





WHAT MAKES A LIVE STREAM COMPANION? ANIMATION, BEATS, AND PARASOCIAL RELATIONSHIPS

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Insights

- People's behavior can be influenced by an animated character in the "lofi hiphop beats" streaming channel.
- Elements of the music and animation seem to help reduce anxiety while studying.
- Parasocial relationships developed with the character also help explain why behaviors can be influenced.

Live streaming 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. In this streaming genre, streamers allow viewers a window into their lives for extended periods of time. IRL content falls into many subgenres, including traveling, cooking, and working out. Viewers can actively participate in the streamer's activities by posting suggestions about what to do in the stream's chat, commenting on their

actions and speaking with other viewers. IRL streams allow viewers to have experiences and spend quality time with the streamer without ever leaving home.

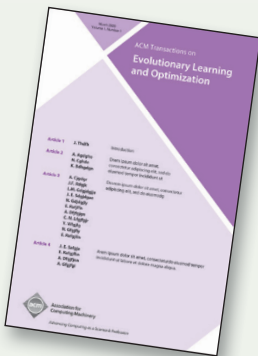
This desire of users to spend time with an online companion is particularly interesting with regard to the emergence of a new genre of streaming channel. "Lofi hip hop study stations" feature animated or live characters studying, accompanied by eponymous "chill" music. Similar to an IRL stream, these streams give viewers a small window into the animation's routine. The characters are depicted reading and writing



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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 unable 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. The music, animation, and chat stream make up an environment. In this environment, users are comforted by sound, have an animated buddy present, and can use chat to make connections with others around the world.

The most popular video of this genre of YouTube-based streaming channels, “lofi hip hop radio - beats to relax/study to,” features a short, animated loop of a girl studying to a rotating playlist of “chill” music (Figure 1). The channel streams to more than 10,000 people at any given time and has more than 3 million subscribers. While working alongside this particular video stream, a member of our research team noticed their mind wandering. Seeing the studious girl in her perpetual loop of getting back to work, they were prompted to follow suit, effectively taking a behavioral cue from her. This piqued our interest, and we decided to look further into this space.

The animated character in this live stream was not able to directly interact with the researcher, but she still affected their behavior. This one-sided interaction is an example of *parasocial interaction*. The term describes the psychology of how people develop and are impacted by connections with media characters and personas, both real and fictional, who cannot return their feelings. *Parasocial interaction* was coined in the 1950s, when American television use first became widespread, and it has experienced a resurgence with the rise of social media. Although the finding is well studied, a good deal of

the work on parasocial interaction has focused on describing and measuring this phenomenon, with less attention aimed at leveraging its potential behavioral outputs. Our current line of research seeks to better understand parasocial relationships in the live streaming of nonhuman agents (e.g., a cartoon character), their ability to influence human behavior in real time, and the important facets of streaming environments that facilitate this.

LIVE CHAT DATA AND ANALYSIS

To gain an initial understanding of how viewers participate in the streaming space, we looked to the chat window, where viewers interact with one another. Since there are no new events occurring onscreen and no human streamer to interact with, the chat is what’s left to discuss the animation and music, or to connect with each other. Although viewers can’t speak directly to the animated streamer, they do often chat about her. Over the course of one week, we collected chat data from “lofi hip hop radio - beats to relax/study to,” looking for clues to how and why people use these streaming channels. In the chat, we saw that the animated girl is personified, with users affectionately calling her Study Girl. Of particular interest was the tendency to draw similarities between themselves and Study Girl when talking about her. This is an example of how viewers may be expressing a parasocial relationship:

Just realized the girl in the animation is left handed, like me.

The girl looks like she’s working on English homework and it makes me jealous.

When the channel was scheduled to go down for updates, some chat users spoke as if she had autonomy and was deciding to leave:

In this environment, users are comforted by sound, have an animated buddy present, and can use chat to make connections with others around the world.

