"I wanted to buy Robux but got scammed for 10 dollars in Bitcoin": Emerging adults' experiences with crypto assets as teens

Lily Klucinec
Carnegie Mellon University
laklucin@andrew.cmu.edu

Ellie Young
Carnegie Mellon University
eleanory@andrew.cmu.edu

Elijah Bouma-Sims
Carnegie Mellon University
eboumasi@andrew.cmu.edu

Lorrie Faith Cranor
Carnegie Mellon University
lorrie@cmu.edu

***Abstract*—Prior work has shown that teenagers engage with crypto assets such as Bitcoin, NFTs, and cryptocurrency futures. However, no human subjects research has investigated teens' interactions with these assets. Building on prior research by Bouma-Sims et al. studying teenagers on Reddit, we surveyed 143 emerging adults aged 18-20 about their most notable positive or negative experiences and harms they encountered while using crypto assets as minors. Our findings suggest that while minors were overwhelmingly motivated by profit and sometimes encouraged by family members to engage, crypto assets also filled a gap in internet payment systems, allowing minors to access digital goods without parental involvement. Engaging in crypto assets puts minors at risk for digital and financial harms they otherwise would not encounter, such as pump-and-dump scams and gambling losses. We discuss the difficulties of protecting minors from these harms in the greater landscape of crypto market regulation.**

I. Introduction

Cryptocurrency, non-fungible tokens (NFTs), and related assets such as cryptocurrency futures (referred to in this paper as "crypto assets" or "crypto") have exploded in popularity in recent years, with Bitcoin reaching a market cap of over $2 trillion USD in January 2025, up from around $60 billion on January 2019 [23]. These assets are of particular interest to young people: A 2023 report by the Financial Industry Regulatory Authority (FINRA) states that crypto assets are the most popular type of investment among U.S. investors ages 18–25, with over half of investors holding cryptocurrency and about a quarter owning an NFT [46]. Twenty-five percent of these investors reported that they began investing before they turned 18.

Minors in the US are not permitted to open or manage traditional investment accounts on their own [86], and very few banks allow parent-managed accounts to participate in trading highly volatile crypto assets. Crypto assets can, however, be purchased on non-US-based and decentralized exchanges without know-your-customer (KYC) policies that require age verification.

There is concern that teens are uniquely situated to experience the worst of crypto-related harms [82], as their still-developing brains make them more susceptible to risky behavior [12], [22] and peer pressure [16], [42]. Because they are generally unable to access regulated forms of crypto trading, it is feared that some teens might instead resort to self-managing their wallet (which comes with a high risk of key loss for most users [1], [30], [53], [99]) or using an unregulated exchange (often carrying risk that the exchange will go bankrupt or be shut down [6], [105]). They may also be especially vulnerable to scams commonly perpetrated by social media influencers popular with teens such as MrBeast [11], [32], [61], [82].

Further, frequent crypto trading is known to be associated with problem gambling [28], [41], [50], [52]. Children and teens who are already exposed to a form of gambling via lootboxes in popular video games [14], [37], [107] may become even more vulnerable to gambling-related harms if they attempt to buy/sell virtual items from lootboxes on crypto-powered online marketplaces. These lootboxes function as unregulated casinos and are designed to entice young users to engage in sports betting [25], [107].

A 2024 analysis of 1,676 posts containing cryptocurrency-related keywords from six communities on Reddit predominantly used by teenagers by Bouma-Sims et al. found that underage crypto investors experience similar harms to adults [10]. Though several human subjects studies have explored the experiences of crypto investors overall [1], [30], [53], [57], [99], no prior human subjects research has focused on the crypto asset experiences of underage teens.

Our study builds on the findings of Bouma-Sims et al. [10] by exploring similar research questions via a qualitative survey of emerging adults ($n = 143$), enabling us to more directly examine teens' experiences with crypto assets of all types—cryptocurrency, NFTs, cryptocurrency derivatives (e.g. options, futures), and others (e.g. smart contracts). We explored in more depth Bouma-Sims et al.'s research questions related to teenagers' motivations for acquiring crypto assets and the methods they use to access them. Additionally, we investigate security and privacy harms more directly than Bouma-Sims et

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al.'s work. We shed light on the range of positive and negative experiences associated with underage crypto use.

Our study explores the following questions:

- How do teenage users gain access to the crypto asset ecosystem?
- What motivates teenagers to acquire crypto assets?
- What security/privacy issues do teenagers face when using crypto assets?
- What negative and/or positive effects do teenagers experience when using crypto assets?

Our work confirms Bouma-Sims et al.'s findings and provides additional insight into teenagers' motivations behind engaging in crypto assets and the emotional effects of the harms they encounter. We found that teen crypto investors were motivated by profit, parental influence, and financial independence. Teenagers experience similar harms to adults trading crypto assets; many of these harms (e.g. gambling losses) are experienced by adults in multiple fora, but are experienced by teens mainly when crypto assets are involved. Teens also seem to be greatly emotionally affected by harms they encounter, even when financial losses appear to be small. We discuss the difficulties of protecting minors from crypto-related harms in the greater landscape of crypto market regulation.

II. Background and Related Work

In this section we review prior research and other context underpinning our work, including usability issues with cryptocurrency, teenagers' online safety, and teen engagement with financial systems.

A. Usability, risks, and mental models of cryptocurrency

Unlike most other electronic payment systems, cryptocurrency does not rely on a central intermediary to process and verify transactions; instead, transactions are recorded on a shared blockchain that utilizes public-key cryptography to verify transactions [65]. Individual wallet-holders are responsible for maintaining secure access to their keys. If a user loses their key or the underlying seed phrase [38], or if an attacker gains access to them [98], [100], lost funds cannot be recovered. In other words, to paraphrase Murphy's first law of cryptography [5]: *Cryptocurrency turns a banking problem into a key management problem.* Key management is a famously difficult unsolved problem in usable security [81], [89], [101] and an incredibly common struggle for cryptocurrency holders [1], [30], [53], [99].

Custodial wallets such as Bitpay [9] and exchanges that allow crypto trading (e.g. Coinbase, Robinhood [19], [79]) relieve users of some of the burden of self-managing keys; however, they rely on a centralized authority to maintain wallets, introducing risks inherent to centralized financial institutions (e.g. hacking [70], fraud [87], [106], etc.). In 2023, Nair et al. proposed a framework enabling non-custodial wallets to achieve similar usability features to custodial wallets via authentication factors users may already have (e.g. Google Authenticator, YubiKey) [66], [67]. As of writing, this has only been implemented in a 2024 proof-of-concept Ethereum wallet by Sharma et al. [88] and is not widely available to consumers.

Users generally lack a conceptual understanding of crypto and greatly underestimate the risks. In a 2020 interview study with 29 participants exploring mental models of cryptocurrency, Mai et al. [57] revealed several dangerous misconceptions regarding the privacy and security attributes of crypto assets. Participants overestimated the anonymity of the blockchain, with some believing transactions are deleted after a period of time or that all transactions are encrypted, inherently fully anonymous, and unreadable by the public. They also observed widespread misunderstandings of keys and addresses; most participants did not realize private keys should never be revealed to other entities. These findings align with Krombholz et al's 2017 survey of 990 Bitcoin users [53], in which 32.3% of respondents believed Bitcoin to be fully anonymous (in truth, it is only pseudonymous). 61.2% of participants who had lost Bitcoins in Krombholz et al.'s sample had experienced the loss due to self-admitted user error or security breach. Mai et al. suggest improving the usability of crypto management tools to address misconceptions leading to financial loss.

B. Teenagers and online safety

Adolescent brains are still developing, which makes teens less able to effectively identify and assess risks. Teenagers' impulsive tendencies are widely discussed in neuroscience and psychology research. During adolescence, the parts of the brain responsible for emotional regulation mature faster than the prefrontal areas that regulate long-term and goal-oriented decision-making [12], [22]. Though teenagers are capable of critically evaluating the potential consequences of a risky decision, "responsible" actions are easily overridden by emotional and social factors [76]. For example, previous work has found that adolescents are significantly more likely to engage in risky behavior while in the presence of peers—in contrast with adults, who exhibit similar rates of risk-taking surrounded by friends as they do while alone [16], [42].

