



Not “Just a Hobby”: The Influence of Early Interest and Hobbies on Community College IT Student Decision-Making

ELIZA K. PETERSON,^{1*} MICHELLE VAN NOY,¹ SAM SCOVILL,¹
and RENEE EDWARDS²

¹*Education and Employment Research Center, School of Management and Labor Relations, Rutgers, the State University of New Jersey, Piscataway, NJ 08854*

²*Heldrich Center for Workforce Development, Edward J. Bloustein School of Planning and Public Policy, Rutgers, the State University of New Jersey, 30 Livingston Avenue, New Brunswick, NJ 08901*

[*eliza.peterson@rutgers.edu](mailto:eliza.peterson@rutgers.edu)

Abstract: This study aimed to find how IT-related hobbies and interests impacted students’ educational and career decision-making. **Methods:** As part of a six-year-long, ATE-funded study of IT students at Ivy Tech Community College, our team conducted semi-structured, phenomenological interviews. These interviews were analyzed using keyword searches and a combined inductive-deductive approach to coding to explore how IT-related hobbies and interests interacted with other personal characteristics to inform student decision-making. **Findings:** Our team identified a potential link between early IT interest, IT-related hobbies, and persistence in IT education and careers. Many participants in the study had a moment of clarity where they realized that their IT hobby could become their career, the “hobby-to-career reckoning.” **Contributions:** This piece explores the potential connection between IT interests/hobbies and student outcomes within the field of IT while exploring the different social factors that may impact student decision-making and the role of the hobby-to-career reckoning in the decision-making process. This piece will give practitioners and researchers insight into how early interest in IT and IT-related hobbies may impact student decision-making about IT educational programs and careers.

Keywords: information technology, student decision-making, community college, hobbies

© 2024 under the terms of the J ATE Open Access Publishing Agreement

Introduction

Amateur computer hobbyists helped spark the technological revolution that moved the computer away from the institution and into the home [1]. Since then, Information Technology (IT) has exploded in popularity and variety for professionals and hobbyists alike. Today, IT hobbies can take the form of video gaming, PC building, programming, server managing, and even hacking. While there is work on the connection between IT hobbies and careers, much of it centers on undergraduates at four-year schools, gender disparities, and current IT professionals who have already entered the field. There seems to be a lack of understanding of how IT hobbies influence decision-making about education and careers, particularly for community college students.

Theoretical Framework

Social cognitive career theory (SCCT), happenstance learning theory, and career construction theory, serve to undergird this paper’s discussion of the role of early interest and IT hobbies on student decision making. In happenstance learning theory, hobbies are a venue or learning event through which individuals can develop their vocational identity [2]. SCCT, meanwhile, posits that individuals develop a greater sense of self-efficacy within certain activities, which helps to form their vocational interests [3]. This meshes well with career construction theory, which presents hobbies as a testing ground or rehearsal



space for finding out if an individual might have an aptitude for the career areas in which they are interested [4]. This theory asserts that children develop an understanding of themselves, their skills, and the foundations of their vocational self-concepts through engagement in hobbies and other activities. Career construction theory also emphasizes the importance of parents in developing a career identity because parents often serve as vocational role models for their children. These theories resonate in the literature about IT students and professionals.

IT Student Decision-Making

Some studies suggest that an early interest in computers and technology may lead students to pursue IT programs and careers. Studies have shown that early computer interest guides undergraduate students toward an IT major [5,6]. This connection expands beyond schooling, with IT professionals in one study pointing to factors like early exposure to IT and the development of IT interests or computing hobbies as contributors to their decision to pursue an IT career [7]. Research also indicates that students with a personal interest in IT/computing often had an epiphanic moment – what our team calls a “hobby-to-career reckoning” - when they realized that their strong interest could be a career [8].

The connection between student decision-making and hobbies may be field-dependent, with the best-established connections being found in STEM fields. To illustrate, studies have identified field-related hobbies as influential to student decision-making in agriculture, horticulture, and engineering, as well as to career decision-making for engineering professors [9–12]. Jones, et. al. (2019) found salient connections between STEM hobbies and STEM careers. They found that, compared to non-STEM career hobbyists, the STEM-career hobbyists were more interested in STEM courses in school and more likely to identify their hobbies as an influence on their choice to pursue a career in STEM [13].