*Study girl's finals must be over soon.
It's time for the study girl to finally get
some rest.*

The chat windows of highly viewed channels are often chaotic. Despite the high-speed pace of some of the more popular channels, users still reach out to one another directly. We found users reaching out to each other to ask for relationship advice, give homework help, offer words of encouragement, and even exchange contact info. In comparison with esports-style streams, the chatter seems to lean more toward connecting with each other than reacting to the stream itself [1]:

@[user name] I like that you listened and consoled [other user]. What a tough time man hope you find eventual happiness in your life with someone who truly cares for you, [other user]

USER INTERVIEWS AND TAXONOMY

To better understand what is so enticing about lofi streaming channels, we conducted a series of exploratory interviews with people who regularly use ChilledCow's station, as it is the prototypical example. We asked people to reflect on what they perceived as important elements (e.g., the music, the animated character) and how they relate to it, and to discuss the feelings or sensations that come up when they use it. As we conducted the interviews, participants and colleagues who were aware of our interest began to point us toward other stations that they related to the original lofi hip hop station. While some of these were clearly similar—even past the point of homage to infringement—we began to see many unique deviations in both the visual and audio design. This led us to begin developing a taxonomy of this digital artifact space alongside our interviews.

We quickly saw that our colloquial terminology, “lofi hip hop stations,” was actually a bit of a misnomer and represented only one segment of the artifacts that interested us. Specifically, in identifying facets of the most popular lofi stations, we began seeking out hypothetical opposite arrangements of the same facets. For instance, the classic lofi channel features a cartoon girl studying indoors while listening to



Figure 1. Study Girl from the ChilledCow's “lofi hip hop radio - beats to relax/study to” YouTube stream. (<https://www.youtube.com/watch?v=hHW1oY26kxQ>)

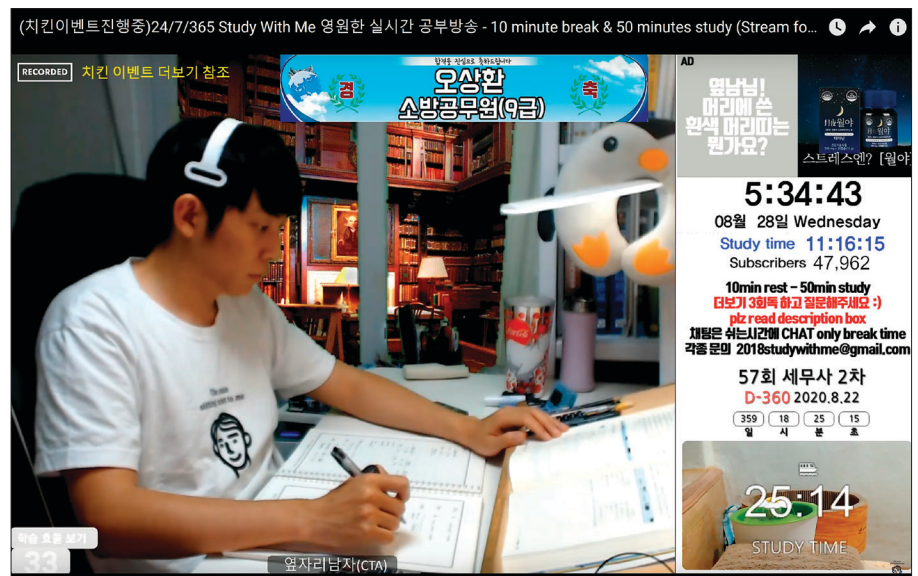


Figure 2. “The man sitting next to me [study with me]” live study stream on YouTube. (https://www.youtube.com/channel/UC5F_d3cnqsl_6syKejWVWxw)

music with a cat. So we sought out examples with actual people, real animals, no music, outdoor settings, and so on. However, what unified these different examples was a sense that the stations were being curated to elicit a calm and/or focused sensation. This sensation was mainly driven by elements of the animation (or video, in the case of people), and elements of the music, which we will discuss next.