Almost all American teenagers aged 13-17 (96%) use the Internet daily, and nearly half of them (46%) are online "almost constantly" [62]. This leaves them imminently exposed to online risks. Prior work has found that teens experience many of the same online privacy and security challenges as adults, such as social media privacy [3], [26], [60], phishing attacks [69], and issues with password management [96].

Minors may experience some online risks differently from older populations. Children and teens are vulnerable to issues like cyberbullying [108] and online sexual exploitation [102]. Teenagers also seem to play video games and use video-focused social networks such as TikTok and Youtube at a higher rate than adults [4], [35], [62], [78], and therefore may also experience harms unique to those platforms at a higher rate than adults. There is concern that developing minds are at greater risk of harm from attention capture deceptive patterns (e.g. the video recommendation algorithms on TikTok and YouTube) [15], [48], [77], [85] and video

game mechanics that resemble gambling [14], [37], [107]. Supporting this idea, various studies have found that teens engage with online risks differently from other populations. Sánchez et al. [83] interviewed six participants aged 15-17 about their interactions with manipulative and deceptive design practices, finding that teenagers' coping strategies for risks presented by deceptive design patterns were highly influenced by personal and social contexts. In a secondary analysis of a U.S. census-representative survey data set, Jia et al. [49] identified several categories of teens' risk-taking and risk-coping behaviors on social media and found that teens were strongly motivated by regret. These developmental vulnerabilities may make teenagers especially susceptible to harms embedded in the often gambling-like nature of crypto markets.

C. Teenagers and finance

Historically, many American youths looking to earn money took odd jobs that paid cash (e.g. mowing lawns, babysitting, etc.) [64]. However, cash has limited usefulness in an increasingly digital society where an unlimited number of goods can be purchased online. Most major electronic payment systems (as well as most bank accounts) in the US either ban minors outright or require them to join a "custodial account" attached to a parent's account [13], [97].

Minors aged 14-17 in some states are permitted to seek part-time employment, but the number of underage teens who do so has been on a long-term decline, falling to around 30% in post-pandemic years [24], [91]. Teenagers interested in formal employment face several barriers to entry, including conflicts with school schedules, child labor laws and restrictions, and issues with transportation [18]. Formal jobs also generally require employees to have access to a bank account. In contrast, mining cryptocurrency only requires a smartphone or computer and involves no identity verification.

Teens also face barriers in accessing traditional investments. Minors in the US are not permitted to open their own brokerage account, but many banks offer custodial brokerage accounts adults can contribute to in a child's name. Unlike custodial accounts for electronic payment platforms (e.g. Venmo) that enable a child to use certain parts of the service on their own, custodial brokerage accounts can only be managed by a parent. Ownership is automatically transferred at the local age of adulthood (age 18 or 21 depending on the state) [86].

Some online financial services aimed at children, such as Step [92], advertise custodial brokerage accounts that allow minors to select trades on their own (with a parent's approval for every transaction). These services and apps typically include low spending limits and integrate financial literacy education for children and teens using the platform [29]. These apps can be great options for financially forward-thinking teens. However, the parental involvement required can be a major obstacle for some, particularly children and teens from lower-income or lower-educated families [74].

Bouma-Sims et al. conducted a thematic analysis of 1,676 posts containing cryptocurrency-related keywords from six communities on Reddit predominantly used by teenagers to learn how teens access cryptocurrency and identify risks teens encounter while using it. They found that underage crypto users experience similar harms to adults. In contrast with the overall (likely mostly adult) population of cryptocurrency users on Reddit, cryptocurrency users in teen-focused subreddits accessed crypto assets through a trusted adult; in several cases, teens also appeared to be motivated to invest by parental pressure [10]. Other work studying Reddit communities `/r/cryptocurrency` [17], [50] and `/r/WallStreetBets` (an investing forum) [52] has observed a startlingly widespread culture that leans into unhealthy gambling-like behaviors associated with trading and normalizes major harms such as scams and massive financial losses. Though these studies provide valuable insight into the experiences of cryptocurrency users and investors overall, only Bouma-Sims et al. focuses on the experiences of emerging adults, and none pose questions directly to cryptocurrency users. Our study directly engages with emerging adults to probe their motivations for acquiring crypto assets as teens, methods used to acquire them, security and privacy issues faced when using crypto assets, and negative and positive experiences when using crypto assets.

III. Methods

To investigate our research question, we conducted an online survey about emerging adults' (aged 18 to 20) experiences as a minor with cryptocurrencies, cryptocurrency derivatives, NFTs, and any other types of crypto assets.

A. Recruitment

Due to the difficulty in identifying and ethically recruiting teens who trade crypto assets we recruited young adults rather than teens. In particular, we recruited participants who were 18–20 years old. This age range was selected to mitigate recall bias, as older users would have more difficulty recalling events before the age of 18. Participants were recruited in multiple stages through email lists and the crowd-working platform Prolific.

All participants took a one-minute screening survey that asked about their age, student status (if applicable), past and current crypto asset ownership, credit accounts held, online gambling games played, and their age when first trading crypto assets. The questions about credit accounts and online gambling were added to prevent participants from focusing on crypto assets before entering the main survey. Only those who reported having ever owned crypto assets and who first interacted with them when they were 17 or younger were taken to the main survey.

We first piloted our survey with six participants on Prolific in July 2024. We used Prolific's built-in prescreening functionality to recruit individuals ages 18–20 who indicated that they owned cryptocurrency or had used a cryptocurrency exchange.

Between August and December 2024 we sent recruitment emails to various cryptocurrency clubs, financial clubs, and computer science/economics departments at 77 colleges and universities across the United States. We sent the message

to addresses for clubs that we found on their websites. We also emailed department heads and faculty who do usable security research and asked them to forward the recruitment message to mailing lists that included undergraduates. The recruitment message asked for "young crypto users to share their experiences in an online survey."

Our email recruitment yielded only a few responses from each university, and we received no responses from many of the universities we contacted. After reviewing our initial responses, in January 2025 we decided to switch to Prolific to recruit more participants and add some questions to get more detailed information about participants' experiences. As in the original pilot, we used Prolific's prescreeners to invite potential participants between the ages of 18 and 20; however, given that many participants recruited via colleges did not currently own any crypto assets and the fact that most popular crypto exchanges do not allow minors to sign up, we removed the filters for active cryptocurrency ownership and past exchange usage. The overall structure and flow of this survey was the same as the previous survey, but with the addition of Likert scale questions assessing how positively or negatively a participant felt about a particular type of crypto asset overall before they were 18 and more granular free-text questions about their experiences in place of singular questions about their most positive and negative experience with each crypto asset they had used as a minor.

Participants on Prolific who were screened out were paid Prolific's minimum wage at the time of this study ($0.14 per minute). Since paying university participants who were screened out would have required collecting personal information that we did not otherwise need and offering a very small payment, we opted to only compensate university participants who completed the main study.

Pilot participants on Prolific were compensated $2.50 for the main survey, which took an average of 11 minutes to complete. University participants were compensated via chances in a random drawing to win a $50 Amazon gift card; one gift card was given out for every 20 participants, making the overall compensation equivalent to the $2.50 each pilot participant received on Prolific. The more detailed Prolifc survey administered in January 2025 took an average of 25 minutes to complete, and participants were compensated $6.00.

B. Survey Design

After completing the screening survey, eligible participants were asked a series of multiple-choice and free-response questions regarding their experiences with crypto assets as a minor. The full list of questions can be found in Appendix A. Specifically, participants were asked if they had experiences with the following crypto assets: cryptocurrencies, cryptocurrency derivatives, NFTs, and other types of assets (e.g. smart contracts). For each type of asset that participants reported using as a minor, they answered multiple-choice questions about how they accessed the asset at the time, how they first acquired it (e.g., purchased on an exchange, mined, etc), and how positively or negatively they felt about their experience with that asset overall as a minor.

Participants recruited through Prolific were shown an expanded series of questions about their positive and negative experiences to further contextualize their responses. This included the following information: when the experience occurred, how much money was involved, any other parties involved, services used, motivations behind actions taken during the experience, a brief description of the experience, and why this was their most positive or negative experience.

To close out both surveys, participants were also asked a multi-select question about positive and negative experiences regarding cryptocurrencies, with answer choices based on the results found by Bouma-Sims et al. [10] and discussions with cryptocurrency researchers.