Some scholarship on IT undergraduates indicates that there is a link between field-related hobbies and pursuit of a STEM educational program or career, though this may be complicated by personal characteristics like family background and type of hobby. One study found that, in a group of undergraduate Computer Science students, long-time computer-related hobbies were the second most popular reason they chose to enter a computer science program, following the most popular reason, strong employment prospects [6]. Some scholars have called into question the influence of video gaming on interest in Computer Science [14]. Still, others have established support for the link between video gaming and choosing a STEM major [15,16]. The nature of this link may be dependent on parental involvement and the type of gaming platforms available in the home [16]. It may also depend on the nature of the hobby; for example, those involved in video game modification have been found to use their hobby as career inspiration and even use their projects as part of their portfolio when applying for jobs [17]. Similarly, researchers have found that self-taught programming hobbyists have more positive attitudes toward IT, lower chances of dropping out, and higher grades than their peers who had only programmed in school or had no prior programming experience [18]. Additionally, in a study of engineering students, researchers found that students with hobbies like programming, video game development, and robotics had higher self-efficacy scores than their peers that did not participate in these hobbies [19].

Personal background, particularly a student’s identity and family, play a role in developing interest and hobbies in IT and, later, pursuing a career in the field. Racial and socioeconomic gaps in childhood computer access in the home [16,17] may prevent individuals from developing an interest in the IT field. The digital divide – race and class based differences in access to computers, technology usage patterns, and computer literacy - tends to be most potent for African American and Latina women, and those living in high-poverty areas, where low-SES students may have fewer chances to develop IT skills and lower levels of IT self-efficacy than their peers [20–30]. Parental influence is particularly salient in discussions of decision-making, IT, and class. Low-SES parents may be less comfortable with computers and more



restrictive with their children's use of technology [31,32]. Parental IT influence, like providing access to computers or exposure to computing activities, has been identified as important to decision-making about IT education and careers, particularly for women [30–33]. More generally, parents with STEM careers and field-specific cultural capital may be connected to a student's choice to pursue and succeed in a STEM major and career [18,33,34].

There are many influences in individuals' respective backgrounds that may lead to the development of an IT interest or an IT-related hobby, and there are many indicators that these factors may facilitate student success in the field. However, scholarship on the connection between hobbies and IT education and student decision-making is somewhat limited, particularly for those enrolled in community colleges. This paper seeks to add to the growing body of literature highlighting the role of early established interest and IT-related hobbies in IT education and employment outcomes by focusing on findings from a study of Ivy Tech Community College IT students. This paper focuses on one of the most compelling aspects of a larger study with a broader scope: the prevalence of early IT interest and the influence of IT hobbyists on decision-making within the samples. The research team found that individuals with an early-established interest in IT who pursue extracurricular IT-related hobbies in adolescence and adulthood ("IT hobbyists") may be particularly strong candidates for completing community college IT programs and pursuing jobs in the field. This study indicates that they may have a better chance for a positive IT outcome than their non-hobbyist peers, such as completing an IT degree or certificate program, pursuing higher education in IT, or landing an IT career. These IT hobbyists in the sample often had a moment of epiphany where they realized that their hobby could be a viable career, a moment our team calls "hobby-to-career reckoning." This article explores these findings in further detail and is organized around the following two research questions:

1. How does early interest in IT and IT-related hobbies impact student decision-making about IT educational programs and careers?
2. Do IT hobbyists and those with an early interest in computing engage with IT educational programs and careers differently than their peers without an early interest in IT-related hobbies

Methods

This paper was developed as part of an extensive, multi-year research partnership between Ivy Tech Community College and Rutgers Education and Employment Research Center (EERC), centered on student decision-making in Ivy Tech Community College's School of IT, funded by a grant from the National Science Foundation Advanced Technological Education (NSF-ATE) program. This paper is closely related to findings from a forthcoming longitudinal study, one of the significant products of this research partnership [35]. This study includes various samples of Ivy Tech IT students, but this article focuses on just two groups: the Longitudinal and Completer samples. Selection criteria for inclusion in the longitudinal sample included students who 1) could participate in a student survey conducted by the research team, 2) volunteered to participate in the longitudinal study, and 3) completed at least two of the three rounds of interviews. Participants received a \$25 Amazon gift card for each 45-60-minute interview they completed with the research team. Completer students were identified by Ivy Tech staff, recruited via email, and offered a \$25 Amazon gift card for their participation.

The participants were interviewed in a semi-structured, semi-phenomenological fashion using a literature-based protocol [36]. In the interviews, participants were asked about their background, educational and career decisions, and factors or experiences that influenced their decision-making process. For more about the interview protocol and longitudinal study methods, see Edwards et al., 2023 [35]. Twenty-six students completed two or more rounds of interviews and were included in the longitudinal study. This paper also draws from another sample, the Completer sample, a group of 17 interviewees who completed an Ivy Tech IT degree or certificate in 2020. The initial round of complete interviews occurred in the summer of 2020, with a limited round of follow-up interviews occurring the next summer. The completer interviews



followed a similar protocol to those used in the longitudinal interviews, with some changes to account for their changed status (i.e., graduates as opposed to current students) and the timing of the interviews.

