Hiding the gender binary behind the 'other': A cross-platform analysis of gender and sexuality self-categorization affordances on mobile dating apps

Giulia Campaioli

University Rovira i Virgili,
Medical Anthropology Research Center,
Tarragona, Spain

Abstract

Mobile dating apps are digital spaces for intimate and sexual encounters that have the power to remediate culture by materializing and shaping the meaning of identity categories like gender and sexuality. To uncover how gender and sexuality are baked into platform design, this article analyzes gender and sexuality self-categorization affordances on 12 mobile dating apps by performing recorded walkthroughs of a new user registering an account. The cross-platform analysis shows that some dating apps behold a binary and static understanding of gender, others materialize gender as dynamic and plural, while two popular apps continue

Corresponding Author:
Giulia Campaioli
University Rovira i Virgili, Medical
Anthropology Research Center,
Tarragona, Spain
giulia.campaioli@urv.cat

to reproduce the gender binary by hiding it behind the category of the 'other'. Self-categorization affordances reflect the proliferation of gender and sexual identity labels and claims of inclusivity, though maintaining the gender binary for data collection purposes.

Keywords: mobile dating apps, gender identity, sexual identity, gender categorization, LGBTQAI+, gendered affordances.

1. Introduction

Mobile dating apps (MDAs) are smartphone applications that connect users for romantic, sexual, and friendly meetings and use location-informed algorithms to suggest nearby users in real-time (Wu and Ward 2018). In virtue of their explicit focus on dating and romantic or sexual encounters, MDAs are sociotechnical artifacts that offer a special point for observing how discourses of gender and sexuality are reproduced or disrupted through design choices that show culture and technology's intimate entanglement (McPherson 2014), and their impact on social relations of power (Malhotra *et al*. 2022; Vickery and Everbach 2018; Bivens and Haimson 2016; Bivens 2015). In relation to gender and sexuality, categorization affordances can be investigated as cues through which users construct and understand their identity (MacLeod and McArthur 2018) and as data collection strategies used by digital platforms to "bolster digital monetization practices" (Bivens and Haimson 2016, 2). The analysis of these affordances reveals how gender and sexuality are materialized in design choices, whose transformation informs about cultural changes in understandings of gender and sexuality.

Few studies have investigated how gender is constructed through categorization affordances in the process of profile creation on social media (Bivens and Haimson 2016; Bivens 2015) and specifically on dating apps, among which only Tinder and

_____

Bumble have been analyzed (Garritano 2021; MacLeod and McArthur 2018). Sexual identity remains understudied in relation to gender and self-presentation, which Ranzini and Lutz (2016) attribute to the heteronormativity of most dating sites. This paper proposes a cross-platform analysis of gender and sexual identity categories in the process of sign-up and profile creation on 12 dating apps using the walkthrough method (Light *et al*. 2018), with the aim of exploring how cultural discourses on gender and sexuality are materialized and perpetuated through interface elements.

Findings show that some apps behold a binary and static understanding of gender, while others afford multiple and dynamic self-categorization of gender and sexual identity. On the other hand, two popular apps, Tinder and Badoo, materialize a 'ternary' representation of gender by collating all non-conforming identities within the category of the 'other,' which however does not really afford non-binary self-identification. By forcing users to identify as one of two genders for the show-gender widget, they hide behind the category of the 'other' the permanence of a binary understanding of gender. I argue that MDAs self-categorization affordances reflect the proliferation of gender and sexual identity labels and a generic assumption that social media, and society at large, should strive for greater gender and sexual inclusivity; however, mainstream MDAs continue to reproduce the gender binary. Finally, I hypothesize how the investigated affordances may affect the experience of lesbian, bisexual, and queer women, and transgender and non-binary users, and how they may reflect a deliberate data strategy that considers the role of algorithms.

1.1. Mobile dating applications

The origin of dating apps can be traced back to newspaper ads and matrimonial agencies, and followed along the development of the Internet in the creation of online dating sites, where strangers from any part of the world found lonely-hearts-