C. Analysis

Two researchers collaborated to develop an initial codebook for the free response questions using responses from the participants recruited through universities. The codebook was further refined as new themes emerged during coding. The two coders independently coded all responses and resolved conflicts through reconciliation meetings.

D. Ethical Considerations

Our study was approved by our institution's IRB. All survey participants were presented with an IRB-approved consent form and provided consent prior to accessing the survey. Participants were asked not to reveal any information that is private, identifiable, or potentially incriminating. Identifying information used for compensation (Prolific IDs, email addresses) were stored separately from survey data. Links to identifying information used to ensure data quality were removed after data cleaning was completed.

E. Limitations

Our results provide insights into the range of experiences that minors have with crypto assets. However, our sample is not representative. We report frequencies of themes that emerged in our sample, but these should not be assumed to reflect how frequently they occur among US teens trading in crypto assets. As our participants were all located in the US, we also have no insights into how experiences may differ in other parts of the world. A large fraction of our participants were recruited from universities, which likely skews our sample towards those with more education.

Our participants were asked to recall experiences that, in many cases, occurred several years earlier and that they may not remember clearly. As we collected data via online surveys, we did not have the opportunity to ask followup questions, which might have provided clarifications or more detailed explanations than our participants provided. We did get somewhat richer responses in our second round of data collection after adding some survey questions.

	Main survey	
	Colleges (n=54)	**Prolific (n=89)**
18	12	29
19	15	31
20	25	29
No Answer	4	0

TABLE I: Age breakdown of participants in our survey.

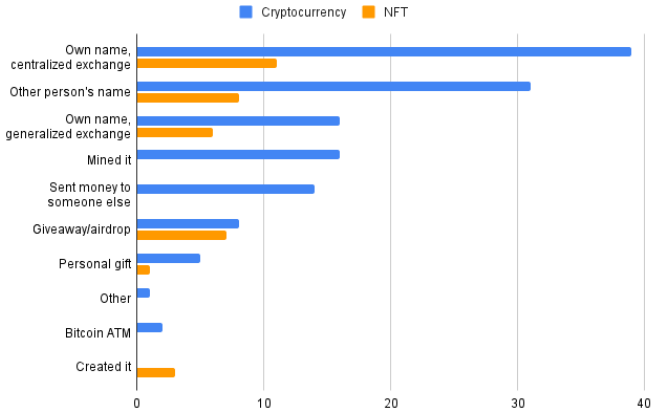

Fig. 1: Participant responses regarding their first acquisition of cryptocurrency ($n = 131$) and NFTs ($n = 33$)

IV. Results

In this section, we describe the results as they relate to our research questions. This includes data from both the multiple choice and open-ended responses from all participants regardless of recruitment method.

We recruited 294 participants to take the screening survey via our emails to universities. 65 university participants (22% of screening survey respondents) completed the main survey. 700 participants completed the screening survey on Prolific and 135 (19.3%) completed the main survey. We removed 13 university participants and 44 Prolific participants because their responses were incomplete, fraudulent (e.g. submitted 3 different responses attached to the same email) or appeared to have been generated by AI.[1] The ages of our participants are summarized in Table I. We did not collect any demographic information other than age.

A. How teenage users access crypto assets

Figure 1 summarizes the ways our participants acquired their first cryptocurrency ($n = 131$) and first NFT ($n = 33$). Figure 2 summarizes their primary methods of accessing/managing cryptocurrency before they turned 18.

The most common way participants reported accessing crypto as teenagers was by creating an account in their own

[1]Lengthy passages that were completely identical to other responses; presence of LLM copy-paste artifacts (e.g. "Sure, I can answer that..."); responses containing our gibberish word inserted via the invisible text method [34]. We inserted an invisible warning at the beginning of the survey alerting screen reader users of the extra instructions.

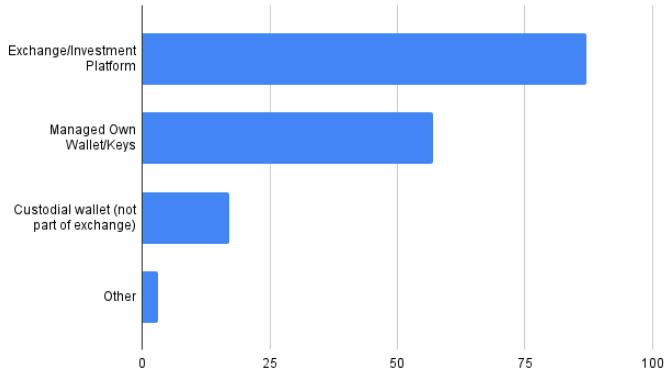

Fig. 2: Participant responses to a multiple-select question regarding their primary method(s) of accessing cryptocurrency prior to age 18 ($n = 131$)

name on an exchange or investment platform. 62 participants in our sample reported acquiring their first cryptocurrency or NFT by purchasing it on a centralized exchange using an account in their own name. However, most of the mainstream services named by participants who reported doing this would not have allowed a minor to create an account using their own name during the time period participants reported engaging in this behavior [8], [19], [71], [73], [79].

Bouma-Sims et al. found that teens on Reddit frequently advised other teens to use their parents' names and/or information to create accounts on centralized cryptocurrency exchanges and investment platforms [10]. Many of our participants who claimed to use their own identity likely used their parent's account (perhaps misremembering it as their own) or misunderstood the question. Supporting this idea, two participants who initially said they had used their own name stated later in the survey that they had help from a parent.

Notably, ten participants said Binance was the platform they used to acquire their first crypto asset in their own name. This fact is concerning, as, in 2023, Binance was charged by the United States Commodity Futures Trading Commission (CFTC) with willful evasion of federal "know your customer" (KYC) regulations following their 2019 split into two distinct companies, Binance US and Binance International [21]. Binance allegedly made it very easy for US users to avoid federal regulations by accessing Binance International using a VPN, with compliance officers employed by Binance regularly advising US users to do so [56]. None of these participants provided detailed context for their access, but it is possible some of them used a VPN to trade on Binance International in their own name.

Thirty-four participants reported using someone else's account or asking someone else to buy a crypto asset for them. Two participants used their parent's social security number to gain access to an exchange, one apparently without consent.

Fourteen participants used a peer-to-peer service (e.g. the now-defunct LocalBitcoins [6]) or decentralized exchange (DEX) to obtain their first crypto asset. DEXs are automated

marketplaces that use smart contracts to programmatically exchange one cryptocurrency or token for another [31]. As they do not deal in cash, they can be used pseudoanonymously and typically do not follow KYC regulations, raising concerns about their risk to minors [82] Most participants did not specify which service or exchange held their assets. One participant described hopping between platforms based on an influencer's recommendations: "I used several due to the monitoring and what the influencer told chat to keep an eye out for." All of these participants managed their wallet and keys themselves.

Sixteen participants acquired their first cryptocurrency by mining it. Twelve of these participants stated that they managed their own wallet and keys.

Several participants who claim to have self-managed their own cryptocurrency wallets also indicated acquiring their first asset on a centralized cryptocurrency or general speculative assets exchange but did not provide enough context for us to understand how exactly they acquired and managed their assets. It is likely these participants did not understand the differences between various ways of managing crypto assets. A more in-depth qualitative data collection method (e.g. an interview study) could provide a greater understanding of teen crypto users' mental models of blockchain access.

B. Teenagers' motivations for engaging with crypto assets

1) Profit: In alignment with Bouma-Sims et al.'s findings, teens in our sample were most commonly motivated to acquire crypto assets based on a desire to turn a profit. Forty participants stated that profit was their primary motivation for engaging with crypto assets. Many of our participants believed that they would realize a relatively large profit in a short period of time. One participant stated as their initial motivation: "My friend in middle school made a couple hundred bucks from it so I decided to join him and make some quick money from day trading cheap cryptos." The same participant described later making $50 USD "for free." However, a few participants described being motivated by long-term profit potential, with one participant believing that "soon paper money isn't going to be a thing everything is going to be online and when that happens, cryptocurrency will sky rocket."

2) Desire for financial independence: 25 participants described their initial motivation as a desire to have money of their own and/or a desire to learn about managing money on their own. One participant succinctly described their actions as being primarily driven by "the illusion of financial freedom/responsibility."