As part of the more extensive ATE-targeted research study, both sets of interviews were coded in a combined deductive and inductive fashion using NVivo qualitative data analysis software. Some of these codes were relevant to the themes discussed in this piece, such as: “access to IT,” “hobby-to-career reckoning,” and “personal and family resources and opportunities.” These codes were used as a jumping-off point to identify quotes illustrative of larger trends within the datasets, in this case, those quotes regarding early interest and hobby development. We synthesized these results into a working model aiming, seen below in Figure 1, to illustrate how these different factors and experiences interact, based on the participants in this sample, to guide the thinking of readers.

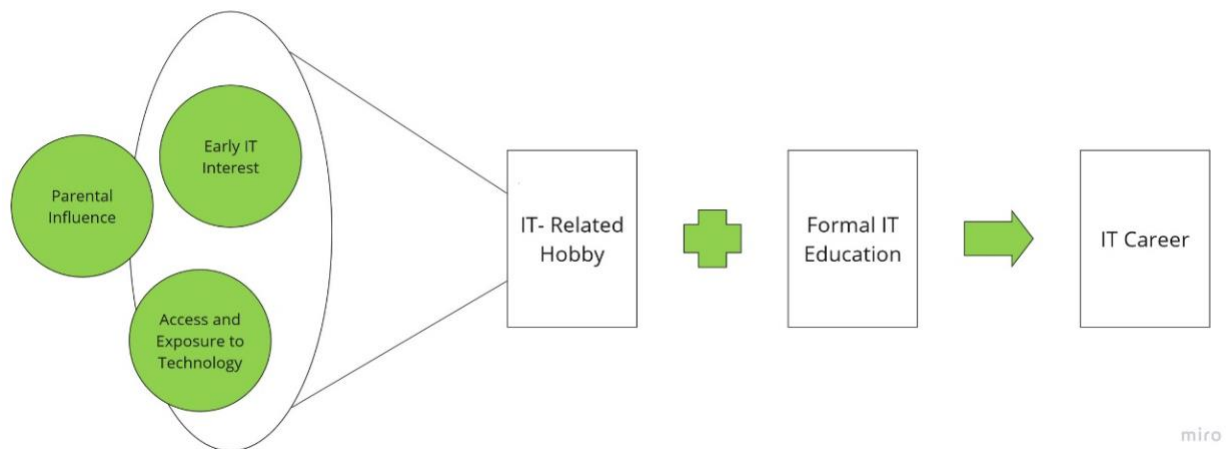


Fig. 1. Working model of an IT hobby-to-career pathway.

Findings

Participants often expressed an early interest in IT and mentioned their IT-related hobbies. The following sub-sections describe how early interest and IT-related hobbies impacted participants’ decision-making about IT education and careers. In the following sub-section, I will discuss the hobby-to-career reckoning experienced by many participants. Finally, I will explain how these characteristics – early interest, IT-related hobbies, and hobby-to-career reckonings - interacted with participants’ education and career outcomes, particularly their ability to continue their formal involvement in IT.

Early Interest in Information Technology

In one or more interviews, students who mentioned a fascination with or interest in technology, computers, and computing that formed before they reached adulthood were considered early interest students by our team. The longitudinal sample comprised 26 participants, 21 of whom showed an early interest in IT. Early interest was similarly strong but slightly less prominent in the Completer sample; 13 of the 17 participants had an early IT interest. These early interest participants often commented, “I’ve always been interested in computing,” or “I’d always wanted to go into tech all my life.” Though many participants said that they have “always” been interested in technology and computers, many also could point to a specific moment that their interest was sparked. This moment usually occurs at a very young age and almost always happens before they graduate high school. This interest-sparking moment was typically precipitated by access to computers or video game consoles, which was particularly notable when such technology was less common.



The interest-sparking moment was often connected to the influence of an adult, usually a parent, who had an IT-related interest, hobby, or job. One participant exemplified this trend, sharing: “One of my earliest memories was sitting on my father’s lap playing an Alf game.” Another participant described how his mother sparked his interest in IT: “My mother previously worked a lot with computers for her job. She is a nurse and had to do a lot of input, and she had one. She played a lot of video games, and so I did too; she played World of Warcraft, and so I did too.” Though many participants had adults in their lives who sparked their interest via video games, other participants were exposed to computing via educational activities or their parents’ workplace. Participants mentioned academic exposure to computing in their education or via observing their parent’s education. For instance, one participant said, “When I was in junior high, my dad also studied to fix computers. I helped him study for that as well...Ever since, I have always been drawn to people who work with computers and pick their brain about it.” Another participant was influenced both by his educational activities as well as his father’s hobbies, stating that:

“My parents did a lot of those games that are learning-oriented. That’s how I started using computers in the very beginning. But, from that I just started messing with the computers, learning to fix them. My dad knows how to fix computers a little bit. I learned some of that from him, some developing skills, and soon I was fixing his computers.”

