

**“The most aggressive of algorithms”:
User awareness of and attachment to TikTok’s content personalization**

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Abstract:

This paper examines how a group of TikTok users in Costa Rica made sense of the workings of its algorithmic content personalization, how they came to this understanding, and what the implications of their self-proclaimed awareness are for establishing a particular affective relationship with the app. Drawing on actor-network theory, we argue that the awareness that these users have of algorithms shapes their affective attachment to TikTok (which they often describe as a form of “addiction”). The paper examines how users carefully enacted various practical roles in order to maintain the affect associated with personalized content on the app. In this way, we add nuance to dominant accounts of the user-algorithm relationship. Rather than viewing it as constant, fixed, and universal, we argue for considering it as “always in the making.” The paper shows how this relationship undergoes multiple “passages” through which distinct capacities for both users and algorithms emerge.

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“TikTok is my oasis!”, said Mario, a 23-year-old international relations major, during a focus group we conducted for this study. He explained: “It’s a place of smiles in the midst of our disastrous and busy life.” During the same conversation, Catalina, who is 20 and recently began working for a public institution in Costa Rica while she finishes her college education, described her experience using the app: “When I have no other responsibility, I give myself the right to be happy for a little while and say to myself: ‘You can now check TikTok’”. Mario and Catalina also shared with us their recipe for reaching such a state of “happiness”: they had learned to teach what they defined as “aggressive” algorithms how to personalize their content.

Most research to date has concluded that users tend to show little awareness of algorithmic operations (Gran, Booth, & Bucher, 2020; Powers, 2017; Schwartz & Mahnke, 2020). In this study, we focus instead on a group of users like Mario and Catalina, who argued they were highly aware of algorithmic personalization procedures. This is not to suggest that these users *knew* how TikTok’s algorithms actually work. Instead, we examine how they understood the workings of TikTok’s algorithmic content personalization, how they came to this understanding, and what the implications of their awareness were for establishing a particular relationship with this app.

We broaden understanding of how users relate to algorithms by incorporating issues of affect into the analysis (Bucher, 2017). Specifically, we argue that the awareness that users in our study showed of the operation of algorithms shaped their *attachment* to TikTok. This is because awareness provided a context for understanding the capacities of both people, algorithms, and

their shifting relationship. As a result, users carefully enacted various practical roles in order to maintain the affect associated with personalized content on the app.

TikTok offers a compelling case for this kind of analysis. The app has been the focus of recent controversies surrounding alleged biases inscribed in its algorithms, which could promote far-right extremism content and suppress videos from users with certain characteristics, such as “abnormal body shape” and “ugly facial looks” (Biddle, Ribeiro, & Dias, 2020; Weimann & Masri, 2020). Moreover, commentators have often defined TikTok by the attachment it generates in users. In discussing the app’s significance for the music industry, *The Pitchfork Review* (2020 n.d.) podcast described it as “a soul-crushingly addictive time suck.” As Grosser (2020) notes, “talking about TikTok addiction has itself become a TikTok meme” (p. 115). The growth of the app in many parts of the world has been typically described as an exponential phenomenon, particularly during the COVID-19 pandemic.

Most research has focused on the memetic value of TikTok’s content to account for both its success and the addiction it generates (Grosser & Lovink, 2020; Literat & Kligler-Vilenchik, 2019). Yet, as Lovink (2019) shows, the notion of addiction has somewhat lost “its ability to create [analytical] differences” as it has begun to pervade everyday language (p. 154). To supplement the study of actual behavioral dependence, we analyze users’ self-reported “addiction” to TikTok by considering it as a form of affective attachment that emerges through specific kinds of “passages” (in Gomart and Hennion’s [1999] sense) that link together users and algorithms in certain ways. We show that the relationship between users and TikTok’s algorithms was not constant but changed continuously: it shifted from experimentation to training so-called “aggressive” algorithms, to “collaborating” with them, to enjoying the results of this collaboration, to loving them, and to taking care of them.

This study is part of a larger project devoted to understanding how algorithmic assemblages are experienced in the global south. A recent report estimated that 10% of TikTok users were located in Latin America, an identical number to that of Europe (10%) and similar to the United States (12%) (Iqbal, 2020). Costa Rica typically ranks high in connectivity rates in Latin America. According to Latinobarómetro (2018), the country leads the regional use of numerous social media platforms. The focus on Costa Rica thus allows us to discuss findings from one of Latin America's most digital countries in terms of infrastructure, culture, and use.

Algorithms, User Awareness, and Assemblages of Attachment

Awareness and Algorithms

The interest in how users make sense of algorithms has grown over the past years. Researchers have focused on how people form “imaginaries” and “folk theories” of algorithmic devices (Bucher, 2017; Siles et al., 2020). Awareness has occupied a prominent place in this body of work. Yet, despite some exceptions (Hargittai, Gruber, Djukaric, Fuchs, & Brombach, 2020), scholars have provided few definitions or operationalizations of what awareness actually means. In practice, researchers often use notions such as awareness, knowledge, and understanding as synonyms.