Seven participants first acquired cryptocurrency in order to purchase an item online. One of these participants acquired it to buy an NFT. One participant wanted "to anonymously purchase a specific item overseas." The rest were seeking virtual items for video games: CS:GO skins and various Roblox items & currency. A Roblox limited item was the primary motivation for our youngest reported cryptocurrency holder, who said they first acquired it at age eight.

One participant described mining Bitcoin on their personal computer for about a month in order to buy their mother a $40 birthday gift.

> My mother's birthday was coming up and I had no money. I wanted to get her something nice but I had no cash. So I found a way to convert the bitcoin that I had been mining to an Amazon giftcard (via Bitpay). I was able to buy her something that she had been wanting for awhile purely with bitcoin that I had mined.

Though a majority of our participants used crypto assets purely for speculation and all items participants reported purchasing were non-essentials (toys, Roblox items, etc), these observations highlight a practical use for cryptocurrency.

Many participants believed crypto to be "free money." In some cases, it was; 13 participants received their first cryptocurrency and/or NFT through an online giveaway (i.e., an "airdrop" [20]). All of these participants reported that they did not spend any real money on their first asset. The allure of "earning" money without spending any was a major draw for teens in our sample, regardless of the amount of work they needed to put in to receive the funds. A few participants described receiving airdrops after completing online tasks (e.g. surveys). One such participant recalled the way they felt when they were rewarded for completing a social media advertising task: "When I saw my address [on the list of airdrop winners], I was basically joyous, not really because of the money but for the fact that I could make something out of almost nothing." Another participant recalled visiting several crypto faucet websites in the hopes of receiving spare change. Following several faucets and crypto YouTubers closely for three years in the hopes of receiving free crypto netted this participant "less than $20" overall. They still found it to be a positive experience, writing, "It was chill, didn't have to spend any of my real money and there was a hope that the coins would go up in value."

These sentiments may be related to teens' desire for financial independence. Though airdrops typically involve a minuscule amount of crypto [20], teens may find it an appealing alternative to traditional ways of earning money which are saddled with restrictions and generally require parental involvement. One participant described spending several days completing LLM training tasks for a reward of only $2, and stated as their motivation for doing so: "I just wanted some cash, even if it was little."

One participant explicitly stated that they mined cryptocurrency because they felt it would be easier than getting a part-time job:

> I saw a YouTube video on Bitcoin when I was around 14, I was at that age where I was itching for extra spending money. Since I could make Bitcoin from mining and then selling it, I thought it was the perfect solution since I was too lazy to go out and get a job.

Three participants acquired their first crypto asset from Reddit's 2022 NFT avatar giveaway [44]. In 2022, Reddit introduced the ability for users to mint their customizable avatar icon as a "Reddit Collectible Avatar" NFT on the Polygon blockchain. An undisclosed set of random users were airdropped those NFTs later that year.

All three participants who discussed the Reddit Collectible Avatars received theirs in one of these airdrops. They generally had positive feelings about the free gift, though one participant later regretted it, writing:

> "It was a free avatar and a free NFT. I didn't know anything about it so I just clicked yes, accept, etc. I thought it looked cool at the time... I started reading more into cryptocurrency as people who were more critical of it came out about info regarding scams and the environmental impact and stuff. I realized that I did not want to own an NFT and I got rid of it because I thought they were, in some way, bad to own."

Reddit discontinued portions of this program in August 2024 following the late 2023 discontinuation of another blockchain initiative, "Community Points Tokens" [36], [63].

3) Peer pressure/parental influence: 20 participants recalled that their first acquisition of a crypto asset was because of someone they knew in real life. Half of these real-life influences were friends. One participant stated, "My friend in middle school made a couple hundred bucks from it so I decided to join him and make some quick money from day trading cheap cryptos." Some participants felt pressured by their friends and ultimately had a negative experience with cryptocurrency because of this. For example, one participant stated that their most negative experience occurred when they "used a sketchy online exchange that [their] friend had recommended, and it turned out to be a scam."

One participant succinctly described their initial motivation as, "I didn't want to be left out." This participant invested increasingly large amounts of money into Toncoin, a crypto coin owned by messaging app Telegram [68], with their brother and friends. They recalled spending about a year "learn[ing] about crypto on the internet and listen[ing] to peoples experience and reviews on how crypto has benefit them financially" and were surprised when they ultimately lost around half of what they put in (about $300 USD), writing "It was very sad that the risk was very high, I had to lose my crypto without expecting."

Six participants cited their father as their initial inspiration. Participants recounted both positive and negative experiences from this inspiration: some participants spent valuable time with their fathers, while others felt upset due to poor investments or parental control of funds. For example, one participant felt that their most positive experience with cryptocurrencies was due to "gaining profit and my dad teaching me about it."

Some other participants described their overall experience trading with their father quite negatively. We observed more negative experiences with fathers than positive ones, but this may not be representative. One participant recalled their father gifting them Ethereum, then forbidding them from selling it despite the participant's discomfort and belief that "crypto is glorified gambling." This participant felt better after their father allowed them to donate it to a nonprofit of their choice.

Another participant described using crypto faucets (websites that require users to complete tasks for small amounts of free crypto [33]) with their father as their "biggest nightmare," recalling it to be "very stressful and demanding to me as at that time I had little to no idea of the outcome of the numerous transactions my Dad requested me to make."

4) Curiosity: Though only a handful of participants specifically described acquiring crypto assets for fun, we observed themes of curiosity and a desire to learn in many survey responses. Several participants appeared to have no expectation of what specific benefit they would gain from owning crypto assets. For example, one participant described their primary motivation to start mining cryptocurrency as: "I thought it was cool."

Other participants, particularly those who acquired their first crypto asset by mining or minting it on their own, discussed an interest in blockchain technology, often mentioning experiences getting something to work on their computer by themselves. For example, one participant said that their motivation for mining crypto was that they "had a spare graphics card...and learned I could put it to use and make money."

Outside of an interest in technology, seventeen participants wanted to learn more about topics such as financial responsibility and financial markets. For a few participants, cryptocurrencies were their first experience with managing their own money. One participant described their motivation for obtaining cryptocurrency as "the hope of learning how to make money by myself...."

While trading were you affected by any of the following?	Count
Investment and trading losses	65
Hypothetical losses	40
Lost access to wallet	34
Pump and dump scam	28
Gambling losses	27
A service/project they invested in was hacked	17
A service/project they invested in committed fraud and they lost money	14
Other type of scam	13
Lost access to wallet after exchange implemented KYC	1

TABLE II: Negative experience counts based on participant responses to a multi-select question at the end of the survey: "While trading/using crypto assets before age 18, were you affected by any of the following?" (n = 143).

C. Security and privacy issues faced by teens

Table II lists common harms experienced by participants. Some participants who described experiencing harms in their free-text responses did not select the corresponding option in the multiple-select question.

1) Wallet loss due to key management problems and other user errors: Two participants' most negative experiences

with cryptocurrency was forgetting to save their keys when replacing their computer/phone. Another participant lost their security phrase for MetaMask (a self-managed wallet). Additionally, 34 participants reported having lost access to their crypto wallet at some point prior to turning 18. It is unclear what caused most of these participants to lose access to their wallet; though key loss is a common experience for crypto traders overall [58], there are a number of other possible causes.

2) Pump-and-dump scams and rug pulls: 28 participants were affected by pump-and-dump scams. A pump-and-dump involves artificially inflating the price of an asset through misleading statements, exaggerated claims, or coordinated hype (the "pump") in order to sell off holdings at an unnaturally elevated price (the "dump"). Once the perpetrators dump their holdings, the price of the asset typically sharply plummets, resulting in significant losses for other investors. These schemes are illegal in most jurisdictions, but are common in crypto due to the unregulated nature of these markets [59], [75], [103].

One participant stated their most negative experience with cryptocurrency was "getting rugged," which refers to a rug pull. Rug pull is a term derived from the crypto industry, most often referring to pump-and-dumps schemes in which the creator of a worthless token hoards most of the shares, artificially inflates the price by convincing investors to purchase with a bad-faith promise of returns, then sells all of it, profiting greatly and leaving investors in the dust as the token quickly drops value.