Many participants were passed the baton by their parents and encouraged to move forward with their IT interests. Sometimes, parents even helped cultivate the IT skills of participants; one participant said, “My dad knows how to fix computers a little bit. I learned some of that from him, some developing skills and soon I was fixing his computers Any time my computer goes down I fix it myself.” On the other hand, some participants mentioned how their parents’ lack of access to technology impacted their interest in development. One participant said that,

“My family was slow on computers, so I had dialup until 2006 or something, but I would always...just open up the computer and see what was in it...just trying to figure out what each thing did, and my parents couldn’t help me because they weren’t very computer oriented.”

These key interest-sparking experiences, whether facilitated by parents or independently initiated, helped participants develop their interest in IT at a very young age, which often followed them throughout life. There seemed to be a connection between early IT interest and having an IT-related hobby later. Of the 21 longitudinal participants who did express an early interest in IT, the majority (16 out of 21) were considered IT hobbyists by our research team.

IT Hobbyists

IT Hobbyists were participants who mentioned actively participating in at least one IT-related hobby at the time of one or more of their interviews. Most participants in the longitudinal and completer samples were IT Hobbyists: 16 out of 26 and 10 out of 17, respectively. We were able to collect more specific information about the hobbies of our longitudinal sample. The IT-related hobbies held by our participants fit into 7 main categories: video gaming, independent study of IT, PC/console building, coding/programming, video game modification/server management, and other IT-related hobby. Half of the 16 IT hobbyists in the longitudinal sample participated in more than one of these hobby categories. Video gaming was by far the most popular hobby category, followed by video game modification/server management and independent study of IT. The two IT hobby types with the most significant overlap were video gaming and video game modification/server management, with 5 participants participating in both hobby types. For more details on the exact counts of hobby participation, see Figure 2 below.



Video gaming was often a type of hobby that was adopted at a very young age and was frequently facilitated by a participant’s parents. Video games mentioned by participants included Neopets, Minecraft, World of Warcraft, and Webkinz. They also mentioned consoles such as Super Nintendos, Ataris, Play Stations, Game Cubes, and the Sega Genesis. However, many participants also participated in video games played on a desktop or laptop computer. This hobby was often very social – it allowed participants to deepen existing bonds with family and friends and create new ones virtually. For example, one participant said

“[I] especially like the multiplayer [video] games because it was an outlet for me to communicate with other people. And sadly, I’ve been generally shunned by other people in my peer groups, so it’s...a good outlet for me.”

Video gaming often sparked a lifelong love of computers and technology that participants would later take advantage of when they realized that their hobby could potentially lead to a career pathway.

