permeable membranes between their subgroups, as active members may become contributors to the project. Therefore, it was decided to analyse the whole sample together.

Moreover, most participants indicated they are comfortable socialising online, suggesting that the results may be skewed towards particularly digitally savvy users. However, that is presumably the case for many communities in a highly technical, emerging digital context. Also, conducting research in (pseudo) anonymous online spaces including survey methods can introduce limitations such as self-report bias and potential selection bias. These challenges, however, are not distinct to crypto communities but apply to various forms of online research in general (Janssens and Kraft, 2012).

As crypto continues to grow in popularity as a global digital network of users, and given the importance of interpersonal factors in crypto, as highlighted by the study, there is an increasing need for in-depth ethnographic and psychological research to gain a deeper understanding of its communities, user behaviour, and social dynamics. Although built upon prior literature, more research is needed to fully understand the interplay of a community's social features, people's fusion with a community, and the protocol's growth. Accordingly, the questionnaire should be further developed and tested with different samples to confirm the factor

structure and relationships with identity fusion. Gaining a deeper understanding of these dynamics will be vital for advancing knowledge of crypto communities and how people form social bonds within pseudonymous internet communities in general. This will become increasingly important as socialising online becomes more commonplace.

Finally, future research should aim to gain a more accurate understanding of a community's demographic profile, while preserving the normative pseudonymity inherent in crypto communities. Group forming processes and social bonding may vary slightly depending on participants' role in the crypto space. Moreover, while identity fusion reflects a psychological state rather than a personality trait (Gómez et al., 2020; Swann et al., 2009), future studies could also investigate the correlations of users' predispositions and crypto-related ideological orientations with their group bonding behaviour. Users' personality traits and attitudes towards crypto may not only influence their financial decision-making but also their tendency to forge meaningful connections in these pseudonymous online spaces. Such insights into user behaviour will enhance our understanding of the underlying drivers of group formation in crypto and crypto's future potential.

## 7 Implications and conclusion

This study contributes to the literature in several ways. First, it adds to a better understanding of the significance of social factors in crypto generally. The crucial role of social factors including meaningful relationships for ongoing community engagement is an important finding, particularly in light of crypto's trustless ethos of reducing reliance on social relationships, and its transient and highly competitive financial nature. This is a substantial expansion of the previous literature that, although pointing out the relevance of crypto's social layer, hitherto has not empirically tested the relationship between social features and crypto users' engagement in the space (e.g., Aebli and Silberstein-Bamford, 2024; Dodd, 2018; Hayes, 2019). Second, this study contributes to the literature on the mechanisms shaping identity fusion in virtual, rapidly-evolving communities, emphasising the crucial role of perceived agency within the community and self-esteem derived from group participation in fostering sustained engagement in digital spaces (Cheng and Guo, 2015; Chiu et al., 2015; Seraj, 2012; Mousavi et al., 2017). Additionally, in light of crypto's financial context, this study underscores the importance of a shared vision and the project's positive prospect in sustaining group engagement, thereby contributing to the literature on the role of performance expectancy in financial settings (Elok and Hidayati, 2021; Slade et al., 2015). Third, this study contributes to the discussion of crypto and its underlying blockchains as a trustless system (Tan and Saraniemi, 2023; DeFilippi et al., 2020; Hawlitschek et al., 2018). While trust did not significantly predict identity fusion, our study demonstrates that trust in the team and the team's perceived expertise are essential for engaging in a protocol, with trust emerging as a central theme in the interviews. This finding challenges crypto's supposed trustless nature, which aims to eliminate the need for trust in network interactions. Although blockchain technology

itself may reduce the need for trust, this study shows that crypto introduces new dynamics of trust in people, rather than code, through the promotion of social interactions within the community.

In conclusion, this study highlights the essential role of social dynamics in driving the success and longevity of crypto projects. It calls for greater consideration of the relevance of social features and people's need for meaningful connections within (pseudo) anonymous, highly dispersed communities. Accordingly, crypto community developers and decentralised autonomous organisations in blockchain should place greater emphasis on the social dynamics critical to a protocol's success, rather than solely focusing on the techno-economic aspects of their projects. As with other types of online communities, the success of an online group largely depends on the members' behaviours that benefit the community as a whole. Thus, establishing meaningful connections and enhancing users' sense of agency within a dispersed, rapidly-evolving pseudonymous space will be crucial in building long term group cohesion, distinguishing successful projects from the rest.

Lastly, we would like to note that crypto may be particularly conducive to identity fusion, as digital crypto spaces inherently involve shared, often high-pressure activities, such as quickly exchanging information with group members to identify the best financial trades. Shared experiences are particularly effective in facilitating identity fusion, especially when the experiences are challenging (Newson et al., 2016) and engaging. This however overlooks other facets inherent in crypto's nature, including its predatory and highly competitive financial characteristics. Thus, fostering authentic community building and social cohesion within groups may prove to be far more challenging than in other digital networks. Furthermore, while social identity fosters strong bonds within in-groups, it can also breed rivalry toward out-groups—those social groups which an individual does not belong to or identify with—as social identity promotes a sense of similarity with fellow members and dissimilarity from those in out-groups (Simon et al., 1995). Future research studying social dynamics in online communities should be mindful of these effects and their potential downsides.

## Data availability statement

The original contributions presented in the study are included in the article/[Supplementary Material](#), further inquiries can be directed to the corresponding author.

## Ethics statement

The studies involving humans did not require ethics review, according to the guidelines set out by the Finnish Advisory Board on Research Integrity (TENK, 2019, p. 61), to which the Human Sciences Ethics Committee at the University of Jyväskylä adheres. 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.

## Author contributions

AA: Conceptualization, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing—original draft, Writing—review and editing. FS-B: Conceptualization, Formal Analysis, Investigation, Methodology, Validation, Writing—original draft, Writing—review and editing, Funding acquisition, Resources. JB: Conceptualization, Formal Analysis, Investigation, Methodology, Validation, Writing—original draft, Writing—review and editing, Funding acquisition, Resources.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fbloc.2025.1530186/full#supplementary-material>

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