Before crypto, teens were limited in their ability to participate in financial markets independently, which would prevent them from being victimized by pump-and-dump schemes.

3) Other types of scams: 13 participants reported being affected by non-pump-and-dump scams. (Six of these participants were victimized by both a pump-and-dump and another type of scam.) Several participants stated their most negative experience with cryptocurrency was being scammed by a marketplace seller while attempting to buy something using cryptocurrency.

> I wanted to buy Robux but got scammed for 10 dollars in BTC I bought on Coinbase by some stranger on discord.

This type of scam is very common overall and is not unique to cryptocurrency [90]; however, victims of crypto-facilitated scams typically have fewer avenues of recourse given the decentralized nature of most cryptocurrencies [84]. One participant was able to take action against the marketplace user who scammed them, but still couldn't recover their funds: "I sent this person the bitcoin and they took my money and blocked me. I reported them and they got banned I believe but I never got my money back."

Several participants who reported being scammed may have just unknowingly invested in a worthless asset. Many tokens, especially "memecoins," are inherently worthless. Some of these tokens are in fact created with the intention to defraud investors [59]. Two participants described experiences that were clearly related to scam tokens: one participant purchased a token that was fell in value immediately after purchasing, while another pooled money with friends in the hopes of realizing astronomically high profits:

> Me and my friend bet on a coin that was supposedly worth over a million dollars, but we got too greedy and excited. We put our earnings together from jobs and all to bet on this coins, telling ourselves that we would get equal profit.

Some mentions of "getting scammed" appear to just be normal investment losses. One participant described their most negative experience with cryptocurrency as when they invested $200 and then another $100 after losing money, which they called a "scam," despite having previously acknowledged that this was due to making investments "without doing proper research." Another participant who lost money because a token they had purchased "turned out to be a scam" later stated that they had not experienced a pump-and-dump but that their monetary loss from this coin was due to typical market fluctuations.

4) Hacking: 17 participants stated that a service they used or project they invested in was hacked, causing them to lose money. The majority of these participants did not provide any other context, so it is possible their monetary losses attributed to hacking were caused by user error or something else. One participant found all their assets (around $350) "emptied" immediately after connecting their wallet to a decentralized exchange.

D. Harmful outcomes

In addition to the security and privacy issues described in the previous section, some teens in our sample experienced other harmful effects from their engagement with crypto assets as a minor.

1) Monetary loss: Most participants who engaged with cryptocurrency experienced financial or trading losses in some form. Financial losses were not only the most common harm reported, but also the most common negative experiences participants had as minors across crypto asset types. These losses ranged from "a couple of cents" to a participant's "life savings," with the highest value lost being reported as $2,000.

Participants listed various reasons for these losses. Commonly, participants bought coins impulsively, either not expecting the market to fluctuate ("I invested in bitcoin without researching the market much") or purchasing assets that were inherently worthless ("The token turned to be a scam, and I lost all my money"). Many participants also seemed emotionally unprepared, frequently engaging in "panic selling" either prior to the value of a coin dropping or after seeing the market fluctuate. This occurred even when fluctuations were small. For example, one participant stated "I bought 2 dollars of Bitcoin Cash in PayPal, waited a few days to see that it got down by like a couple of cents, I was sad. I then sold it and never touched it. This time, I lost money, a couple of cents can do a lot for you and I lost it."

2) Strong emotional effects: Participants in our sample seemed deeply emotionally affected by losses—even hypothetical ones. Hypothetical losses were reported as participants' most negative experiences at almost the same frequency as actual investment losses. For both types of loss (real and imagined), participants described strong feelings of sadness, betrayal, stress, heartbreak, anger, disappointment, low self-worth, and depression.

These strongly negative sentiments shared by participants who experienced trading losses (or thought they would experience trading losses) were indistinguishable from those of participants who experienced gambling losses. 22 participants said they experienced significant stress and anxiety watching the market fluctuate, with one participant regretfully admitting to "obsess[ing]" over the value of their assets so much they were unable to focus on classwork. Obsessive watching of balances closely resembles a key characteristic of gambling addiction [28], suggesting that in addition to being a literal outlet for underage gambling, crypto asset trading appears to have had gambling-like effects on teens in our sample. A 2021 analysis of bank data by Hackethal et al. found that crypto traders check markets much more frequently than other types of investors [41]. Bouma-Sims et al. also observed this behavior in teenagers on Reddit [10].

A few participants expressed feelings of guilt and self-blame over someone close to them experiencing monetary loss from crypto investments. One participant recalled "kind of encouraging" a colleague to purchase a Bored Ape NFT, which cost the colleague over $10,000 when the Bored Ape bubble burst [95]. Another described feeling guilty over advising their father to invest in a coin which he then lost money on, despite the father experiencing the loss due to "panic selling" against the participant's advice.

Thirteen participants wrote that they had no negative experiences with a crypto asset before turning 18. Two of these participants also claimed to have no memorable positive experiences. Three others related their lack of negative experiences to not investing much money and/or receiving crypto "for free" through an airdrop. Four participants who claimed to only have positive experiences viewed their engagement with crypto assets as purely educational.

E. Positive outcomes

A majority of participants asked to rate their overall experience with crypto assets as a minor rated it as "somewhat positive" or "extremely positive" (63 of 85; 74%) . In this section, we list and describe some of the positive outcomes we observed in participant responses.

1) Profit and financial independence: The majority of positive experiences recalled by participants were related to profit and/or making independent financial decisions. 59 participants wrote that their most positive experience with crypto assets involved turning a profit; 21 of these were specifically short-term profits, while only two were long-term (the rest did not specify). Reported financial gains ranged from a few dollars to a few thousand dollars. Participants described strong feelings of elation when realizing profits.

> Invested my life savings at the age of 15 into bitcoin in 2019, the coin skyrocketed in 2020 and 2021, and when it hit a new high in November 2021 I sold it. I made $2500, felt like John Rockefeller

> I bought a meme coin and it pumped, then I sold it and made good profit. It was the best thing that had ever happened to me. I never thought I could make money from crypto.

Twenty-five participants' most positive experiences with crypto assets involved earning, managing and spending money on their own without parental involvement, aligning with our finding that financial independence was a primary motivator for teens to engage with crypto (IV-B2).

> I heard about a crypto investment platform and did a lot of research into it. I was convinced but my parents were not convinced so I had to find my own means of purchasing some crypto to do the investments and I got 3 times of my investment capital (around $1,000)

2) Privacy/anonymity: Three participants stated that their most positive experience with cryptocurrency was being able to purchase items online anonymously. All three of these participants used cryptocurrency exclusively for this purpose. They named issues with key management and market volatility as their reasoning for not engaging in speculation. Two out of three did not ever engage with other types of crypto assets besides currency; the third participant also bought and sold NFTs with family members.

3) Improved technical skills: 11 participants described an interest in technology as their primary motivator for engaging with crypto assets. Nine participants described learning about technology as their most positive experience with crypto assets. Most of these stories involved mining a crypto coin on their own, and involvement levels varied, with some using a downloadable program on their computer or phone and others building multi-device mining farms. One participant enjoyed programming smart contracts but later stopped because they could not afford the "horrid" fees.

4) Fun social and learning experiences: Overall, 26 participants described a social experience as their most positive experience with crypto assets as a teenager. Most of these participants recalled fun times hanging out and earning money alongside their friends.

> i was joking with a friend that we should buy a coin because the name sounds funny. turns out that the coin will make us a lot of money

For some participants, the time spent with friends completely overshadowed any profit they made. This was particularly common for participants who used NFTs. Five participants mentioned enjoyable experiences making art with their friends and minting them as NFTs and/or participating in artist communities via owning NFTs. Only one of these participants earned money from their NFTs, though many of their buyers

were supportive friends, and they did not think the profit was worth the time investment. They wrote, "I only gained around 10 dollars which was horrible considering how much NFTs I had made." One participant felt that trying to make a profit on crypto assets was stressful and "more difficult than it seems," but did not regret the experience, writing, "It was fun since it was with a friend but it's just an experience but rather positive for me." When asked why they considered their experience to be mostly positive, they wrote "I spent a lot of time with my buddy."

