



Figure 1: "Study Girl," the animated student from the most popular lofi hip hop channel, ChilledCow. (<https://www.youtube.com/watch?v=hHW1oY26kxQ>).

A Livestream Companion

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ABSTRACT

YouTube Lofi HipHop study playlists have become an increasingly popular sub-genre of livestreams. They normally feature short animated loops of characters studying in a relaxed environment. Although there is no human agent involved, we are interested in whether some viewers develop parasocial relationships with these characters, and treat them similarly to "In Real Life" genre streamers. We performed a preliminary analysis of ChilledCow's "lofi hip hop radio - beats to relax/study to" chats for 15 minutes every hour for a week in January 2019, followed by user interviews. From the pilot interview, it appears that these characters may help productivity by acting as a "study buddy", creating a calm environment where a viewer can focus on studying or work. Our preliminary work also shows that some viewers project autonomy onto the characters - as if the characters themselves ran the stream as in an IRL stream.

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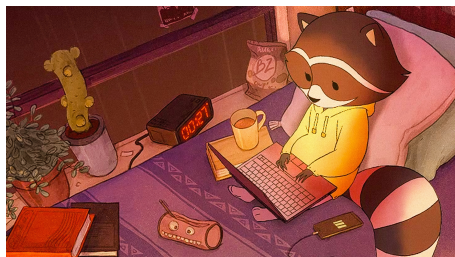


Figure 2: A studying character from another popular channel, Chillhop Music. (<https://www.youtube.com/watch?v=bebuiaSKtU4>).

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INTRODUCTION

Livestreaming has become a popular mode of entertainment for a wide range of interests. Fans of games and esports can tune in to watch and comment as competitions and events unfold in real time. Recently, in real life (IRL) streaming has become quite popular. Herein individuals record a live feed of themselves, allowing viewers a window into their lives for extended periods of time. IRL content falls into many subgenres: traveling, cooking, working out and more. In most streams, viewers can actively participate in the streamer's activities by following along in the chat, often giving them suggestions about what to do. In this way viewers are able to spend quality time with a streamer within the confines of the viewer's own home.

This desire of users to "spend time" with an online companion is particularly interesting with regard to the emergence of Lofi HipHop study stations (the focus of this paper). Recently a new genre of streaming channel has emerged, featuring animated characters studying accompanied by eponymous "chill" music. These stations have grown in popularity and have become something of a pop-culture phenomena. The most popular streams to over ten-thousand people at any given time and has over two million subscribers. The animated characters are depicted reading and writing at a slow steady pace, occasionally stopping to stretch or look out the window of their room on a short repeating loop. Because the animation is a loop, viewers are not able to interact in the same way as with IRL streams, but the animation does still offer some of the same comforts of having another person there. Similar to an IRL stream, viewers are given a small window into the animation's routine. In addition to the animated character, all of these stations feature a shifting playlist of downtempo music. The channel names are focused on the music, so one would expect that the millions of subscribers are only there for the music. While music is a huge draw, it seems that viewers are also deriving productivity from and combating loneliness with the companionship of these animated characters quietly focused on tasks, as well as connecting with others in the chat stream. Music, animation, and chat stream make up an environment. In this environment users are comforted by the sound, have an animated buddy present, and can use chat to make connections with others around the world. Of particular interest to our study is how people who view the channel build a connection with an animated character.

Building a relationship with a media character was first described by [5], where they coined the term "parasocial" relationship. This describes establishing a connection between a media consumer and a media character, whether a real life celebrity or an animated character. The relationship is inherently one sided yet increased exposure to a media character has been found to elevate attraction

Table 1: Example Autonomy Comments

the timer means its time for study girl to turn her book in lmao.
Loving you study girl! Go pass those exams!
its time for the study girl to finally get some rest
study girl's finals must be over soon!
What's supposed to happen to study girl?
When does the study girl leave?
whats this about study girl leaving?!
Study girl back from break?

Table 2: Example Projection Comments

just realized the girl in the animation is left handed, like me
the girl is writing in left hand, she must be smart
the girl looks like she's working on english homework and it makes me jealous
study girl looks so peaceful in the other stream im so happy for her
HAS ANYONE NOTICED THAT THE GIRL IS LEFT HANDED WTF!!!! i CANT EVEN BREATHE DOING ANYTHING LEFT HANDED.

to the character (either physical, social, and/or task based), and increase the parasocial interaction towards that character [11]. Parasocial interaction was measured by agreement with items such as "I feel sorry for my favorite television performer when he or she makes a mistake". Indeed, higher scores on parasocial interaction correlated with the relationship's importance for the media consumer.

Ruben and McHugh originally tested their model on television watchers, but this study was also recently updated to YouTube video watchers. A similar path model was developed by Kurtin, whereby YouTube exposure was correlated with social attraction and physical attraction[7]. Higher social and physical attraction deepened the parasocial relationship, leading to a greater relationship importance. Based on the discussed results, it is perhaps not surprising that people grow to have companionable relationships with the characters in the animations. Greater exposure to the channel likely leads to increased feelings of attraction, greater parasocial interaction, and finally a greater importance on the relationship. It is vital to understand how people form a relationship with media characters and non-human agents as we begin to use them for a variety of different tasks.