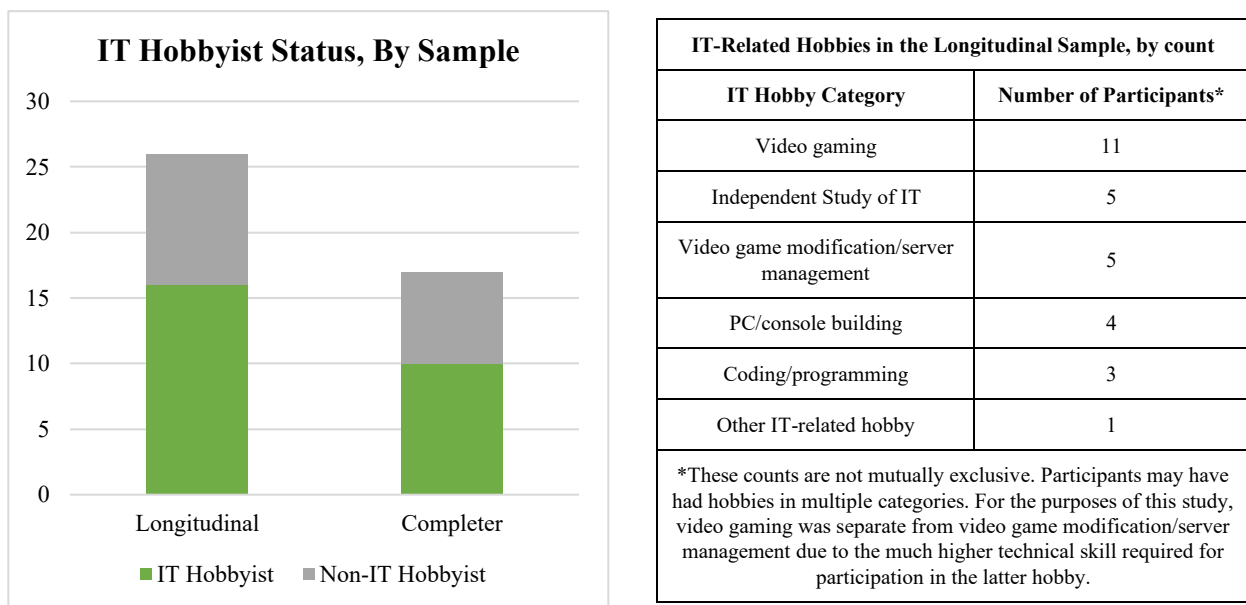


Fig. 2. IT Hobbyist status, by sample, and IT-Related Hobbies in the Longitudinal Sample, by count.

Hobby-to-Career Reckoning

One of the most prominent themes among the hobbyists in this sample was the notion of the “hobby-to-career reckoning” – the epiphanic moment where a participant realized that their long-time IT-related hobby could be a viable career path. Many participants expressed that, though they had been involved in an IT hobby for a long time, they didn’t realize the pragmatic implications of their hobby. Many participants downplayed their hobby, making statements like, “For me I think it was always a hobby and I didn’t necessarily consider it as a career until later,” or “Even though I am currently administrating a gaming community and their servers, it’s really just a hobby. It’s not something I can put on a resume,” or “I took apart computers on my own. It was basically just a hobby.” Even when participants were engaging in complex and skilled activities for their hobby, such as administrating video game servers or deconstructing hardware, they initially saw these activities as “just” a hobby. Later on, they realized that



this hobby could be helpful for their career and could guide their choice to enroll in an IT program, their choice of major, and even their choice of job.

One participant summed up the hobby-to-career reckoning well, describing his decision to transfer from a Business program to an IT program at Ivy Tech:

“I feel like when I started getting into coding, I was coding mods for video games. And it was just a hobby. And I realized I have a lot of fun doing this...And I made the switch because I realized that I felt like everyone was pushing me to business. But what I really enjoyed was learning programming.”

Another participant described when he realized that his hobby of coding flash games could be a marketable skill: “I guess I never realized that the same skill set I used to make my goofy games was the same skillset that they like teach in school and market to employers.” Some participants expressed worries that mentioning their video game-related hobbies might be unattractive to potential employers and that there was something of a negative connotation to their hobby. For example, one participant said

“And even though I am currently administrating a gaming community and their servers, it’s just a hobby. It’s not something I can put on a resume. At least now I have a start. I have the first certification. And when I get my degree, I can finally go back and apply for some other options besides Geek Squad.”

He later added, “I think it’s just the word gaming community. That’s kind of a negative,” alluding to the negative stereotypes that sometimes surround video gamers. More common, though, was participants simply did not connect their hobby to a career, not that their hobby necessarily had negative implications.

What sparked the hobby-to-career reckoning moment varied among the participants. Sometimes, it came from self-reflection and other times from discussions with others or institutional experiences. For example, one participant said,

“I guess once I decided it was time to go after school and once I got my foot in the door with programming classes to see how similar what they were teaching in class was to my hobbies... that could be the moment I guess.”

One participant described a long-time interest in IT and a hobby of independent coding and learning about IT but had initially been dissuaded from entering the field by his family who “didn’t get it.” Being a low-income, first-generation student, his family may have been hesitant to embrace a technology career initially, which aligns with the literature on the participant [31]. His hobby-to-career reckoning was sparked during a business course that he was taking at Ivy Tech, which led him to enroll in and complete an associate degree in software development. Institutional or individual influences may spark the hobby-to-career reckoning, though participants were not always able to identify these influences specifically. The hobby-to-career reckoning moment is important to student decision-making about what program or job to pursue. It may influence their ability to complete an educational program and, later, get hired.

The Impact of Hobbies and Interests on Student Outcomes

In both samples, particularly the longitudinal sample, there was an interesting interplay between the characteristics of early IT interest, having an IT hobby, and the student’s tendency to stay in or complete an IT educational program or enter the field of IT professionally. We noticed that having an IT-related hobby may be connected to having an early interest in IT. Of the five longitudinal participants who did



not express an early interest in IT, none were considered IT hobbyists by our team, and, perhaps even more notably, none of them were still formally involved in IT at the time of their final interview. In the completer sample, 10 of the 13 participants who were still formally involved in IT at the time of their interviews had either an early IT interest, an IT related hobby, or, most commonly, both. Interestingly, 3 of the completers still formally involved in IT had reported neither an early interest nor an IT-related hobby. This difference between samples may be caused by the fact that the completers had earned an IT certificate or degree and, thus, were more likely to secure a job in IT than the longitudinal participants, who may or may not have finished their program at the time of the interviews. In both samples, having an early interest in IT and having an IT-related hobby seemed connected to a participant's choice to stay formally involved in IT. All of the longitudinal participants who remained formally involved in IT had an early interest in IT and had an IT-related hobby. In fact, most of the participants who remained formally involved in IT had both characteristics; only three had an early interest in IT but no IT-related hobby. This may indicate that having an early interest in IT can lead to having an IT-related hobby later and that both characteristics may facilitate persistence in IT education and careers.