Fifteen participants stated their most positive experience with crypto assets as a teen involved learning about technology, markets, or personal finance. These experiences were mostly nonspecific; most participants in this category did not name specific things they learned, only that they learned *something* from engaging with crypto assets. Notable exceptions include participants whose learning experiences were tied to social experiences. For example, two participants described learning about crypto from their older brothers, who guided them through the process of obtaining assets.

V. Discussion

In this section we discuss the implications of our findings. Our results confirm Bouma-Sims et al.'s observations of teenage crypto users on Reddit. However, our approach of directly surveying young adults who used cryptocurrency as teenagers allowed us to obtain richer data, particularly from participants who may not have felt comfortable sharing their experiences on Reddit. We also gained some insight into the behaviors of teenage users of NFTs, cryptocurrency derivatives, and other types of assets, finding their experiences to be mostly similar to the experiences of cryptocurrency users.

A. Financial Independence and Parental Influence on Teen Crypto Behaviors

We observed a lot of discussion from our participants surrounding a desire for financial independence. Many participants recalled initially acquiring cryptocurrency because they wanted to buy something specific or because they wanted to learn about managing their own money. Though custodial accounts exist that allow children and teens to access digital money, most require some level of parental involvement, and few allow minors to buy and sell crypto assets [93].

In alignment with Bouma-Sims et al.'s findings, creating an account in the name of a parent or older relative was a primary way participants accessed crypto assets. A few of our participants avoided identity verification obstacles by using their parents' information to sign up for exchanges, sometimes without consent. Based on our participants' stated motivations, they seem to have done so because they did not know how to access crypto assets otherwise and likely did not think through the implications of impersonating someone else in a financial context.

We also observed several instances of parental influence as a motivational factor. Every participant who mentioned parental pressure was influenced by their father. This is likely due in part to the large gender gap in crypto involvement overall [2]. We agree with Bouma-Sims et al.'s hypothesis that parental motivation is rooted similarly to teens' ideas that crypto is highly profitable. Many teens appear to believe in crypto as a source of "free money," despite the work involved in obtaining it frequently outpacing the monetary benefit. The responses from participants who were initially motivated by parental influence seem to suggest their parents believed the same.

Our participants' stories of engaging with crypto assets due to parental influence were more negative than positive. Participants shared stories of feeling pressured to participate in activities that made them uncomfortable and being expected to provide reliable profit for their parents from extremely unpredictable crypto assets. Teens and parents may benefit from more accessible and robust financial education regarding crypto assets and market fluctuation.

Disturbingly, some of the stories shared by participants implied that fathers were intentionally pressuring their children to invest to an abusive degree. While opening financial accounts in a child's name is legally identity theft and is considered child exploitation [72], it is unclear whether forcing a child to become a crypto advisor would fall under existing regulations. It is possible that these parents view crypto assets more like technology than investment vehicles, and believe they are simply seeking tech advice from their digital native children—similar to some parents who exploit their children to earn money as social media influencers [27], [39]. Only recently have some U.S. states begun expanding protections for child actors to include online content [51]. Mandatory reporters in schools and other adults responsible for child welfare should be educated on the potential for child financial abuse through crypto investing. Teens in these situations may still benefit from greater literacy of crypto markets, as our participants (regardless of initial access/motivation) frequently believed they had more control (and thus responsibility) over the value of their assets than is really possible in a highly volatile market.

Underage teens are clearly interested in participating in securities. Financial markets' inherent fluctuations are not a great match for adolescents who do not yet have the facilities to fully assess risk, but as evidenced by our participants, an "abstinence-only" approach to protecting teens from financial harms does not completely stop them from attempting to engage anyway, and pushes many to incur more risk than necessary. Though we did not find much evidence for teens avoiding age-related protections via decentralized exchanges or other unregulated means, we did observe several instances of teens using accounts that were not meant for them (e.g. in a parent's name), thus enabling them to make highly destructive mistakes. Many of our participants lost hundreds or thousands of dollars as teenagers due to fraud, gambling, or market fluctuation. Our findings highlight a need for safer investment vehicles for minors.

B. Participant Engagement with Gambling

In addition to crypto asset trading encouraging gambling-like behavior [28], some teens in our sample engaged in literal gambling using cryptocurrency, as observed in a small percentage of posts analyzed by Bouma-Sims et al [10]. A few participants in our study also described using cryptocurrency to bet on virtual items inside video games like Roblox and CS:GO. It makes sense for online markets selling virtual goods to accept virtual currency as payment—the risk involved in this type of transaction is mostly inherent to the specific coin being used. Where this really becomes dangerous is that many of these websites facilitate buying and selling virtual items as a secondary feature: they primarily serve as unregulated casinos powered by cryptocurrency.

Children and teens join crypto marketplace platforms, many of which lack KYC policies [7], to sell valuable items they receive in lootboxes (which are widely considered to be a form of gambling in and of themselves [14]). They are left with cryptocurrency that they need technical expertise to withdraw as a minor, if the platform allows them to withdraw at all—many marketplaces utilize proprietary crypto coins that have no value outside of the site. Users are permitted to use these funds to purchase or bid on other items, but popular sites like CS:GOLounge employ deceptive design tactics to entice users into sports betting channels [43], [83]. Minors in the U.S. are not legally permitted to participate in sports betting, but e-sports like CS:GO are not covered under gambling laws [45]. Crypto marketplaces with casinos are unlikely to become safer for underage users without sweeping regulations to close legal loopholes utilized by these platforms and target gambling mechanics in video games [25], [80], [104].

C. Crypto Scams and Emotional Impacts

Amid concerns that teens are uniquely targeted by crypto scams perpetuated by influencers [82], we did observe a few instances of teens being scammed on social media; however, most participants who experienced this were victimized on a small scale (e.g. by an individual they met on Discord). There is evidence that teens are easily influenced by popular online creators [55], and there is certainly no shortage of influencers perpetuating crypto scams [32], [61], [94]. Though a few of our participants described losing money after following influencer recommendations, none named any known influencer scams. Teens in our sample appeared to be more strongly influenced by their friends than any online source.

Our participants' descriptions of their most positive and negative experiences with crypto assets were strikingly emotional, providing more context to crypto asset use than users may feel comfortable sharing on platforms like Reddit [10]. This may in part be due to our sampling method requiring participants to recall events from the past; it is well-known that emotional experiences are remembered more clearly than neutral events [54]. That said, our participants described feeling intense emotions that did not appear to match the intensity of their experiences. Participants reported similar levels of despair over trading losses regardless of their size and regardless of whether the loss was real or hypothetical. Feelings of joy over real and hypothetical gains were described as equally intense. This tracks with a wealth of neuroscience research finding that adolescents experience emotions more strongly than adults [12], [22], [40], [76]. This is concerning because crypto markets are unpredictable and values fluctuate wildly. Dealing with unpredictably fluctuating financial assets is difficult to handle even for adults, and our findings suggest that this emotional rollercoaster is much steeper for teens. It follows that the resulting negative effects similar to that of a gambling addiction may be more harmful to teens. Future research should evaluate these effects in more detail and more directly compare the experiences of adolescent crypto traders to that of adults.

VI. Conclusion

Our study adds context to the ongoing discussion around risky online financial behavior of teenagers. Through our survey of 143 emerging adults who had owned crypto assets prior to turning 18, we confirmed findings from previous work that teens are motivated by profit & parental pressure, they primarily access crypto assets with the help of trusted adults rather than unregulated exchanges, and they are vulnerable to risks inherent to crypto such as pump-and-dump scams and large market fluctuations. We also shed light on the emotional & mental effects on teenagers affected by common crypto-related harms. Our findings further highlight a need for safer, more accessible means of accessing online finance for underage users.

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APPENDIX

A. Prolific screening survey

1) What is your age in years?
   - 17 or younger
   - 18
   - 19
   - 20
   - 21
   - 22
   - 23 or older

   (Participants must select an age between 18 and 20 to continue with the survey.)
2) Have you ever owned/held any crypto assets (cryptocurrencies, NFTs, or other types of tokens)?
   - Yes
   - No
   - Don't know/prefer not to answer

   (Participants must select "Yes" to continue with the survey.)
3) Do you currently own/hold any crypto assets (cryptocurrencies, NFTs, or other types of tokens)?
   - Yes
   - No
   - Don't know/prefer not to answer
4) Which of the following credit accounts do you currently hold? Choose all that apply. *(Distractor question; lists types of credit accounts)*
5) What types of online gambling/casino games have you played? Choose all that apply. *(Distractor question; lists types of online gambling/casino games)*
6) How old were you when you first bought, traded, created or owned any crypto assets?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants must select an age below 18 to continue with the survey.)