friendly platforms to meet others who shared similar interests and tastes. Since the 2010s, by transporting internet dating on mobile devices and introducing geo-location, mobile dating apps (MDAs) have opened new intertwining between online interaction and the more concrete dimension of reality (Blackwell *et al*. 2015). Online dating sites that focus on verbal self-presentation and personality question-naires to suggest partners still exist, but they have been surpassed in popularity by mobile dating apps. Mainstream MDAs interfaces, like that of Tinder and Bumble, tend to privilege image over verbal self-presentation, and favor engagement through a simple game (left for no, right for yes) which has been said to *gamify* the development of romantic relationships (Mackinnon 2022; Garda and Karhulahti 2021; Timmermans *et al*. 2021). Despite the 'moral panics', the popularity of these apps is now well established (Curry 2022), to the point that, according to an inquiry by the Pew Research Centre, 1 in 3 Americans was using one dating app or website in 2019 (Barroso and Brown 2021). In Italy, the YouGov poll of 2021 suggests similar proportions, with 28% of Italians who affirms having used dating apps at least once in their life (Stevanin 2021). A recent survey of Time2play suggests that 32.6% of Italians use dating apps, in particularly Tinder (67,4% of MDAs' users), the work-horse of the tech giant MatchGroup, which also owns OKCupid, Meetic, Plenty of Fish, Pairs, Our Time and 8 more apps (Marazza 2022).

People of the LGBTQAI+ community have been using these technologies for friendly, romantic and sexual encounters from the very beginning; it was Grindr, considered the most popular 'hook up' app for Men who have Sex with Men (MSM), that introduced geolocation in dating apps for the first time (Miles 2018). According to estimates of the Pew Research Centre, LGB users are about twice the number of heterosexual users in the United States (Barroso and Brown 2021), and most companies have been implementing LGBTQAI-friendly policies and design features over the years, to present their platforms as safe spaces for everyone. If, on one hand, these applications can help reduce LGBTQAI+ people's marginality by making

individuals and groups visible (Blackwell *et al*. 2015), on the other hand this same visibility brings serious risks for users who are vulnerable to harassment and violence (Pinch *et al*. 2022; Smith 2022; Birnholtz *et al*. 2020). Growing evidence is showing that mobile dating apps are sites of rampant misogyny, cyber victimization, and sexual harassment toward women (Gillett 2018) and people whose gender and sexuality are socially marginalized (Smith 2022; Owens *et al*. 2021; Jozsa *et al*. 2021; Waldman 2019). This cyberviolence must be understood as a continuum with offline violence (Vickery and Everbach 2018) and in its intersection with violence based on hierarchical relations of ethnicity, ability, age, class, and geographical location (Curington *et al*. 2021; Crenshaw 1991). Gender and sexual minoritized users face heightened risk of interpersonal violence on behalf of other users and, in some countries, institutional violence where homosexuality is penalized (Steinfield 2020). They are also vulnerable to more subtle forms of symbolic violence embedded in digital technologies' affordances and design (Bivens and Haimson 2016). These forms of violence remain underexplored, but they have the potential of negatively affecting the wellbeing of these users with misgendering, meaning the use of gender labels that do not match with a person's gender identity. This paper analyzes how gender and sexual identity are constructed on dating apps in the process of profile creation, and how the categories made available inform and concur to shape contemporary discourses on gender and sexuality.

1.2. User categorization and recommender systems of dating apps

On dating apps, like most social media, users meet through a personal profile that involves selecting several characteristics, including categorization by gender and sexuality. Gender identity is defined as a person's deeply felt, inherent sense of being a girl, woman, or female; a boy, a man, or male; a blend of male or female; or an alternative gender, which may or may not align with sex assigned at birth (APA 2015). Sexual orientation (Shively and De Cecco 1977) or, as I will refer to in

this paper, sexual identity (MacLeod and McArthur 2018) is defined as a person's sexual and/or emotional attraction to another person (APA 2015). Gender and sexual identity are distinct constructs, although deeply intertwined: sexual identity labels describe desire in relation to the gender of both the person using the label and the person toward whom their desire is directed (MacLeod and McArthur 2018), as theorized by Judith Butler (1990).

The categorization of users by gender on social platforms is affected by at least two, mostly conflicting, influences: people's motivation to characterize their profile and the platform's motivation to offer options. If people choose a gender category to create a profile and be intelligible to users and algorithms (MacLeod and McArthur 2018), platforms are driven by commercial opportunities, advertising, and data collection (Bivens and Haimson 2016). The categorization of users based on gender and sexuality plays a key role in mobile dating platforms that use a recommender system, like Tinder and Bumble (Tinder 2023; Bumble 2023). Dating apps collect and use data on gender and sexuality, age, location, and more personal information, but understanding how these 'black boxes' make use of this data to present profiles is difficult, even more so as they are proprietary algorithms (Pasquale 2015). According to Narr and Luong (2021), Tinder's and Bumble's algorithms likely favor those users who sustain more activity, conversations, and exchanges on the app. For the authors, the recommender systems of these apps are informed by the ratio of likes and non-likes, where users who receive more likes are also more likely to be recommended, creating a feedback loop whereby "more attractive" users are flooded with matches, while "less attractive" users are rendered invisible. However, Courtois and Timmermans (2018) suggest that the association between swipe activity and matches is curvilinear rather than linear, meaning that more swiping does not necessarily bring more matches. This mechanism would foster the right amount of frustration in users so to incentivize buying a

_____

premium account (*Ibidem)*. Differently, Grindr claims not to use recommender systems, but only profiles ranking based on geographical proximity, users' preferences, and filters, even though they add: 'Sometimes a little randomness is thrown in to keep results fresh' (Wiley 2023). However, Grindr and other apps for MSM have been shown to be easily breached, raising concerns for users' privacy and security, which platforms have poorly addressed (Sriram 2020).