The plasticity of this concept is not an entirely new phenomenon. Already in the early 2000s, Schmidt (2002) noted that, “depending on the context [awareness] may mean anything from consciousness or knowledge to attention or sentience, and from sensitivity or apperception to acquaintance or recollection” (p. 287). Against this background of flexibility, Dourish and Bellotti (1992) provided a useful definition for the purposes of this study:

awareness is an understanding of the activities of others, which provides a context for your own activity. This context is used to ensure that individual contributions are relevant to [an] activity as a whole, and to evaluate individual actions with respect to [...] goals and progress. (p. 107)

A common premise in various fields is that awareness matters because it shapes user action: it “leads to [...] interactions, connections, and [...] cultures” (Dourish & Bly, 1992, p. 541); it “engenders” specific ways of understanding and acting with technology (Schmidt, 2002, p. 289). This is arguably the most fundamental insight generated by critical algorithm studies. For example, Eslami and colleagues (2015) examined the “paths” through which a group of people came to be aware of the operation of algorithms. They concluded that awareness was the product of an “active engagement” with the platform, that is, assuming an active role in using and exploring its features. In this perspective, awareness is tied to how much and how long users appropriate algorithmic apps (Powers, 2017).

Attachment in Algorithmic Assemblages

We build on these insights on user awareness but supplement them in one important way. These studies have emphasized a rational dimension of awareness. Furthermore, many scholars have drawn on concepts that tend to assume that the user-algorithm relationship is constant and fixed. Schwartz and Mahnke (2020) thus framed to this relationship as a type of “communicative action.” Lomborg and Kapsch (2020) opted for Stuart Hall’s classic notion of “decoding.” Cotter (2019) referred to this as “playing the game,” an interplay between people who are disciplined via algorithms but also play a role “in directing and making sense of their own behavior through interpretations of the game” (p. 900). As an alternative to these valuable analytical tools, we turn

to work on attachment and agency “passages” in actor-network theory in order to argue that the user-algorithm relationship constantly varies.

Attachment refers to how people and things become linked to each other. In Hennion’s (2017b) words, attachment is “what we hold to and what holds us’ (p. 71); it “signifies a connection, restriction, restraint and dependence” (Hennion, 2017a, p. 113). The notion of attachment points to how agency is distributed in networks or assemblages of actors of different natures. From this perspective, technologies (including TikTok) are best understood as “provisional results of a heterogeneous tissue of relations [assemblages] being continually tried out, tested, reshaped, in order to produce other objects, without being able to reliably distinguish content and support, network and actors, products and users” (Hennion, 2016, p. 292). The distribution of agency within assemblages is never final. Instead, it is constantly and dynamically performed. Through these processes, actors (both people and technologies) acquire specific capacities and roles. Gomart and Hennion (1999) refer to these agency shifts or redistributions as “passages.” According to Gomart (2004), rather than assuming “that there [is] from the start an already constituted subject,” this approach focuses on the passages “through which ‘subjects’ [and objects] emerge, and emerge with new capacities” (p. 87, emphasis in original).

Callon (2017) identified three mechanisms through which attachment is produced: dialogue (conversations devoted to showing that things provide a response to specific problems); co-production (users’ participation in the process of conceiving and developing an artifact); and addiction (a relationship of dependence that results in a quasi mechanical attachment). In a similar manner, Verbeek (2005) argued that the attachment between people and technology develops through two main dynamics: “transparency” (the sense that users can understand and

relate to an artifact's inner workings) and "engagement" (the notion that people can actually be a part of technologies' functioning).

We add maintenance to this list of attachment mechanisms (Denis & Pontille, 2015). An underlying premise in the study of maintenance is that fragility is a constitutive part of life and things. Maintenance is a process oriented towards the active prevention of decay. It challenges a view of technology as stable and envisions it instead as always "in the making." In this logic, permanent adjustments and transformations are technology's mode of existence. As Denis and Pontille (2020) show, maintenance is a creative process: it "creates or strengthens bonds [...] [and] recognizes and concretizes both the interdependencies and the 'attachments' that hold together caregivers and objects/subjects of care" (par. 7, our translation).

Our study weaves together these different theoretical strands. In what follows, we examine the paths that led TikTok users in Costa Rica to the awareness of algorithms on TikTok. We show how this awareness created a context for understanding the operation of the TikTok assemblage, that is, how specific roles, relations, and capacities emerged and were constantly redistributed among users and so-called "aggressive" algorithms. We then analyze how the relationship between users and TikTok's algorithms underwent a series of passages through which attachment to the platform emerged and was performed. Before delving deeper into the empirical discussion of this case, we describe the research design that we employed in our study.

Research Design

We conducted 7 focus groups with 35 participants between June and July 2020 with Costa Rican TikTok users (that is, both people who created videos and those who used the app primarily to watch them). We recruited participants through a call for participation that circulated

on social media platforms associated with the university where the research was conducted. Interested people were asked to fill out an online questionnaire, which allowed us to select potential participants with different sociodemographic characteristics. The final sample included a larger representation of women (66%) than men (33%). All participants were college students in various local universities or had recently graduated. They studied majors such as business administration, communication and media studies, engineering, international relations, law, political science, and psychology, among others. The average age of participants was 21 years-old (ranging from 18 to 26).