B. Prolific main survey

1) Filter question: Participants were shown different portions of the survey depending on their answer to this question. (Participants who selected "I'm not sure" or "I've never owned any crypto assets" were screened out and paid for their time.)

1) Which crypto assets have you owned? (Please select any assets you have ever owned, even if you do not currently hold any)
   - Cryptocurrency (Bitcoin, Ethereum, etc)
   - NFTs
   - Cryptocurrency derivatives (e.g., options, futures, etc.)
   - Others (describe) *(text)*

- I'm not sure
- I've never owned any crypto assets

2) Cryptocurrency questions:

1) How old were you when you first bought, traded or owned cryptocurrency?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) Do you currently own/hold any cryptocurrencies?
   - Yes
   - No
   - Don't know/prefer not to answer
3) What have you used cryptocurrency for? (Select all that apply)
   - Long-term investment
   - Short-term trading (e.g. day trading)
   - Buying or selling NFTs
   - Buying or selling other goods/services
   - Gambling
   - Conversion between international fiat currencies
   - Sending/receiving money
   - Blockchain games
   - Creating a Web3 project (e.g. by issuing a new token)
   - Other (describe here) *(text entry)*
4) How do you currently access cryptocurrency? (Select all that apply)
   - I manage my own wallet and keys
   - I use an exchange or investment platform (e.g. Robinhood, Binance, Crypto.com)
   - I use a custodial wallet that is **not** part of an exchange or investment platform (e.g. BitPay, Electrum)
   - I don't currently hold any cryptocurrency
5) How did you manage your cryptocurrency before you were 18? (Select all that apply)
   - I managed my own wallet and keys
   - I used an exchange or investment platform (e.g. Robinhood, Binance, Crypto.com)
   - I used a custodial wallet that is **not** part of an exchange or investment platform (e.g. BitPay, Electrum)
   - Something else (describe here) *(text entry)*
6) How did you acquire your first cryptocurrency?
   a) Purchased by myself **in my name** using a general speculative assets exchange platform (Venmo, Robinhood, etc.)
   b) Purchased by myself **in my name** using a centralized crypto exchange (Coinbase, Binance, etc)
   c) I sent somebody money and they gave me cryptocurrency NOT using a centralized exchange (LocalBitcoins or paying a coin miner directly)
   d) Bitcoin ATM or similar
   e) I asked someone to buy it for me on an exchange / I used someone else's account to buy it from an exchange
   f) Received through a giveaway/airdrop
   g) Mined it
   h) Someone personally gave it to me as a gift
   i) Other (describe and explain your motivation) *(text entry)*

   Participants who answered (a)–(f) here answered question 7, (g) answered question 8, and (h) answered questions 9–10.
7) What first motivated you to buy cryptocurrency? *(text entry)*
8) What first motivated you to mine cryptocurrency? *(text entry)*
9) Did you choose to purchase or mine more cryptocurrency after receiving it as a gift?
   - Yes
   - No
10) Why or why not? *(text entry)*
11) How positively or negatively would you describe your overall experience with cryptocurrency (before you were 18)? *(Likert)*
12) Think about your most **positive** experience with cryptocurrency (before you were 18) and answer the questions below. *(all text entry)*[2]
    a) When did it happen? (Over what period of time?)
    b) How much money was involved, if any?
    c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
    d) What service(s) did you use, if any?
    e) What action(s) did you take that led to this experience? What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
    f) In a couple of sentences, describe this experience. What happened?
    g) Why was this your most positive experience with cryptocurrency?
13) Think about your most **negative** experience with cryptocurrency (before you were 18) and answer the questions below. *(all text entry)*note1
    a) When did it happen? (Over what period of time?)
    b) How much money was involved, if any?
    c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
    d) What service(s) did you use, if any?
    e) What action(s) did you take that led to this experience?

[2]University participants only answered parts (f) and (g).

What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
   f) In a couple of sentences, describe this experience. What happened?
   g) Why was this your most negative experience with cryptocurrency?

3) NFT questions:

1) How old were you when you first acquired or created an NFT?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) How did you acquire your first NFT?
   a) Purchased by myself **in my name** using a centralized exchange platform
   b) Purchased by myself using a decentralized exchange
   c) I asked someone to buy it for me on an exchange
   d) Received through a giveaway/airdrop
   e) Created it myself
   f) Someone personally gave it to me as a gift
   g) Other (describe and explain your motivation) *(text entry)*

   Participants who answered (a)–(d) here answered question 3, (e) answered question 4, and (h) answered questions 5–6.
3) What motivated you to purchase your first NFT? *(text entry)*
4) What motivated you to create your first NFT? *(text entry)*
5) Did you choose to purchase or create more NFTs after receiving one as a gift?
   - Yes
   - No
6) Why or why not? *(text entry)*
7) How positively or negatively would you describe your overall experience with NFTs (before you were 18)? *(Likert)*
8) Think about your most **positive** experience with NFTs (before you were 18) and answer the questions below. *(all text entry)* note1
   a) When did it happen? (Over what period of time?)
   b) How much money was involved, if any?
   c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
   d) What service(s) did you use, if any?
   e) What action(s) did you take that led to this experience? What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
   f) In a couple of sentences, describe this experience. What happened?
   g) Why was this your most positive experience with NFTs?
9) Think about your most **negative** experience with NFTs (before you were 18) and answer the questions below. *(all text entry)* note1
   a) When did it happen? (Over what period of time?)
   b) How much money was involved, if any?
   c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
   d) What service(s) did you use, if any?
   e) What action(s) did you take that led to this experience? What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
   f) In a couple of sentences, describe this experience. What happened?
   g) Why was this your most negative experience with NFTs?

4) Cryptocurrency derivatives questions:

1) How old were you when you first bought, traded or owned cryptocurrency derivatives (options, futures, etc)?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) How positively or negatively would you describe your overall experience with cryptocurrency derivatives (options, futures, etc) (before you were 18)? *(Likert)*
3) Think about your most **positive** experience with cryptocurrency derivatives (options, futures, etc) (before you were 18) and answer the questions below. *(all text entry)*note1
   a) When did it happen? (Over what period of time?)
   b) How much money was involved, if any?
   c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
   d) What service(s) did you use, if any?
   e) What action(s) did you take that led to this experience? What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
   f) In a couple of sentences, describe this experience. What happened?

g) Why was this your most positive experience with cryptocurrency derivatives?

4) Think about your most **negative** experience with cryptocurrency derivatives (options, futures, etc) (before you were 18) and answer the questions below. *(all text entry)*note1
   a) When did it happen? (Over what period of time?)
   b) How much money was involved, if any?
   c) Who was involved (e.g. just you, your friend, your parent, an influencer—don't provide personally identifying info)?
   d) What service(s) did you use, if any?
   e) What action(s) did you take that led to this experience? What was your motivation behind these actions? (e.g. bought an experimental coin in the hopes of making money)
   f) In a couple of sentences, describe this experience. What happened?
   g) Why was this your most negative experience with cryptocurrency derivatives?