User categorization by gender and sexuality does not only inform the recommendation algorithm of the app, affecting user experience, but it contributes to the construction and deconstruction of discourses on gender and sexuality through their materialization in the design of the artifact, in a process of continuous mediation between social arrangements and technologies (Lievrouw 2014). To study this reciprocal influence, many scholars have found in the affordance framework a useful analytical tool for this 'third' position in Science and Technology Studies (STS) between determinism and constructivism (Hutchby 2003). The term affordance has raised considerable criticism, especially for inconsistencies in its definitions and its difficult applicability, which have led to questions about its 'analytical value' (Evans *et al*. 2017). However, in this paper I advocate for the usefulness of this concept, which I use in the sense of "the multidimensional relationship between the object or technology and the user, and how that relationship offers possible (and actual) outcomes (i.e., what emerges from the user' interaction with the object)" (Evans *et al*. 2017, 5). Affordances are often interrogated to reveal how the realm of possible actions is based on and contributes to reproducing heterosexist scripts and norms, a concept expressed as *gendered affordances* (Semenzin and Bainotti 2020; Schwartz and Neff 2019). Thus, affordances are understood as the possibilities of action(s) made available by technologies, including those suggested by the design of the artifact and those unexpectedly 'developed' by users, and they are considered both in relation to the specific artifact (in this case, a mobile dating app) and in relation to each other in a polymedia environment

(Medianou and Miller 2012). The latter concept refers to understanding digital media as 'an environment of affordances' within which each individual medium is defined in relational terms in the context of all other media (Medianou and Miller 2012), supporting the relevance of cross-platform analysis.

Categorization affordances for gender and sexual identities "represent a way of understanding the role of the apps' interface in providing cues through which performances of identity are made intelligible to users of the app and to the apps' algorithms" (MacLeod and McArthur 2018, 5). These affordances are made available in the process of sign-up and profile creation on social media, which, according to Bivens and Haimson (2016), has three characteristics that contribute to the materialization of gender: sign-up pages work as mandatory steps during which data is collected, they are transitory spaces designed to be quickly surpassed, and they become increasingly immune to change over time. Dating apps, like other social media, cannot be used without a personal profile, but designers are aware that this process cannot be too long to avoid tiring users before the finish, and users are prone to proceed without reflecting on the information they are giving. Yet, highlight the authors:

> It is in these moments – when we uncritically accept the categorization systems through which we are asked to identify ourselves – that we are more susceptible to recursive consequences of design decisions, such as the acceptance of the binary as normal and neutral (Ivi, 3).

If for many people this step is banal, users whose gender and sexual identity disrupt normative categories are left confronting technical difficulties, legal obstacles, and psychological distress if the available categories are incomplete but mandatory, forcing users to do misgendering to themselves to access the app (Bivens 2015). The introduction of gender as a non-binary category is recent in the

_____

ecosystem of social media. Only in 2014 Facebook introduced 56 categories to personalize gender (Bivens 2015). Yet, by forcing users to also select one in three pronouns (he, she, them), they:

> reinscribe gender as a three-option data classification and collection system, allowing FB to continue store and process data about gender in effectively the same way they had since their launch in 2014 (when male, female, and undefined constituted gender on profile pages). [...] Biven's (2015) investigation highlights the capacity of software to misgender users under the surface, burying this act of symbolic violence deep in the database. (Bivens and Haimson 2016, 5).

A similar claim is made by Garritano and the queer participants interviewed in their study on the construction of gender on Tinder and Bumble (Garritano 2021). Though Tinder introduced a nonbinary category in response to critiques of exclusion and obscuration, it also forced these users to select one of two options (man or woman) to inform the algorithm if they want to be included in searches for men or for women. "This required question nullifies the gender non-conforming option by forcing users to select a binary-aligned gender that the system and other users will use to view and comprehend them" (Garritano 2021). In their analysis of Tinder (version 6.3.2) and Bumble's gender affordances, MacLeod and McArthur (2018) claim that one's gender on dating apps is not an affordance for identity self-presentation, since it is not visible to other profiles; rather it is only a type of data used by the platform to determine which profiles to show, so to inform the recommendation algorithm. The authors suggest that:

> Accordingly, the restrictiveness of the Gender widgets may not only be an uncritical replication of assumptions about gender, but also a deliberate data strategy: having users select the gender category from which the app will draw

profiles to show them requires that those genders be intelligible not only to other users but to the algorithm that calls up profiles to display. (MacLeod and McArthur 2018, 13).