Since the research was conducted during the COVID-19 pandemic, all focus groups were conducted on Zoom. Each group consisted of five participants (and the two researchers). This proved an ideal number for allowing participants to express their thoughts on a platform such as Zoom. All participants (except one) turned on their cameras during focus groups. Conversations lasted an average of 71 minutes.

After inquiring about participants' personal backgrounds, we asked them to describe their main use practices with TikTok and how these practices had evolved. We then discussed how participants interpreted the operation of algorithms on the app. We examined the answers and debates between participants through which they collectively constructed explanations about the operation of TikTok. To avoid guiding their responses in any particular direction, we did not mention the word "algorithm" in the questions we asked, nor in the explanations of the focus group dynamics. Instead, we asked about people's interpretations of how TikTok recommended content and their thoughts about these recommendations. However, participants explicitly mentioned algorithms in their explanations in less than ten minutes into conversations in all the focus groups without exception. When this occurred, we then inquired into their understanding

of this term. Both researchers acted as moderators. We recorded the discussions upon the approval of participants and transcribed them in their entirety. Pseudonyms are used to protect the identity of participants. (We translated from Spanish excerpts from these discussions).

We used an abductive approach to make sense of the data. This approach consists of “a continuous process of forming conjectures about a world; conjectures that are shaped by the solutions a researcher already has or can make ready to hand” (Tavory & Timmermans, 2014, p. 28). We began by conducting open coding of transcripts in an individual manner. Both researchers then met to compare individual coding results and identify similarities and differences. We organized our data around three main categories: the awareness of algorithmic operations; interpretations of content personalization; and the affective attachment that users reported having with the app. The next phase of (axial) coding was conducted by both researchers in parallel to flesh out the properties of these three categories and rethink them through extant literature (such as Gomart and Hennion’s (1999) notion of passage). We also considered our previous work on users’ relationship with algorithms as part of the “cultivated position” from which we evaluated our findings (Tavory & Timmermans, 2014). The final phase of (theoretical) coding was conducted collectively as an attempt to refine explanations of the relationships between our main categories. We specifically developed the link between algorithmic awareness and attachment to TikTok.

In what follows, we discuss our main findings and the explanation we developed abductively to account for such findings and categories. We argue that users developed an attachment to TikTok through two interrelated processes: becoming aware of the workings of “aggressive” algorithms; and maintaining the TikTok assemblage through certain passages or redistributions of roles and capacities for both users and algorithms. Although it would be more

precise to describe these two processes as cyclical or mutually constitutive, we analyze them independently for analytical purposes.

Becoming Aware of TikTok's Algorithms

For most people in our focus groups, using TikTok began with a period of experimentation. Users reported having to figure out how the app worked and what it was all about. This process took time and practice. Experimenting with TikTok also required overcoming the “shame” (in their words) of using an app associated with teenagers and spending time in “non-productive” activities. Some users said they abandoned or deleted the app after initial frustration. The following experience described by one person is illustrative in this regard: “At first, it was hard for me to get a grip on the app, and I didn’t like it. But when you personalize your ‘For You’ page, it becomes a catalogue of everything you like. It’s infinite and really never stops!” In this account, personalizing content became the goal of using the app and the turning point in the user’s relationship to it.

For many, having to stay at home during the COVID-19 pandemic created conditions for conducting this experimentation process. Mario referred to this as the “quarantine effect.” He explained: “Many gave TikTok a ‘redemption shot.’ If they hadn’t been so bored, many people would have deleted it. But since they wanted to consume content and didn’t have anything else to do, they were like, ‘I’ll give it another shot’”. As they experimented with the app, users acquired not only a better understanding of its workings but also an awareness of how TikTok’s algorithms operated.

Researchers have noted that awareness usually stems from active engagement with a platform (Eslami et al., 2015). This was also the case of TikTok users. They started noticing the operations of an algorithm as they employed the app's features in certain ways. Nicolás (22 years old) explained a typical experience:

[I learned] that, if you left a [video] “pressed,” you could say to [the app] that you are not interested in it. That was great, because it was like, ‘Hey, I can get rid of many things I’m not interested in!’ It’s one of those things that make you better understand how the platform works.

Users mentioned a number of features that they felt had a similar effect on altering TikTok's content and thus led to a “better understanding” of its workings. Daniela, a 23-year-old audiovisual producer, summarized some of these features:

I realized that [TikTok learned my tastes] in several ways. One, the ‘likes’ [you give]. That’s the easiest way. Second, the [videos’] playing time. If the platform realizes that I spend more time watching a video, or even finish it, or watch it more than once, then it means that I’m interested. Third, when I go into someone else’s profile, then the platform starts recommending a lot of content from that [person].

Active engagement thus helped establish the notion that specific user practices led to visible results in TikTok's algorithms. In this way, users incorporated the premise that they had to actively participate in making explicit their interests and disinterests. During this process, users interpreted the behavior of TikTok's algorithms as a form of interpellation, as if the app were speaking directly to them and demanding them to be aware. Mónica's words are revealing in this regard: “[TikTok] expects you to teach it what you like.” Santiago, a business administration major, supplemented this response: “The algorithm wants to draw the user's

attention, so to speak, to generate an engagement from the person.” Accordingly, users learned to employ those features that they considered most effective for producing a visible response from algorithms. Says Laura, a 19-year-old public relations student: “I had to use the ‘not interested’ feature when I saw content I really didn’t like. I think I’ve helped to train my algorithm a lot.” Laura’s words reveal how active engagement became a demand. Her comment also makes visible how users arrived at the conclusion that a particular relationship with these algorithms was forming: users gradually become attached to the app.