5) Other assets questions:

1) You mentioned you have owned other type(s) of crypto assets besides cryptocurrency, NFTs, and derivatives: *[insert free text response from filtering question]*
   How old were you when you first acquired one of these assets?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) In a couple of sentences, describe your most **positive** experience with other (non-currency, non-NFT) crypto assets before you were 18. *(text entry)*
3) In a couple of sentences, describe your most **negative** experience with other (non-currency, non-NFT) crypto assets before you were 18. *(text entry)*

6) Common experiences:

1) While trading/using crypto assets before age 18, did you experience any of the following? (Select all that apply)
   - Turned a profit
   - Made new friends
   - Gained experience that was used for professional development and/or a college application
   - Acquired technical skills
   - Learned about financial markets
   - Learned about politics
   - Other (describe) *(text entry)*
   - None of the above *(exclusive)*
2) While trading/using crypto assets before age 18, were you affected by any of the following? (Select all that apply)
   - Lost access to wallet (e.g. lost the key or seed phrases)
   - A service I used or project I invested in was hacked
   - A service I used or project I invested in committed fraud and lost my money (e.g., FTX, SafeMoon)
   - Pump-and-dump scam (click here if you don't know what this is) *(links to an investor.gov article defining pump-and-dump schemes [47])*
   - Other type of scam
   - Gambling losses (e.g. online casinos using cryptocurrency)
   - Investment and trading losses (e.g. bought $50 worth of coin, sold for $10)
   - Hypothetical losses (didn't lose money but missed out on a significant profit opportunity)
   - Other (describe) *(text entry)*
   - None of the above *(exclusive)*

C. College screening survey

1) What is your age in years?
   - 17 or younger
   - 18
   - 19
   - 20
   - 21
   - 22
   - 23 or older

   (Participants must select an age between 18 and 20 to continue with the survey.)
2) Are you a student at any of the following universities? You don't need to be a student to be eligible to participate in this study.
   - *Our list of university contacts, redacted for submission*
   - I am a college student but not at any of these schools
   - I am not a college student
3) Have you ever owned/held any crypto assets (cryptocurrencies, NFTs, or other types of tokens)?
   - Yes
   - No
   - Don't know/prefer not to answer

   (Participants must select "Yes" to continue with the survey.)
4) Do you currently own/hold any crypto assets (cryptocurrencies, NFTs, or other types of tokens)?
   - Yes
   - No
   - Don't know/prefer not to answer
5) Which of the following credit accounts do you currently hold? Choose all that apply. *(Distractor question; lists types of credit accounts)*
6) What types of online gambling/casino games have you played? Choose all that apply. *(Distractor question; lists types of online gambling/casino games)*

7) How old were you when you first bought, traded, created or owned any crypto assets?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants must select an age below 18 to continue with the survey.)

D. College main survey

1) Filter question: Participants were shown different portions of the survey depending on their answer to this question. (Participants who selected "I'm not sure" or "I've never owned any crypto assets" were screened out and paid for their time.)

1) Which crypto assets have you owned? (Please select any assets you have ever owned, even if you do not currently hold any)
   - Cryptocurrency (Bitcoin, Ethereum, etc)
   - NFTs
   - Cryptocurrency derivatives (e.g., options, futures, etc.)
   - Others (describe) *(text)*
   - I'm not sure
   - I've never owned any crypto assets

2) Cryptocurrency questions:

1) How old were you when you first bought, traded or owned cryptocurrency?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) Do you currently own/hold any cryptocurrencies?
   - Yes
   - No
   - Don't know/prefer not to answer
3) What have you used cryptocurrency for? (Select all that apply)
   - Long-term investment
   - Short-term trading (e.g. day trading)
   - Buying or selling NFTs
   - Buying or selling other goods/services
   - Gambling
   - Conversion between international fiat currencies
   - Sending/receiving money
   - Blockchain games
   - Creating a Web3 project (e.g. by issuing a new token)
   - Other (describe here) *(text entry)*
4) How do you currently access cryptocurrency? (Select all that apply)
   - I manage my own wallet and keys
   - I use an exchange or investment platform (e.g. Robinhood, Binance, Crypto.com)
   - I use a custodial wallet that is **not** part of an exchange or investment platform (e.g. BitPay, Electrum)
   - I don't currently hold any cryptocurrency
5) How did you manage your cryptocurrency before you were 18? (Select all that apply)
   - I managed my own wallet and keys
   - I used an exchange or investment platform (e.g. Robinhood, Binance, Crypto.com)
   - I used a custodial wallet that is **not** part of an exchange or investment platform (e.g. BitPay, Electrum)
   - Something else (describe here) *(text entry)*
6) How did you acquire your first cryptocurrency?
   a) Purchased by myself **in my name** using a general speculative assets exchange platform (Venmo, Robinhood, etc.)
   b) Purchased by myself **in my name** using a centralized crypto exchange (Coinbase, Binance, etc)
   c) I sent somebody money and they gave me cryptocurrency NOT using a centralized exchange (LocalBitcoins or paying a coin miner directly)
   d) Bitcoin ATM or similar
   e) I asked someone to buy it for me on an exchange / I used someone else's account to buy it from an exchange
   f) Received through a giveaway/airdrop
   g) Mined it
   h) Someone personally gave it to me as a gift
   i) Other (describe and explain your motivation) *(text entry)*

   Participants who answered (a)–(f) here answered question 7, (g) answered question 8, and (h) answered questions 9–10.
7) What first motivated you to buy cryptocurrency? *(text entry)*
8) What first motivated you to mine cryptocurrency? *(text entry)*
9) Did you choose to purchase or mine more cryptocurrency after receiving it as a gift?
   - Yes
   - No
10) Why or why not? *(text entry)*
11) Describe your most positive experience with cryptocurrency (before you were 18). *(text entry)*
12) Describe your most negative experience with cryptocurrency (before you were 18). *(text entry)*

3) NFT questions:

1) How old were you when you first acquired or created an NFT?
   - 9 years of age or younger

- 10–11
- 12–13
- 14–15
- 16–17
- 18–19
- 20+

(Participants who select ages 18+ skip to the next section.)

2) How did you acquire your first NFT?
   a) Purchased by myself **in my name** using a centralized exchange platform
   b) Purchased by myself using a decentralized exchange
   c) I asked someone to buy it for me on an exchange
   d) Received through a giveaway/airdrop
   e) Created it myself
   f) Someone personally gave it to me as a gift
   g) Other (describe and explain your motivation) *(text entry)*

   Participants who answered (a)–(d) here answered question 3, (e) answered question 4, and (h) answered questions 5–6.
3) What motivated you to purchase your first NFT? *(text entry)*
4) What motivated you to create your first NFT? *(text entry)*
5) Did you choose to purchase or create more NFTs after receiving one as a gift?
   - Yes
   - No
6) Why or why not? *(text entry)*
7) Describe your most positive experience with NFTs (before you were 18). *(text entry)*
8) Describe your most negative experience with NFTs (before you were 18). *(text entry)*

4) Cryptocurrency derivatives questions:

1) How old were you when you first bought, traded or owned cryptocurrency derivatives (options, futures, etc)?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) Describe your most positive experience with cryptocurrency derivatives (options, futures, etc.) — before you were 18. *(text entry)*
3) Describe your most negative experience with cryptocurrency derivatives (options, futures, etc.) — before you were 18. *(text entry)*

5) Other assets questions:

1) You mentioned you have owned other type(s) of crypto assets besides cryptocurrency, NFTs, and derivatives: *[insert free text response from filtering question]*
   How old were you when you first acquired one of these assets?
   - 9 years of age or younger
   - 10–11
   - 12–13
   - 14–15
   - 16–17
   - 18–19
   - 20+

   (Participants who select ages 18+ skip to the next section.)
2) Describe your most **positive** experience with other (non-currency, non-NFT) crypto assets before you were 18. *(text entry)*
3) Describe your most **negative** experience with other (non-currency, non-NFT) crypto assets before you were 18. *(text entry)*

6) Common experiences:

1) While trading/using crypto assets before age 18, did you experience any of the following? (Select all that apply)
   - Turned a profit
   - Made new friends
   - Gained experience that was used for professional development and/or a college application
   - Acquired technical skills
   - Learned about financial markets
   - Learned about politics
   - Other (describe) *(text entry)*
   - None of the above *(exclusive)*
2) While trading/using crypto assets before age 18, were you affected by any of the following? (Select all that apply)
   - Lost access to wallet (e.g. lost the key or seed phrases)
   - A service I used or project I invested in was hacked
   - A service I used or project I invested in committed fraud and lost my money (e.g., FTX, SafeMoon)
   - Pump-and-dump scam (click here if you don't know what this is) *(links to an investor.gov article defining pump-and-dump schemes [47])*
   - Other type of scam
   - Gambling losses (e.g. online casinos using cryptocurrency)
   - Investment and trading losses (e.g. bought $50 worth of coin, sold for $10)
   - Hypothetical losses (didn't lose money but missed out on a significant profit opportunity)
   - Other (describe) *(text entry)*
   - None of the above *(exclusive)*