Platforms continuously change in response to public critiques, calling for novel research to shed light on the transformation of these technologies, practices, and social arrangements that shape and are shaped by the interdependent and dynamic process of mediation (Lievrouw 2014).

2. Research objectives

With a focus on platform design, this paper investigates the construction of gender and sexual identity as categories within 12 dating apps. Using the walkthrough method to explore the process of sign-up and profile creation, it considers 1) how gender and sexuality are materialized through the design of dating apps; 2) how gender and sexuality affordances in the creation of the profile inform about current discourses on gender. Through this inquiry, I propose to interrogate how these categorizations remediate the meaning of gender identity and sexual identity in their materialization on different mobile dating platforms, and the implications for users' experience.

3. Methodology

3.1. Data collection

To document the process of profile creation, we used the walkthrough method, an immersive ethnographic method to systematically analyze the various stages of profile creation (Light *et al*.2018; Burgess *et al*. 2015). Developed as a method in HCI research to evaluate whether users respond to an interface in the ways its

designers intended, here it is used to "illuminate material traces of those intentions and thereby to critically examine the workings of an app as a sociotechnical artifact" (Light *et al*. 2018, .6). The walkthrough method is grounded in an understanding of society and technology as mutually shaping and examines affordances as the perceived actions available on a technology as a function of the relation between social and material influences (Light *et al*. 2018). Building on scholarship from cultural studies, apps are understood as cultural objects which are analyzed in their symbolic and representational elements, as well as in their material elements. As described by Light *et al*. (2018), the method comprises two phases: investigating the environment of expected use and the technical walkthrough. Phase one involves understanding the socioeconomic and cultural aspects of platforms, by examining the apps vision on the purpose, target users, and scenarios of use, describing the operating model in terms of business strategy; for this purpose, data was collected from the apps' descriptions on the Apple App Store and market analytics. Phase two involves the researcher engaging with the apps' interface and analyzing user interface arrangement, functions and features, textual content and tone, and symbolic representation. Depending on the scope of the research, the method can be employed to investigate registration and entry, everyday use, and/or discontinuation of use. For this paper, we aimed at analyzing registration of a new profile. Data was collected using field notes and screenshots.

Between October and November 2021, a total of 15 mobile dating apps were downloaded from the Apple App Store if available in English or Italian. The selection of apps aimed at creating a sample of apps targeting diverse groups in terms of gender and sexuality, according to the app's description, ads, logo, and name. Of the initial sample, three apps were discarded almost immediately due to technical problems with creating the profile or because no longer available; the final sample includes 12 apps: Grindr, Tinder, Badoo, Once, happn, Feeld, Romeo, Her,

Zoe, OkCupid, and Taimi. To account for changes in the platforms, a second round of data collection was completed in January 2023.

3.2. Data analysis

Gender and sexuality were analyzed on the level of environment of expected use considering the description on the Apple App Store, which informed on the apps vision (purpose, target users, and scenarios of use) and operating model (business model). To complement information on the operating model we also considered the market analytics (Curry 2022). Secondly, we analyzed gender and sexuality self-categorization affordances in the process of profile creation, considering the following: - *definition of gender and sexuality* as either mandatory or not mandatory during the process of profile creation; - *gender identity categorization*, in terms of categories of the user's own gender, and – *sexual identity categorization,* in terms of categories of the user's own sexual identity, or sexual orientation, or in terms of the preferred gender of the persons they wish to see on the app.

3.3. Positionality statement

My epistemological standpoint is that of intersectional feminism (Crenshaw, 1991). At the moment of the research, my experience with mobile dating apps is mainly circumscribed to research activities (Campaioli *et al*. 2022), though I also used Tinder during the first Covid-19 lockdown (March – May 2020) out of curiosity and for interacting with new people.