Some potential purposes for media characters and non-human agents include children educational aids, companions for older adults, and corporate brand based entities to sway consumer behavior [3], [2], [12]. For instance, non-human agents and media characters interacting with children have been effective for encouraging STEM interest and learning as well as teaching interpersonal abilities by modeling and/or reinforcing desirable behaviors and skills [3], [6], [1]. Similarly, the highly publicized therapeutic robot seal Paro has been widely studied with elderly populations to help address issues of depression and loneliness through companionship [2]. In fact this has led to a recent interest in using the same platform to push information and reminders about health and wellness [8]. To investigate how people feel about this particular non-human agent, we performed a systematic analysis of the comments accompanying the stream that people are watching.

CHAT COLLECTION AND ANALYSIS

As a preliminary study of this space, we looked to the livestream chat. Over the course of one week we collected chat data for the first 15 minutes of every hour from ChilledCow's "lofi hip hop radio - beats to relax/study to" using Google Cloud's YouTube Livestream API. This is a large amount of data (65535 comments collected in total). Because of the nature of a live chat with thousands of users present, the data collected is chaotic. [9] There already exists methodologies for qualitative analysis of YouTube comments and online chat forums [4], however the authors have not been able to find established methodologies for the qualitative analysis of "waterfall" chat data in this context. Others have studied livestream chat for esports events [10][9], but this environment is quite different. There are no new events occurring on screen and no streamer to interact with. The chat then, is left to discuss the animations, music, or connect with each other. Users reach out to each other to ask for relationship advice, give homework help, offer words of encouragement or just generally scream into

the darkness. In comparison with twitch streams as a whole, the chatters seem to be more involved with connecting with each other than with discussing the stream. Despite the high-speed pace of some of the more popular channels, users still reach out to one another directly.

Although there is clearly no human agent streamer, the animated girl is still personified and even projected onto. Some users affectionately call her "study girl" and others relate her to themselves as seen in Table 2. This is an example of how viewers may be expressing a parasocial relationship.

The stream was temporarily down for updates during the period that we recorded chat data. A timer was set as visible on screen before the update. This change to the video actually starts up a rush of event-based chatting [9] discussing the timer that is not otherwise present. Users thought that the stream was going to end on the date it was scheduled to update. Instead of talking about why ChilledCow might be taking the video down, viewers come up with what the Study Girl is going to do next, and why she gets to stop studying. These types of comments can be seen in Table 1. When asking about the stream shutdown, one person exclaims: "whats this about study girl leaving?!" - giving her autonomy - as if she is the streamer and has control over the channel.

While the Study Girl does appear to be triggering parasocial relationships, it is possible that she could be made more realistic. Users react well to the character herself, but her actions are very repetitive. Users in the chat comment seem to joke frequently about her repetitive habits. If more actions were to be added (standing up and stretching, drinking water, etc.) it may make her character more believable as a live streamer. We speculate that her focused work may be helping others to stay focused on their work, and in the same vein if she performed other healthy work habits it may encourage viewers to do the same.

Sidebar 1: Interview Quote

"It's just kind of a nice thing to have in your periphery . . . like if you do end up looking over it's never gonna be really jarring it's not gonna pull your focus, but if you do if you are like "I'm just so tired of looking at this spreadsheet" it's kind of just an aesthetically nice thing to stare at for thirty seconds at a time, it just makes you feel good. . . just a little raccoon girl doing what I'm doing right now we are one - me and her right now"

PILOT INTERVIEW

We performed an exploratory interview with an expert user who has been using the streams for over five years. The participant was a 30 year old white male accountant who works both in an office environment and from home. The interviewee stated that the streams were helpful while doing their work, particularly highly repetitive (e.g., building spreadsheets) or highly focused tasks (e.g., writing reports). They preferred to use it when they work from home rather than in their office space. They shared that the stream helped maintain concentration but also provided a space for reprieve when they needed a break. The participant noted that the animated character and environment evoked a sense of calm or peacefulness. This wasn't related simply to the audio environment but to a sense of connection with the animated non-human agents. This is illustrated in Sidebar 1.

Additionally the participant felt it was important to see the animated companion and as such prepared their work environment during their tasks to include a physical space for the "study girl" (e.g., giving the stream one monitor in a two monitor workstation). Conversely, they reported that they wouldn't go to this streaming environment if they were multitasking around many small jobs

Sidebar 2: Interview Quote

"What they generally are is; someone in a setting that's suited for what I typically do while using this music - so these things are generally someone at a desk. . . always alone um and always just kind of not noticeably exerting a lot of energy, not visibly stressed or anything like that which is definitely a nice part of it. . . it's just a really overall mellow setting. It's somewhere I could see myself being comfortable. . . Most people if you were to sit them down and say 'is that chill?' [they would say] Yes. 'Does it make you feel anxious?' No. . . . It feels like it's constructed specifically for those kinds of emotions"

(e.g., responding to emails) or performing physical/technical work (e.g., computer repair). They also reflected on the aspects of the character environments that elicits the feeling described in Sidebar 2.

CONCLUSION

In IRL streams users exhibit parasocial relationships. To discover whether these relationships are present with the animated agents we performed a pilot interview and a livestream chat collection. This preliminary work shows that some viewers exhibit a closeness and familiarity with the characters that may ultimately provide a touchstone for positive parasocial engagement. This raises the question: do you need a human agent to have a successful livestream? Non-human agents may be a useful addition to other types of audio livestreams where there is not much/any video. Part of the appeal of these channels is likely the relationship that people form with the agent in the animation. It is worth noting our study is limited to those users who participate in the chat window. A future study will be necessary to provide a stronger link.

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