Like Laura, users typically employed the notion of “training” to describe this relationship. This metaphor evokes notions of ritual and repetition until a desired outcome is achieved. But the training went in both directions: users trained algorithms while they also learned from algorithms how to do this training. Another common way to characterize this relationship was “deuration,” the belief that users could “clean” the impurities in their feed until it reflected only their interests (c.f. Siles et al, 2019). Rodrigo, a library science major, explained it in the following manner: “[Each] TikTok to which I give a ‘like’ is going to deurate the algorithm a little bit. It is also a question of control, of taking care of deuration myself to [get] what I want to have in my [content].” Through this awareness, users thus gained a sense of agency in how they understood their relationship with algorithms.

Users also perceived TikTok’s interface as an affordance that guided their behavior with the app. Specifically, there was common agreement among users on the importance of the “For You” page as the starting place for interacting with content. For Nicolás, this was a product of how the app is designed: “[TikTok] leads you straight there. That’s what you get first [as the default setting] and that’s what you learn to use. Therefore, that’s where I stayed.” As Nicolás suggests, this affordance solidified the notion that personalized content is the default condition in

TikTok. Users also made sense of the “For You” page by opposing it to “Following” (the page for watching content from selected users): whereas the latter allowed them to see what some specific contacts had posted, the former was interpreted as the domain of algorithms.

A key path to algorithmic awareness was comparing TikTok with other platforms. Users assigned a specific identity to TikTok’s algorithms by distinguishing them from those of other social media platforms. According to Laura,

I like to compare [TikTok] to Instagram, [where the default] is to see people you follow. Instead, on TikTok, it’s like: “This is content for you and this is what the app thinks you will like.” I feel that is where you get to see TikTok’s algorithm.

Most users in our focus groups compared TikTok with platforms such as Facebook, Instagram, Twitter, and Vine. These apps provided a background against which they could identify similarities and differences in how algorithms functioned. In this way, users came to see algorithmic personalization as TikTok’s most distinctive feature.

Another path to awareness were explicit mentions to TikTok’s algorithms that circulated both on the app and other social media platforms. Camila, a 23-year-old political scientist, explained:

I came to understand the TikTok algorithm because TikTokers themselves explained it to me and asked me to react to the algorithm. That’s how I began to understand it and to realize that it existed, because they [algorithms] exist everywhere but sometimes you’re not aware.

Camila exemplified this by referring to occasions when content creators had mentioned TikTok’s algorithms in order to ask users to perform certain practices that would help their videos go viral.

On these occasions, it is not the platform's affordances that help to bring awareness but rather the content that circulates in it.

Although research has stressed the importance of active engagement for the formation of awareness, users often emphasized the role of information sources external to the platform. For example, some users argued that their college education had created conditions that made awareness possible. Said Valentina (22 years old), "Probably it's because I am a communication studies major that I know that [algorithms] exist." Others indicated that their awareness came from the naturalization of surveillance practices in the social media industry. Mónica (19 years old) explained with some discomfort how she came to this conclusion: "I start sessions in all my apps through Facebook, so I guess that [TikTok] knows what I like right there. TikTok possibly already saw what I 'liked' on Facebook and Instagram, and decided to replicate it." In this view, TikTok's surveillance only illustrated common practices in this industry.

Finally, users also became aware of algorithms and how to relate to them through the experiences that other people had with the app. Daniela thus recalled: "When I started using it, my friends explained to me that, at the beginning, a lot of things were going to come out [on my feed] and that I needed to somehow help TikTok to know my tastes." In this case, people's experiences provided a sort of practical manual for novice users that incorporated awareness as a guiding principle.

The Most "Aggressive" of Algorithms

Through these paths, users developed various degrees of awareness. This awareness manifested in specific understandings of the operation of TikTok's algorithms but also in the formation of a framework (or "context") to make sense of the user-algorithm relationship

(Dourish & Bellotti, 1992). In “training” TikTok, users believed they were dealing with one particular kind of entity: the most “aggressive” of algorithms.

Users mentioned the notion of “aggressiveness” repeatedly during focus groups. (In the vocabulary of grounded theory, it is an “in vivo” code.) To be sure, this term is a cultural construct. In a country like Costa Rica, which has built a national identity around the myths of being the most “peaceful” and “happiest” place on earth (Harvey-Kattou, 2019), the meaning of the term needs to be further unpacked. By “aggressive,” users typically emphasized how determined (or assertive) they thought that algorithms were in achieving the goal of personalization. Although users also considered the capacity shown by algorithms to confront or interpellate them, they did not associate “aggressiveness” with explicit forms of violence. Their views on algorithmic “aggressiveness” manifested in their explanations of three interrelated processes: how TikTok personalized content; the precision with which users thought algorithms acted; and the speed in which they believed algorithms “learned” to personalize content.