_____

4. Results

4.1. Environment of expected use

In the description on the App Store, dating apps make it clear that their purpose is to establish social interactions and relationships. Some apps define their target groups in terms of gender and sexuality, while others do not specify their target users in terms of gender and sexuality (Badoo, Once, happn, Twoo, LOVOO, Blendr). Among the apps that define a target group, all apps seem to target people of all genders and sexualities, though the choice and order of terms in the description (such as 'folkx' and 'queer'), as well as the app's name (such as 'Her'), suggest differences. For example, the choice of the word *straight* on OkCupid and Tinder suggests that those apps that target heterosexual and non-heterosexual people behold a heteronormative design. Considering these three elements (choice and order of terms and apps' name), I categorized two apps as targeting non-heterosexual women (Zoe, Her), two targeting non-heterosexual men (Romeo, Grindr), four targeting heterosexual and non-heterosexual people (Tinder, Bumble, OkCupid, Feeld), and one targeting the LGBTQAI+ community (Taimi). Two apps specifically address non-monogamous relationships and encounters (Feeld, Taimi), while apps like Tinder discourage these relations by prohibiting couple's profiles (Tinder 2023a).

All the investigated apps use a freemium business model, which makes some affordances available for free, while reserving extra affordances for premium users who purchase a subscription or in-app credit (Nieborg 2016). The only exception is Taimi, which is only available through subscription. Globally, MDA users are estimated to be more than 300 million, of which about 20 million would be premium users (Curry 2022). The dating app market made $5.61 billion revenue in 2021,

with almost $3 billion made by MatchGroup, which possesses the most popular dating app in the U.S., Tinder, while the Bumble group owns the most popular app in Europe, Badoo (*Ibidem*).

All apps have community guidelines, suggesting users which behaviors are appropriate and which not. Guidelines always mention that harassment will be taken seriously, that true identity is fundamental, and that any other use of the app that is not for social meeting – including research – will lead to account deletion.

4.2. *Technical walkthrough*

To access the app, users must create a profile by answering a series of questions which almost always include defining one's gender and sexuality. Only four apps do not obligate users to define their gender and sexuality: Grindr, Romeo, Her, and Zoe; all the other apps force users to categorize themselves to continue creating the profile. The way the question is posed, and the available response options differed across apps. For gender identity, apps can be grouped in four different clusters: list, binary, ternary, and miscellaneous.

Apps that I grouped as *list* (Fig. 1) allow users to select their own gender choosing from a list of gender identity labels (Grindr, Romeo, Feeld, Her, Zoe); of these apps, only Feeld obligates users to fill in this information, although it allows them to change it (only twice); Her is the only app in this cluster that also allows to select a pronoun among three possible options (but not mandatorily). Apps in the *binary* cluster (Fig. 2) are those that only make available a binary choice for gender identity, whether it be man/woman or female/male (Once, happn, LOVOO); these apps do not allow users to change their gender unless contacting support. Apps in the *ternary* cluster (Tinder, Badoo; Fig. 3) present a ternary choice for gender identity, with 'woman, man, other/more' in the initial page; clicking on 'more,' users are redirected to a list of gender identity labels from which they can choose; however, they are forced to also choose between a binary option: whether they

want to be included in searches for men or for women. Finally, there are two apps in the *miscellaneous* cluster, OkCupid and Taimi (Fig. 4). OkCupid presents a ternary choice (man, woman, all) which leads to a list of gender identity labels, but, differently from the apps of the ternary cluster, it does not force users to select any other gender identifier; Taimi presents a list of labels, but it differs from the apps of the list cluster because there are only five options (male, female, trans male, trans female, non-binary), and to change gender users must contact support; Taimi allows to select a pronoun, but it is not mandatory. Romeo and OkCupid are the only two apps where users can select more than one gender identity.

As for sexual identity, apps can be grouped in three clusters: list, ternary, and miscellaneous. Five apps (Tinder, Badoo, Once, happn, LOVOO) provide a ternary choice for the gender of people that the user wants to be shown ('You are looking for… man, women, both'); Tinder also forces users to define their sexual identity choosing from a list of 10 labels (prefer not to say is not an option). All the apps from this cluster allow users to change their preference of the gender of the people they want to be shown. The list cluster includes five apps (Grindr, Romeo, Feeld, Her, Zoe) which provide users a list of sexual identity labels from which to choose, under a widget variously named 'orientation', 'sexual identity', or 'I am'. All of them allow users to change their preference, but only Her shows definitions for each label. Once again, OkCupid and Taimi were grouped as miscellaneous as they differ from the other apps; OkCupid presents a ternary choice that asks users whether they 'want to date' men, women, or 'see all'; yet, clicking on the latter, a list of sexual identity labels is shown, and users can select any of these categories, different from the apps of the ternary cluster. On Taimi, users can choose their sexuality from a list of labels (including 'prefer not to say'); however, they are also forced to select their dating preferences from a list of five options (male, female, trans male, trans female, non-binary).