Participants with IT-related hobbies had practical skills that helped them to get ahead in the classroom and in the workforce. For example, one participant described how his game design hobby helped him in these environments: "When I started taking classes after the job, initially I was surprised. I kind of already knew, not everything, but most of what we were covering in class." Another participant said his coding bootcamp program filled in some of the gaps in his knowledge, but "it helps that I've been a hobbyist programmer all my life." As a software engineer at J.P. Morgan, he was one of the strongest success stories in the Longitudinal sample, achieving his goal of an IT job at a large, stable institution. He shared how his hobbyist background was an asset, particularly when finishing projects up quickly to meet tight deadlines because "That's kind of where I shine, because the sort of sloppy hobbyist coder in me has been doing that all my life." His early interest in IT and his long-time hobby helped him secure the type of role he wanted and excel in that role. Individuals with an early interest in IT may have the passion to push them through more difficult moments in their educational/career pathway because they have "always loved technology." Participants who were still formally involved in IT educationally, professionally, or some combination of the two at the time of their final interview with the team often had an IT hobby or had an early-established interest in the field. These traits may provide participants with skills and passion that drive them to complete academic and certificate programs and to successfully pursue careers in the field.

Table 1. Longitudinal and Completer samples, IT continuation status, by early interest and IT hobbyist classification.

Formally Involved in IT?	Longitudinal Sample			Completer Sample		
	Yes	No	Total	Yes	No	Total
Early Interest / IT Hobbyist	10	6	16	6	3	9
Early Interest / Non-IT Hobbyist	3	2	5	3	1	4
No Early Interest /IT Hobbyist	0	0	0	1	0	1
No Early Interest / Non-IT Hobbyist	0	5	5	3	0	3
Total	13	13	26	13	4	17



Discussion

Our findings about parental influence on IT interest incubation are consistent with literature emphasizing the importance of parental support and influence on interest in IT education and careers [32–34,37,38]. Our study, though, deepens the emphasis on the role of parents in fostering interest in IT as a hobby, as well as the role of video games in the relationship. Among the participants in this study, early interest in IT seemed connected to having an IT-related hobby later, and both traits indicated that a participant may be more persistent in the field of IT, educationally and professionally. These results are consistent with an earlier study of Australian IT professionals, which found that IT professionals may tend to have their interest in IT sparked at an early age, an interest characterized as “hobby-like,” and maintain an intrinsic motivation to pursue IT later on [7]. Some researchers have also highlighted the moment of discovery in the IT-student pathway, which we noticed strongly in the sample and dubbed the “hobby-to-career” reckoning [8]. One study found that, among a sample of video game players, online gaming preferences and behavior vary depending on gender and job category, and that different types of games may foster the development of different soft skills, that, in turn may influence career choice [5]. This study also found gender and career choice differences when considering the importance of IT-related hobbies. However, our sample included various categories of IT-related hobbies, not just online gaming.

Limitations

This study provides some interesting insights into the way that IT students at community colleges make decisions about their education and career, with the caveat that our sample was limited in size and not fully representative. Since participants no longer associated with Ivy Tech may be less likely to complete the later interviews, there may have been a larger number of non-IT continuers than this sample was able to capture. Another group that may not have been well-captured in this sample is women. Our team may not have been able to comprehensively analyze the decision-making process of women in IT, due to the small number of female participants. Also, important to consider is the lack of racial/ethnic diversity within the sample, which is reflective of population trends at Ivy Tech, Indiana in general, and within the field of IT, but means that our exploration of the decision-making process among non-white IT students is limited. This study, however, can serve to guide further research on the role of early IT-interest and IT-related hobbies in the decision-making process for aspiring IT students and professionals.

Conclusion

This work provides the foreground for future research on the influence of early IT interest and IT hobby-having on the decision-making of IT students and IT professionals. It prompts further questions such as: Does having an IT-related hobby lead to persistence and success in the field of IT educationally and professionally? Would the promotion of IT-related hobbies among historically underrepresented groups lead to a more diverse pool of IT students and professionals? Are some IT-related hobbies more useful educationally and professionally than others? How strong is this connection between hobbies, early interest, and career? What is the role of parents and relatives in fostering these interests? Future research should work toward developing methodologies that include, perhaps, linking workforce data to get a better handle on student outcomes, as opposed to relying on student self-reporting. Another major avenue for future research is recruiting a more racial and ethnically diverse population, given the lack in this sample. Similarly, recruiting women and gender nonconforming participants would expand understanding of how community college students in these groups make decisions about IT education and careers. Literature in this subject area tends to revolve around STEM major choice without an IT focus, groups underrepresented in the IT field (women, African Americans, Latinos) and undergraduates at four-year schools, without much space dedicated to community college students specifically.