A first key to understanding “aggressiveness” centered on how users interpreted the algorithmic personalization of content on TikTok. Users believed that, to organize the abundance of videos, TikTok classified content by categorizing it according to formal criteria. They typically referred to these categories as “genres,” “niches,” or “segments.” Personalization specifically meant the algorithmic assignment of appropriate “genres” to each person. Lucía, a 21-year-old law student, explained her theory in the following manner: “TikTok incorporates lots of genres; if you like one, the algorithm will continue to show it to you. It has informational pieces, tips, comedy, sad things, there is everything in there!” The clearest indication that users had normalized this view of personalization was a recurrent tendency to speak of “*my* algorithm” to account for this process.

Employed in this sense, the term “aggressive” meant that TikTok’s algorithms had a remarkable capacity to identify the “genres” that interested users and organize the offer of new videos around these categories. Mónica used a metaphor that stressed what she felt was TikTok’s capacity to use personalization as a “trap” (c.f. Seaver, 2019): “I do think [TikTok’s algorithm] is very aggressive in that it continues to show you what it already knows you like, it boxes you, boxes you, and boxes you by showing you only that!” In this account, personalization on TikTok constrained users (in both the sense of restricting and confining) within the boundaries of segmented content.

A view of TikTok’s algorithm as extremely “precise” supplemented this definition of “aggressive” personalization. Lucía illustrated this belief: “[The app] detects things [patterns] and begins shaping results. [It] is so smart! Nothing there is coincidental!” It was typical for users to combine ideas about personalization on TikTok and conceptions of its precision to define the app’s most distinctive capacities. A telling example of this dynamic came when Mario, whom we cited in the first paragraph, indicated that he had discovered a new type of “genre” that he really enjoyed without knowing it, and for which he had no name until TikTok revealed it. He referred to this newly-discovered “genre” as “things with Vine-energy about mundane things that really make me laugh.” This is reminiscent of Netflix’s own personalized “alternative” genres.

Users also added a temporal dimension to their conception of algorithmic “aggressiveness.” In this view, being “aggressive” manifested in the speed with which algorithms could “learn” from users. Rodrigo put forth this interpretation explicitly: “Content had already changed a lot within the first month of use. I think the aggressiveness has to do with how quickly [the algorithm] adjusts to what I want or what the algorithm thinks I want.” This

belief confirmed the notion that the “adjustments” made by algorithms to respond to user practices were done in an obvious way. Valeria, who is 23 and currently unemployed, noted:

TikTok’s algorithm is brutal! You use TikTok three times, or maybe two, and it already knows everything. My ‘Insta’ doesn’t know I’m queer. It never shows me anything queer. But by the second time I used TikTok, it was showing me lots, and lots of queer stuff. That’s the magic of the platform. I identify myself as queer, not lesbian. My own mother is not able to understand this distinction. But TikTok stopped showing me lesbian things and began showing me things for queer people. I was like, “WOW!”

Valeria thus combined ideas of personalization (queer as a “genre” category), precision, and speed to describe how magical, surprising, and worthy of admiration TikTok’s algorithms were.

Only a few participants linked explicitly the notion of “aggressiveness” to TikTok’s corporate practices of surveillance. Users in our focus groups had opposing views about this issue. Whereas some seemed concerned about recent discussions of TikTok’s surveillance practices that began circulating in the media at the time of our conversations, others claimed to be less preoccupied about it as long as surveillance was used to improve their experiences with the app. Some said they even enjoyed the type of advertising derived from this form of surveillance because they considered it less explicit and more “personal.”

In this process of experimentation, users not only gained awareness of the existence and capabilities of TikTok’s algorithms but also developed a way of understanding their relationship with them. Put differently, users developed an awareness of the *joint* capacities of people and algorithms as an assemblage. Rodrigo offered a vivid illustration of this awareness:

It’s like working together. The algorithm has its formulas, its patterns, and its ways of reading my content, but [I can] pause a video and then play it again or go back and scroll

down [in order to] influence the algorithm. I am aware that giving ‘likes’ will influence my algorithm, and I use this awareness to give ‘likes’ or not. In that sense, I’m collaborating.

Rodrigo’s account put aside the issue of control to favor the language of collaboration; he posited a view of users and algorithms working together toward the common goal of personalization. There was a clear distribution of responsibilities and capacities to achieve this end. Awareness thus provided users with a particular way of evaluating both their roles and those of algorithms with respect to that shared goal. In the next section, we examine how the user-algorithm relationship evolved to maintain personalization on TikTok.

Maintaining the TikTok Assemblage

Passage from Mutual Training to “Active Passivity”

Once users felt that TikTok’s personalization had been achieved through “collaboration” (or from learning how to train algorithms) a passage typically occurred. Because of the “aggressive” nature of algorithms, users felt that they eventually could “let everything in their hands,” as Catalina described it. During those moments, no more training was necessary: users allowed themselves “the right to be happy” (using Catalina’s own words), to intensively experience positive emotions on TikTok without having to interfere. Catalina continued: “If I see something that shouldn’t be there [...] I don’t even bother. My mind thinks, ‘The algorithm will take care of making it disappear. And that’s it.’” Mario described arriving at a point where failures in algorithmic recommendations were so rare that no major intervention was required. In his words:

The experience [becomes] so pleasant, and since you are watching content that you really like, it's a shock if something appears that you don't want to see, it's like the algorithm is disrespecting you [and you wonder]: 'What is this doing here?'