		Gender and sexuality target groups	*Gender and sexuality definition*	*Gender identity*	*Sexual identity*
1	*Tinder (13.24.0)*	Straight, gay, bisexual or anything in between	Mandatory	Ternary + list (Binary). Can be changed.	List. + Ternary. Can be changed.
2	*Badoo (5.295.0)*	Unspecified	Mandatory	Ternary + list (Binary). Can be changed.	Ternary. Can be changed.
3	*Once (2.14.9)*	Unspecified	Mandatory	Binary (male/female). Contact to change.	Ternary. Can be changed.
4	*happn (9.57.1)*	Unspecified	Mandatory	Binary (man/woman). Contact to change.	Ternary. Can be changed.
5	*LOVOO (141.1)*	Unspecified	Mandatory	Binary (female/male). Cannot be changed.	Ternary. Can be changed.
6	*Feeld (6.2.3)*	Couples and singles of all genders and sexual identities	Mandatory	List. Can be changed twice.	List + looking for (list) Can be changed.
7	*Romeo (3.24.3)*	Gay and bi guys and trans people	Not mandatory	List (multiple choice allowed). Can be changed.	List + looking for (list) (multiple choice allowed).

				Can be changed.
8	**Grindr (8.24.2)**	Gay, bi, trans and queer people	Not mandatory	List. Can be changed.	List. Can be changed.
9	**Her (6.16.19)**	Lesbian, queer & bi, non-binary, trans and gender nonconforming women and folkx	Not mandatory	Pronouns + List (with definitions) Can be changed.	List (with definitions) Can be changed.
10	**Zoe (3.5.9)**	Lesbian, bisexual and queer women	Not mandatory	List. Can be changed.	List. Can be changed.
11	**Taimi (5.1.202)**	LGBTQ+ community, dating and polyamour	Mandatory	List + pronouns (not mandatory). Contact to change.	List + 5-option preference
12	**OkCupid (71.2.0)**	Straight, gay, lesbian dating or anything in-between	Mandatory	Ternary + list. (multiple choice allowed). Can be changed.	Ternary + list. (multiple choice allowed). Can be changed.

Table 1 - Apps analyzed for this study using the walkthrough method

To complete the table, missing information was updated in January 2023. Legend of colors:

yellow=ternary cluster;

orange=binary cluster,

light green=list cluster,

light blue=miscellaneous cluster

Two apps show the gender and or sexual identity on your profile (Feeld shows both gender and sexual identity; Once only the sex through the emojis of female or male). Six apps (Her, Zoe, Grindr, Romeo, Tinder, Badoo) allow users to choose whether they want this information to be visible or not. Four apps (OkCupid, happn, Taimi, LOVOO) do not afford showing gender and sexual identity on the profile.
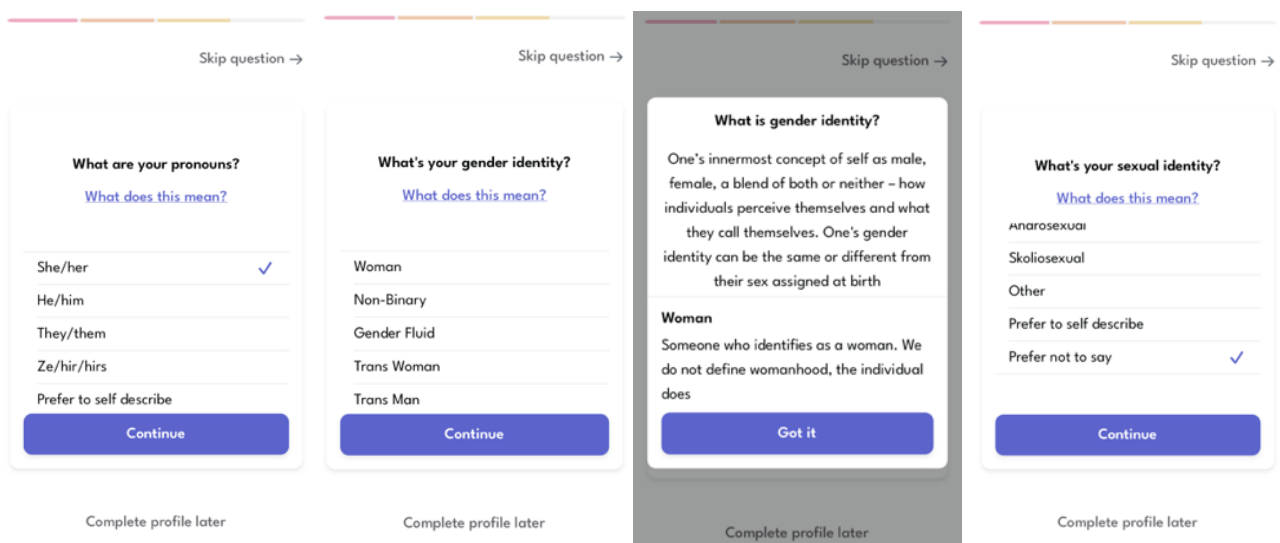