This study, however, adds to the body of work that explores student voice, and particularly the community college student voice, in discussions about who chooses an IT educational program or career and why they make such a choice. In this sample, one of the most notable trends was that parents often



facilitated participants' early interest in IT by sharing their own interests and hobbies. We also noticed a potential connection between having an IT-related hobby and having childhood interest in IT among the participants. IT hobby-having was somewhat correlated with gender in our sample; IT-related hobbies were more common among male participants than female ones. We also found that frequently, individuals with IT hobbies may have a moment where they realize that their informal experience might be valuable in the workplace, which we call the hobby-to-career reckoning. In this sample, having an early interest in IT and having an IT-related hobby seemed like potential indicators that an individual would persist in the field by completing their IT educational program and even entering a related career. Parents and practitioners alike may wish to keep these findings in mind, by encouraging and fostering IT-related hobbies and interests, and by helping individuals see that skills gained through their hobbies could be useful in community college courses, and even in the workforce.

Acknowledgements This work was supported by the National Science Foundation (NSF) under award #1801043, Pathways into Careers in Information Technology: Community College Student Decision-Making about Academic Programs and Jobs.

Disclosures The authors declare no conflicts of interest.

References

1. J. Abbate, "Getting small: a short history of the personal computer," *Proc. IEEE* 87, 1695–1698 (1999).
2. J. D. Krumboltz, "The Happenstance Learning Theory," *J. Career Assess.* 17, 135–154 (2009).
3. R. W. Lent, S. D. Brown, and G. Hackett, "Social Cognitive Career Theory," in *Career Choice and Development*, 4th ed. (Jossey-Bass, 2002).
4. M. Savikas, "Career construction: A developmental theory of vocational behavior," in *Career Choice and Development*, D. Brown and Associates, eds. (Jossey-Bass, 2002).
5. A.-S. Wallinheimo, A. Hosein, D. Barrie, A. Chernyavskiy, I. Agafonova, and P. Williams, "How Online Gaming Could Enhance Your Career Prospects," *Simul. Gaming* 54, 28–44 (2023).
6. M. Papastergiou, "Are Computer Science and Information Technology still masculine fields? High school students' perceptions and career choices," *Comput. Educ.* 51, 594–608 (2008).
7. L. E. C. Potter, L. A. von Hellens, and S. H. Nielsen, "Childhood interest in IT and the choice of IT as a career: the experiences of a group of IT professionals," in *Proceedings of the Special Interest Group on Management Information System's 47th Annual Conference on Computer Personnel Research*, SIGMIS CPR '09 (Association for Computing Machinery, 2009), pp. 33–40.
8. M. Hewner and M. Guzdial, "Attitudes about Computing in Postsecondary Graduates," in *Proceedings of the Fourth International Workshop on Computing Education Research*, ICER '08 (Association for Computing Machinery, 2008), pp. 71–78.
9. C. M. Jagacinski, W. K. Lebold, K. W. Linden, and K. D. Shell, "Factors Influencing the Choice of an Engineering Career," *IEEE Trans. Educ.* 28, 36–42 (1985).
10. J. Rayfield, T. P. Murphrey, C. Skaggs, and J. Shafer, "Factors that Influence Student Decisions to Enroll in a College of Agriculture and Life Sciences," *NACTA J.* 57, 88–93 (2013).
11. G. Naizer, "Science and engineering professors: Why did they choose sci," *Sch. Sci. Math.* 93, 321 (1993).
12. J. C. Bradley, T. Kohlleppe, T. M. Waliczek, and J. M. Zajicek, "Factors Affecting Recruitment of Horticulture Students at Major Universities," *HortTechnology*, 10, 631–636 (2000).
13. M. G. Jones, G. Childers, E. Corin, K. Chesnutt, and T. Andre, "Free choice science learning and STEM career choice," *Int. J. Sci. Educ.* 9, 29–39 (2019).