The passage to enjoying a “pleasant experience” on TikTok should not be confused with inaction. It is more about “active passivity” in Hennion’s sense: “it is not about moving from activity to passivity, but to act in order to be acted on. Things have to be done, to make things happen (*pour que les choses arrivent*)” (Hennion, 2013, par. 29, our translation). In this sense, this passage built on a sense of achievement: it was a way of being entertained by the results of past “training” and “deuration” efforts. It was the time to reap the “harvest,” as Rodrigo defined it.

In this passage, the user-algorithm relationship was enacted as an emotional matter. Users shifted their vocabulary from notions of “control,” “training,” and even “collaboration” to that of mutual “love.” Catalina explicitly stated her feelings for TikTok’s algorithms: “I shaped it and now I love what I have, so I definitely think it’s a super aggressive algorithm, and I love that it is aggressive!” As Hennion (2017b) reminds, attachment “is fundamentally reciprocal” (p. 74). Thus, the “love” for algorithms also had a counterpart; it evoked a feeling of appreciation that Laura captured with precision: “Since I hardly see this [personalization] on other social media [platforms], and I know that TikTok gives me content just for me, I feel special, I feel that it’s giving me attention, making things just for me.”

Enrolling other people and technologies into the TikTok assemblage was key in this passage. Users typically narrated instances of sharing their “harvest” of videos with others in order to sustain key relationships with them. Ernesto conveyed how sharing videos felt like an obligation to him: “I have to do my part of the deal, so to speak: start sending everyone the good

[videos] I saw.” Several platforms were employed to this end. By enrolling others, users delegated them with the task of further “depurating” their feed, which had previously been assigned to algorithms. How TikTok organizes content sent by others created the impression that recommended videos were a “For You” page curated by someone else that algorithms could use to improve the personalization process.

Passage from Pleasure to Care

The TikTok assemblage also needs to be maintained to keep the “mutual love” going. A new passage was required to preserve TikTok’s algorithmic personalization from decay. We refer to this specific passage as care. Borrowing from Denis and Pontille (2015), a focus on care invites a consideration of TikTok as a “fragile and mutating entit[y], [...] [a] thing that ha[s] to be taken care of, despite [its] standardized design and despite [its] ordering aims” (p. 360). Care is also a means to channel user resistance to unwanted content (such as viral trends that are explicitly sexist). Tania thus employed the vocabulary of love to suggest that, when this happened, her relationship with TikTok could feel like “toxic.”

Care began by mobilizing awareness in strategic ways. Rodrigo explained: “Being aware [of how algorithms operate], I somehow try to re-reroute what my algorithm is showing me.” These words illustrate how people sought to incorporate awareness as a regular component of use practices. This awareness then translated into specific roles. It was common for users to employ expressions such as being “careful” (*cuidadoso*) or “cautious” (*cauteloso*) to define the role they needed to perform in this process. Valentina’s words are worth quoting at some length:

The algorithm is definitely something I think about whenever I interact with the app. This is the app where I am more careful about what I give “likes” to and what I “hide” [...]

because I don't want anything to be added to my algorithm that doesn't interest me, because it [the algorithm] seems to me to be too effective. Thus, a misplaced 'like' can mean that my algorithm could disarrange (*se desacomoda*).

Like Valentina, users incorporated their awareness of TikTok's "aggressive" algorithms (in the sense of being extremely precise and fast) to maintain balance in the assemblage. Being "careful" meant conceiving of the "aggressive" nature of TikTok's algorithms as something that needed to be dealt with continuously to avoid the decay of affect. The logic of care was thus one of preservation (hence the idea of "disarrangement") rather than "depuration," "training" or "collaboration."

Carefulness manifested in a series of particular practices and ways of relating to TikTok's algorithms. All the knowledge gained during the "training" and "depuration" of content had to be practiced with discipline. Daniela described this discipline as "conscious effort." She explained: "I hate TikTok dances, so I try too hard to [scroll down] fast, as soon as I get a TikTok dance. It's a way of saying, 'Bye, bye!', so that the algorithm also understands that I don't want to see that." As Daniela suggests, users continued to rely on the notion of TikTok's "aggressive" personalization through "genres" to indicate how she thought the app could be maintained.

Passage from Care to "Addiction"

A final dynamic in the process of attachment was the recognition of "addiction." Self-admissions of "addiction" to TikTok were common during the focus groups. When they employed it, users did not necessarily mean a literal physiological need to use TikTok. Many claimed that they actually didn't use the app every day or used it only when they knew they had time to spare. Yet, they agreed that their "addiction" to TikTok was distinct from their

attachment to other platforms. Users typically used “addiction” to express two ideas: how they tended to lose the perception of time when using the app, and how difficult it was to disrupt its use because of the pleasure it produced. One user expressed these ideas in the following manner: “I would describe [TikTok] as a loop, because once you get in, it is very difficult to get out. It never happens to me that I get bored. When I get out, it’s because I think it’s been enough time. I say to myself: ‘Ok, stop it now’”. In this account, “addiction” meant having to self-regulate the use of the app to avoid spending more time than what seemed reasonable.