Fig. 1 - Her's gender and sexual identity categorization affordances are examples of the list cluster; apps of this cluster do not make self-categorization mandatory, and Her also makes available definitions and choice of pronoun
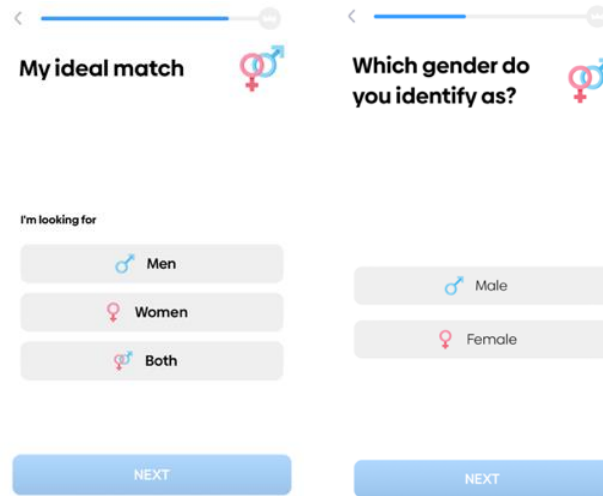(*Source*: screenshots retrieved from the data collection)

Fig. 2 - Once is an example of the binary cluster for gender identity and ternary cluster for sexual identity. (*Source*: screenshots retrieved from the data collection)
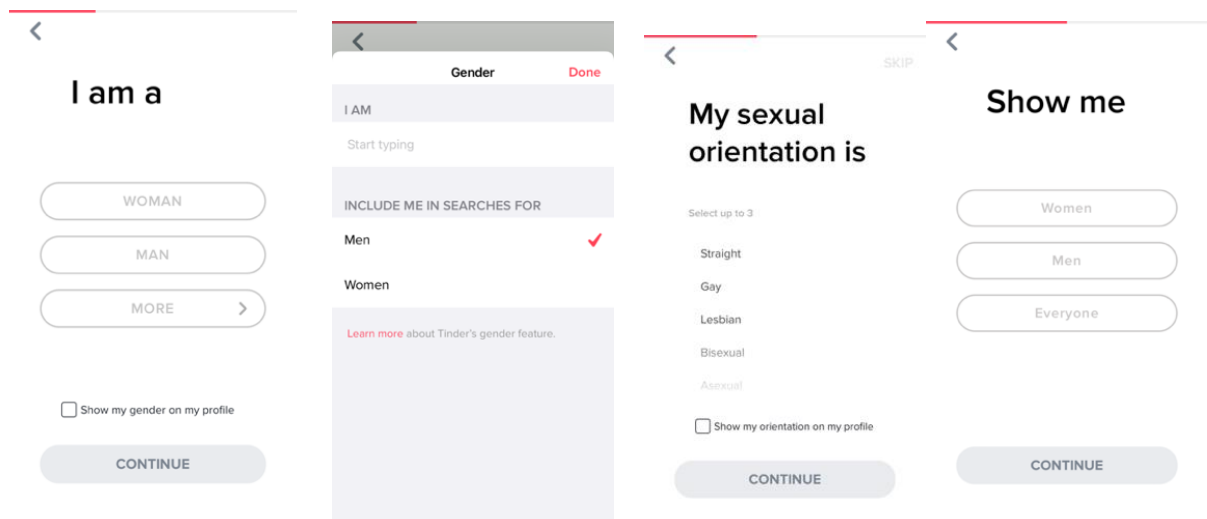