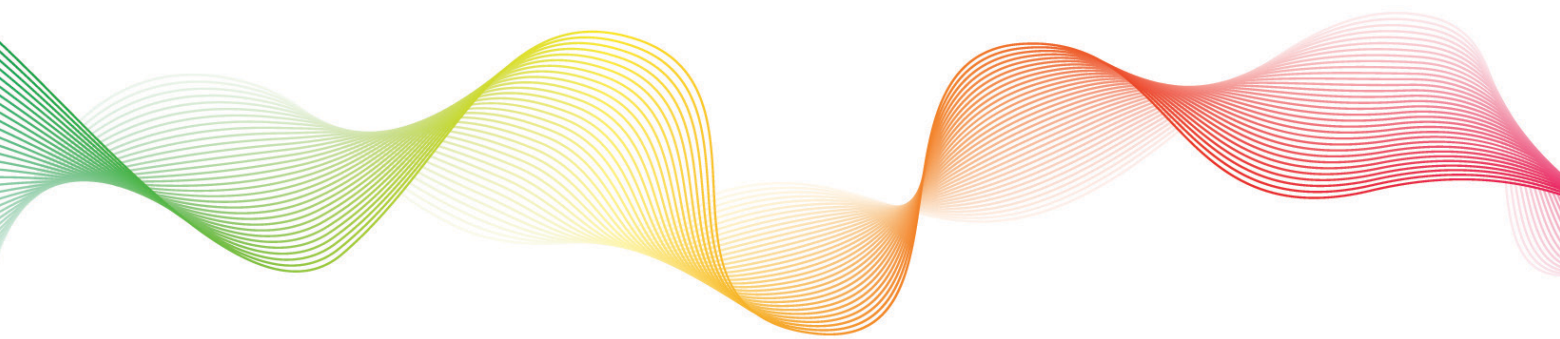
What [lofi stations] generally are is someone in a setting that's suited for what I typically do while using this music—so these things are generally someone at a desk, always alone, and always just kind of...not noticeably exerting a lot of energy, not visibly stressed or anything like that, which is definitely a nice part of it.... It's just a

really overall mellow setting.... It feels like it's constructed specifically for those kinds of emotions.

THE ANIMATION

As described earlier, the animation for the main lofi channel consists of a girl studying at her desk, occasionally looking off into the distance. She is dressed in a loose-fitting green smock, and the entire environment is calm and filled with warm colors. When we started to discuss the animation, one of our interviewees mentioned that they felt a very strong connection to this character, even though they don't actually watch the animation often:

So, I occasionally look at her [laughs] in the video to...remind myself that other people in this college are also studying



by themselves, and that I'm not the only one doing this. And even though she's just fake and not a real human being, it still feels like she's there with me.

Beyond identifying with her as a college student, or someone who studies, other interviewees linked Study Girl directly to themselves. This reflects what we found in the chat window earlier:

[The animation is] somewhat relatable. That's what most people look like listening to it. It's like an animated version of you.... I could relate. That's like me. I like it.

The animation as a whole also evokes an air of peace and studying. Small details shift in the scene, such as the eyes on her headphones moving when she moves, or the cat's tail lazily wagging back and forth. Study Girl actually writes in her notebook, although she never completes whatever she's working on. Overall, the animation conveys a feeling of relaxed focus. This is in line with what we have identified (via our taxonomy) to be the main connector between these study stations. For example, the study station "The man sitting next to me (study with me)" is live action, but many of the actions by the streamer are similar (Figure 2). Both stations include elements of calm and focus.

THE MUSIC

The music is one of the other major

ingredients in these channels, and for many, it is the main reason for watching. Lo-fi hip hop songs have several common traits. The tracks are soft and washed out, and background noise is common. The tracks frequently feature smooth jazz or mellow instrumentals. Some songs sample audio from pop culture, movies, television, and video games. The vocals are infrequent (usually at the beginning or end of a track) and subdued. In addition, the tracks tend to stay within 70–110 beats per minute—a slower tempo than most pop music, but still energetic enough to promote work instead of sleep. Almost all of the tracks used on the channel have a similar structure and drum style. Furthermore, each track's intro and outro contain no drum beats, which helps one track blend into the next. When we asked our interviewees to discuss the music, many mentioned that they felt calm while listening. One stated:

I feel like lo-fi music helps you reach that mood or that vibe when you just feel really relaxed and it naturally allows you to focus deeper on what you're doing.

Interviewees also mentioned that the lack of lyrics made it easier for them to concentrate on the work they are trying to do, rather than listening to music:

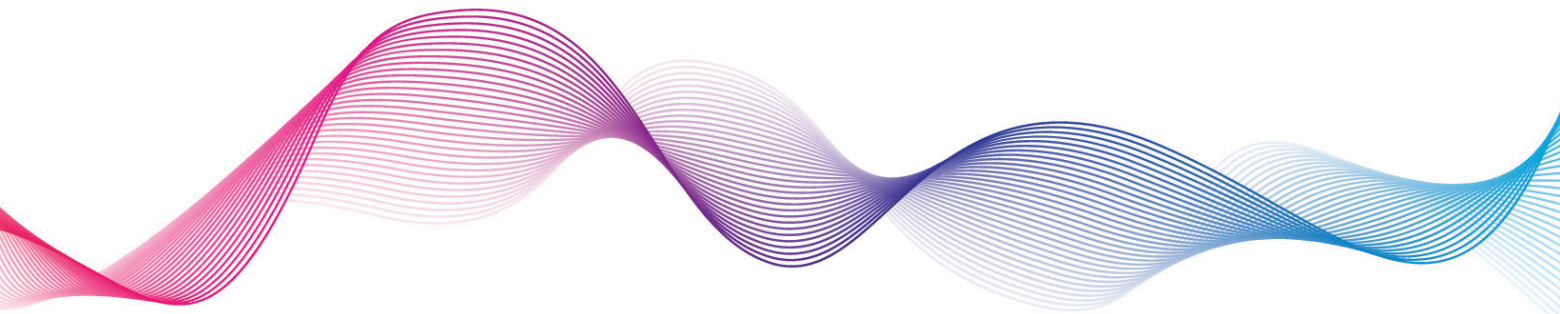
I do appreciate that it doesn't have any words because I'm able to focus more

on the things I'm reading versus trying to juggle lyrics that I know and things that I need to get into my mind.

Based on these initial insights from users, we think that the music, along with the animation, works to promote relaxation. For example, relaxing music has been shown in multiple studies to help reduce stress and anxiety [2]. Relaxing music is typically defined by studies as having a slower tempo and few or no lyrics. To further understand what we mean by *relaxing*, we can turn to psychology. Emotion is often described with a two-dimensional model, one dimension being valence (i.e., positive to negative) and the other being arousal (i.e., exciting to calming) [3]. The music was generally described as neutral or calming, which would be high valence (it's enjoyable) and low arousal (it's calming). Relaxing music for studying makes sense, as there is evidence that stimuli that are too exciting (such as loud, high-tempo, lyrical music) can be distracting [4]. For many students, studying can be an anxiety-provoking activity, so one way to maintain an appropriate balance of physiological arousal would be to listen to music that helps lower anxiety. Some other videos, such as "study with me," have natural background noise in addition to or instead of the music. Natural soundscapes such as rain falling or a fire crackling have been shown to be relaxing. Furthermore, the sound of typing, a page turning, or a pencil on paper can help to transport the viewer into the shared study space.

Our interviews suggest that users felt calmed, by elements of both the music and the animation (the calm, repetitive motions of Study Girl, the arrangement of items around focus, etc.). Furthermore, our interviewees

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CONCLUSION

Although parasocial interactions were first defined to describe the one-sided relationship people formed with television personas [5], new media such as Instagram and YouTube have helped further blur the line between a real person and a media personality. We were inspired along this line of research by existing research linking parasocial relationships to YouTube personalities. The researchers found that parasocial relationships also encompass the relationship between a viewer and a YouTube personality; more exposure to a YouTube personality predicts the formation of a parasocial relationship [6]. Longtime viewers were more likely to compare their ideas with what the YouTube personality says and state that the YouTuber made them feel as if they were with a friend when viewing them.

Even though Study Girl is a one-minute loop of animation that never speaks or looks at the camera, simply writing in her notebook, we believe some users still develop a parasocial relationship with the character. As described in the YouTube study, the more one is exposed to a character, the more likely one is to form a parasocial relationship, and the stronger the relationship is. This is also interesting because our interviewed users also identified Study Girl as themselves.

The interviews and chat data represent our first steps in trying to understand the lofi hip hop beats

live-streaming phenomenon. As this type of station becomes more popular, we think it is important to investigate what sort of impact the music and animations might have. As of this writing, we are currently testing the degree to which having an animated character compared with a real person as a study companion might influence study and testing. For example, we are examining whether parasocial relationships can subtly encourage people to form healthy study habits, such as drinking water, standing up to stretch, or taking a break from screens by hanging out with a character that does the same. We are piloting a procedure to test whether working with a digital-agent study companion increases productivity and results in measurable parasocial engagement. Following that, our intention is to create our own digital study companion. However, lofi stations include a wider range of features than we initially thought, so in designing our own, we may include elements we hadn't initially considered, such as changing perspectives, group social engagement, and hybrid reality characters. While we are interested in parasocial relationships and how they motivate behavior, the space of live-streaming study channels is quite wide. We hope other researchers and designers are inspired by this preliminary data and we look forward to investigating this type of media in the future.

ENDNOTES

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