Users mentioned several reasons to account for their “addiction” to TikTok: the memetic value of the content, the short format of videos, the overall app’s design, the infinite scrolling, the easiness and allure of the swipe gesture, and the availability of time to use the app while they stayed at home during the pandemic. In short, they believed they were “addicted” because personalization worked too well. To be sure, such statements confirm the addictive nature of contemporary technological design (and the dopamine rewards it produces). But following Lovink (2019) and Gomart and Hennion (1999), we treat them also as expressions of the particular kind of attachment that users had established with TikTok through the process we have discussed. Seen in this way, “addiction” also means force of attachment. Put differently, “addiction” to TikTok was performed through the repetition of passages between experimentation, mutual training, active passivity, and careful practice. Jimena, a 22-year-old psychology student, expressed this idea eloquently:

I do think that, to a certain extent, [algorithmic] aggressiveness is what makes you so hooked to TikTok. I know of no other app that [recommends] things to you in such a direct way, and that it’s so easy to use. You just ‘swipe’ like this [mimics the gesture] and you get all the content you want.

Jimena's account provides an ideal summary to the process we have discussed. She began by implying the importance of awareness for understanding how a relationship with algorithms forms. She then acknowledged the relative "aggressiveness" of TikTok's algorithms in responding to conscious user practices. And she concluded by alluding to the swipe gesture as the embodiment of her attachment to TikTok (rather than its cause) and as a symbolic preparation for the personalized feelings and emotions that certainly come next. The continuous process of consciously performing and maintaining this assemblage, over and over, time after time, is the "addiction."

Concluding Remarks

Building on the interest that user awareness has garnered in critical algorithm studies and communication studies, this paper examined how a group of Costa Rican TikTok users became aware of the operations of algorithms, which they often defined as "aggressive," and how this awareness shaped their attachment to the app. This provided a useful contrast to studies that tend to focus on users who are largely unaware of algorithms. Instead, these users developed a sense of their relationships with "aggressive" algorithms through a variety of paths, including active engagement with TikTok but also sources external to the app. To use a common term in the study of datafication, users envisioned algorithms as "transparent black boxes" in the sense of Callon and Verbeek, that is, they felt they could understand the app's inner workings and play a part in them. This sense of "transparency" came not by actually "looking inside" the TikTok black box but rather "across" the TikTok algorithmic assemblage (Ananny & Crawford, 2018, p. 984). Further research could help determine how representative these users are of groups in other parts of the world or with different sociodemographic backgrounds.

As a supplement to scholarship on the user-algorithm relationship, we emphasized the need to further examine the affective dimension of awareness, that is, to understand not only how it engenders certain actions and behaviors but also how it conditions ways of relating to and emotionally experiencing apps such as TikTok. To this end, we turned to the notion of attachment.

By positing the notion of passage, our analysis showed that, not only is the relationship with algorithms different for everyone, but that it constantly varies over time even for the same people. In this study, we discussed instances of users experimenting with and attempting to control algorithms (and thus gain a sense of agency), of mutual training (users training algorithms what they like while learning from algorithms how to train them), of active passivity (enjoying what algorithms offered them without intervention), of mutual love (loving and feeling loved by algorithms), of caring for algorithms to prevent affective decay or “re-route” them, of “addiction.” The notion of passage allowed us to better understand how the roles and capacities of both users and algorithms were constantly and dynamically redistributed in the TikTok assemblage at different points in time. Users and algorithms were thus tied up in each other through a shifting web of relations. In this perspective, the relationship between users and algorithms is not constant but undergoes multiple passages through which distinct capacities emerge. In this way, we argued that “addiction” may also be understood as a form of attachment that is produced and performed through all these passages. Although we discussed them independently, these passages are interrelated in practice.

The approach we developed in this paper could be applied to several platforms that rely on the logic of personalization (Kant, 2020). This could bring much needed specificity to the study of this logic. The TikTok users that we talked with had one specific conception of what

personalization meant and what the role of algorithms was in co-creating it. This view might partially differ from other ways of enacting personalization. In platforms such as Netflix and Spotify, for example, personalization can translate into a tendency to treat the platform as a person. On other occasions, it is experienced as the process through which the platform comes to reflect aspects of the user's personality. Personalization is not a singular process but rather takes multiple shapes and forms. By bringing issues of attachment into the analytical focus, further research could examine the differences in how people make sense of personalization rather than assuming that it means the same in all places and at all times.