14. B. J. DiSalvo and A. Bruckman, "Questioning Video Games' Influence on CS Interest," in *Proc. 4th Int. Conf. Foundations of Digital Games*, FDG '09 (Association for Computing Machinery, 2009), pp. 272–278.
15. S. V. Turner, P. W. Bernt, and N. Pecora, "Why Women Choose Information Technology Careers: Educational, Social, and Familial Influences," in *Ann. Meeting American Educational Research Association* (2002).
16. J. Baxter-Webb, "The role of gaming platforms in young males' trajectories of technical expertise," *Trans. Digit. Games Res. Assoc.* 2, (2016).
17. O. Sotamaa, "When the Game Is Not Enough: Motivations and Practices Among Computer Game Modding Culture," *Games Cult.* 5, 239–255 (2010).
18. C. Chen, S. Jeckel, G. Sonnert, and P. M. Sadler, ""Cowboy" and "Cowgirl" Programming and Success in College Computer Science.," *Int. J. Comput. Sci. Educ. Sch.* 2, n4 (2019).
19. T. D. Fantz, T. J. Siller, and M. A. Demiranda, "Pre-Collegiate Factors Influencing the Self-Efficacy of Engineering Students," *J. Eng. Educ.* 100, 604–623 (2011).
20. H. Ono and H.-J. Tsai, "Race, Parental Socioeconomic Status, and Computer Use Time Outside of School Among Young American Children, 1997 to 2003," *J. Fam. Issues* 29, 1650–1672 (2008).
21. S. M. González-Betancor, A. J. López-Puig, and M. E. Cardenal, "Digital inequality at home. The school as compensatory agent," *Comput. Educ.* 168, 104195 (2021).
22. R. Hawkins and A. E. Paris, "Computer Literacy and Computer Use Among College Students: Differences in Black and White," *J. Negro Educ.* 66, 147–158 (1997).
23. H. Jackson, L. Hansen, L.-S. Tang, J. Willemain, and H. J. C. Ellis, "Changes to an IT program in response to the IT 2008 curriculum guidelines," in *Proc. 10th ACM Conference on SIG-Information Technology Education*, SIGITE '09 (Association for Computing Machinery, 2009), pp. 192–198.
24. K. Mossberger, C. J. Tolbert, and M. Gilbert, "Race, Place, and Information Technology," *Urban Aff. Rev.* 41, 583–620 (2006).
25. A. D. Ritzhaupt, L. Cheng, W. Luo, and T. N. Hohlfeld, "The Digital Divide in Formal Educational Settings: The Past, Present, and Future Relevance," in *Handbook of Research in Educational Communications and Technology: Learning Design* (Springer International Publishing, 2020), pp. 483–504.
26. S. M. Smith, "The Digital Divide: Gender and Racial Differences in Information Technology Education," *Inf. Technol. Learn. Perform. J.* 23, 13–23 (2005).
27. M. K. Eamon, "Digital Divide in Computer Access and Use Between Poor and Non-Poor Youth," *J. Sociol. Soc. Welf.* 31, (2004).
28. I. Vekiri, "Socioeconomic differences in elementary students' ICT beliefs and out-of-school experiences," *Comput. Educ.* 54, 941–950 (2010).
29. A. Jepson and T. Perl, "Priming the Pipeline," *SIGCSE Bull* 34, 36–39 (2002).
30. Jane Margolis, *Stuck in the Shallow End: Education, Race, and Computing* (The MIT Press, 2008).
31. D. L. Linebarger and A. R. Chernin, "Young children, parents, computers," *IT & Society* 1, 87–106 (2003).
32. S. Livingstone, G. Mascheroni, M. Dreier, S. Chaudron, and K. Lagae, "How parents of young children manage digital devices at home: The role of income, education and parental style," *EU Kids Online LSE* (2015).
33. N. Tilbrook and D. Shifrer, "Field-specific cultural capital and persistence in college majors," *Soc. Sci. Res.* 103, 102654 (2022).
34. A. Cheng, K. Kopotic, and G. Zamarro, "Parental Occupational Choice and Children's Entry into a Stem Field," *EDRE Work. Paper No.* 2019-16, (2019).
35. R. Edwards, E. K. Peterson, M. Van Noy, S. Scovill, and M. L. Espino, *Exploring Student Decision Making: A Longitudinal Study of Community College Information Technology Students* (Rutgers University, School of Management and Labor Relations, Education and Employment Research Center, 2023).



36. E. Farrell, "Researching Lived Experience in Education: Misunderstood or Missed Opportunity?," *Int. J. Qual. Methods* 19, 1609406920942066 (2020).
37. S. M. Coyne, L. M. Padilla-Walker, L. Stockdale, and R. D. Day, "Game On... Girls: Associations Between Co-playing Video Games and Adolescent Behavioral and Family Outcomes," *J. Adolesc. Health* 49, 160–165 (2011).
38. G. Sonnert, "Parents who influence their children to become scientists: Effects of gender and parental education," *Soc. Stud. Sci.* 39, 927–941 (2009).