References

- Ananny, M., & Crawford, K. (2018). Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability. *New Media & Society*, 20(3), 973–989.
- Biddle, S., Ribeiro, P. V., & Dias, T. (2020, March 15). Invisible censorship. Retrieved May 13, 2020, from The Intercept website: <https://theintercept.com/2020/03/16/tiktok-app-moderators-users-discrimination/>
- Bucher, T. (2017). The algorithmic imaginary: Exploring the ordinary affects of Facebook algorithms. *Information, Communication & Society*, 20(1), 30–44.
- Callon, M. (2017). *L'emprise des marchés: Comprendre leur fonctionnement pour pouvoir les changer*. Paris: La Découverte.
- Cotter, K. (2019). Playing the visibility game: How digital influencers and algorithms negotiate influence on Instagram. *New Media & Society*, 21(4), 895–913.
- Denis, J., & Pontille, D. (2015). Material ordering and the care of things. *Science, Technology, & Human Values*, 40(3), 338–367.
- Denis, J., & Pontille, D. (2020). Maintenance et attention à la fragilité. *SociologieS*. Retrieved from <http://journals.openedition.org/sociologies/13936>
- Dourish, P., & Bellotti, V. (1992). Awareness and coordination in shared workspaces. *Proceedings of the Conference on Computer-Supported Cooperative Work*, 107–114.
- Dourish, P., & Bly, S. (1992). Portholes: Supporting awareness in a distributed work group. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 541–547.
- Eslami, M., Rickman, A., Vaccaro, K., Aleyasen, A., Vuong, A., Karahalios, K., ... Sandvig, C.

- (2015). "I always assumed that I wasn't really that close to [her]": Reasoning about invisible algorithms in the news feed. 153–162. ACM.
- Gomart, E. (2004). Surprised by methadone: In praise of drug substitution treatment in a French clinic. *Body & Society*, 10(2–3), 85–110.
- Gomart, E., & Hennion, A. (1999). A sociology of attachment: Music amateurs, drug users. *The Sociological Review*, 47(1), 220–247.
- Gran, A.-B., Booth, P., & Bucher, T. (2020). To be or not to be algorithm aware: A question of a new digital divide? *Information, Communication & Society*.
- Grosser, B., & Lovink, G. (2020). Video avant-garde in the age of platform capitalism. In G. Lovink & A. Treske (Eds.), *Video vortex reader III: Inside the YouTube decade* (pp. 105–117). Amsterdam: Institute of Network Cultures.
- Hargittai, E., Gruber, J., Djukaric, T., Fuchs, J., & Brombach, L. (2020). Black box measures? How to study people's algorithm skills. *Information, Communication & Society*.
- Harvey-Kattou, L. (2019). *Contested identities in Costa Rica: Constructions of the Tico in literature and film*. Liverpool: Liverpool University Press.
- Hennion, A. (2013). D'une sociologie de la médiation à une pragmatique des attachements. *SociologieS*. Retrieved from <http://journals.openedition.org/sociologies/4353>
- Hennion, A. (2016). From ANT to pragmatism: A journey with Bruno Latour at the CSI. *New Literary History*, 47(2–3), 289–308.
- Hennion, A. (2017a). Attachments, you say? ... How a concept collectively emerges in one research group. *Journal of Cultural Economy*, 10(1), 112–121.
- Hennion, A. (2017b). From valuation to instauration: On the double pluralism of values. *Valuation Studies*, 5(1), 69–81.

- Iqbal, M. (2020). TikTok revenue and usage statistics (2020). Retrieved July 30, 2020, from Business of Apps website: <https://www.businessofapps.com/data/tik-tok-statistics/>
- Kant, T. (2020). *Making it personal: Algorithmic personalization, identity, and everyday life*. Oxford: Oxford University Press.
- Latinobarómetro. (2018). *Informe 2018*. Santiago: Corporación Latinobarómetro.
- Literat, I., & Kligler-Vilenchik, N. (2019). Youth collective political expression on social media: The role of affordances and memetic dimensions for voicing political views. *New Media & Society, 21*(9), 1988–2009.
- Lomborg, S., & Kapsch, P. H. (2020). Decoding algorithms. *Media, Culture & Society, 42*(5), 745–761.
- Lovink, G. (2019). *Sad by design: On platform nihilism*. London: Pluto Press.
- Powers, E. (2017). My news feed is filtered? *Digital Journalism, 5*(10), 1315–1335.
- Schmidt, K. (2002). The problem with “awareness.” *Computer Supported Cooperative Work, 11*(3–4), 285–298.
- Schwartz, S. A., & Mahnke, M. S. (2020). Facebook use as a communicative relation: Exploring the relation between Facebook users and the algorithmic news feed. *Information, Communication & Society, OnlineFirst*, 1–16.
- Seaver, N. (2019). Captivating algorithms: Recommender systems as traps. *Journal of Material Culture, 24*(4), 421–436.
- Siles, I., Espinoza, J., Naranjo, A., & Tristán, M. F. (2019). The mutual domestication of users and algorithmic recommendations on Netflix. *Communication, Culture & Critique, 12*(4), 499–518.

- Siles, I., Segura-Castillo, A., Solís-Quesada, R., & Sancho, M. (2020). Folk theories of algorithmic recommendations on Spotify: Enacting data assemblages in the global south. *Big Data & Society*, 7(1), 1–15.
- Tavory, I., & Timmermans, S. (2014). *Abductive analysis: Theorizing qualitative research*. Chicago: University of Chicago Press.
- The Pitchfork Review. (n.d.). *The revolution will be TikTok'd*. (Original work broadcast)
- Verbeek, P.-P. (2005). *What things do: Philosophical reflections on technology, agency, and design*. University Park, PA: Pennsylvania State University Press.
- Weimann, G., & Masri, N. (2020). Research note: Spreading hate on TikTok. *Studies in Conflict & Terrorism*, 1–14. <https://doi.org/DOI: 10.1080/1057610X.2020.1780027>