Fig. 3 - Tinder's gender and sexuality categorization affordances are an example of the ternary cluster. Tinder allows to show gender and sexual identity on the profile, but it maintains a binary understanding of gender through the 'include me on searches for' widget (mandatory) and, relatedly, in the 'show me' page.
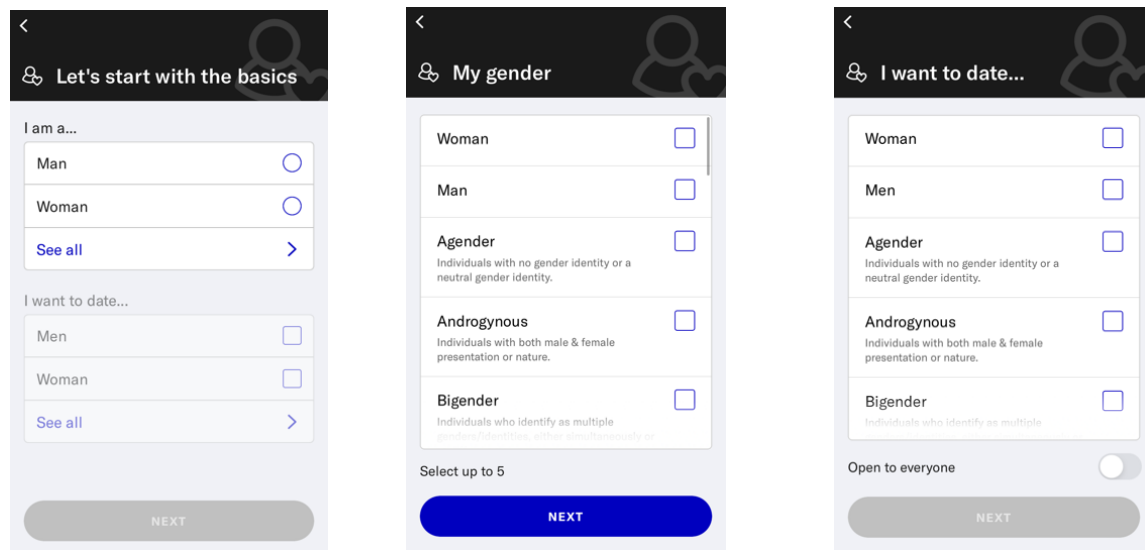(*Source*: screenshots retrieved from the data collection)

Fig. 4 - OkCupid's gender and sexual identity categorization affordances are an example of the miscellanous cluster (*Source*: screenshots retrieved from the data collection)

5. Discussion

This study aimed to explore how gender and sexual identity are materialized and perpetuated on MDAs through affordances of categorization in the process of profile creation, using the walkthrough method with 12 dating apps (Grindr, Tinder, Badoo, Once, happn, Feeld, Romeo, Her, Zoe, OkCupid, LOVOO, Taimi). Apps can be grouped in four clusters that characterize the way gender is materialized in the creation of a new-user profile, namely list, binary, ternary, and miscellaneous, and in three clusters for affordances of sexual identity categorization, namely list, ternary, and miscellaneous. Some apps afford a binary categorization of users' own gender, where only two options are available; these apps afford categorization of users' sexuality in terms of gender of the person they are looking for, with three options (men, women, both). The rigid binary of these apps shows that the word gender, employed to ask participants to define themselves, is in fact used as a

_____

formal variant of sex. It is noteworthy that the apps of the binary cluster do not show any mention to gender and/or sexuality of their target group(s) in the description on the App Store.

This cluster of apps clearly differs from the list cluster (5 apps), which includes apps that allow users to identify themselves using gender and sexual identity labels, choosing from a list of several terms; four of these apps do not force user to self-categorize in terms of gender and sexuality, an exception compared to the other apps, which make this categorization mandatory. The apps of this cluster quite clearly address LGBTQAI+ people through the language in the description on the app store. Among these, the app Her stands out as the only one that also affords users to select a pronoun (not mandatory) and provides definitions for the available labels (including the definition of gender identity and sexual identity). The ternary cluster, which includes the popular apps Tinder and Badoo, affords categorization that looks inclusive to people of all genders and sexuality, but hides a binary categorization: on these apps, users can choose gender identity labels from a list, but they are then forced to select one of two options, defining whether they want to be included for searches for men or for women (mutually exclusive). Tinder also allows to choose a sexual identity label from a list, though it then forces to choose the gender of the profiles that the user wants to see among three possible options: women, men, or both. Finally, two apps were categorized as miscellaneous as they showed mixed characteristics of the list and ternary clusters; OkCupid for example allows to self-identify with any, and as many, labels as the user desires, but the widget resembles the apps of the ternary cluster, with a 'man, woman, more' design. However, different from the apps of the ternary cluster, once the user clicks on the list, they can choose any label without having to then select one of two genders.

The apps of the binary cluster can be said to reproduce a hegemonic understanding of gender as binary, and as heterosexuality as the norm; after all, when

gender and sexuality go unspoken – as it is in their description on the app store – they tend to be implicitly binary and heterosexual (Brake 2012; Butler 1990; Hollway 1984; Rich 1980). The apps of the list cluster appear to strive for greater inclusivity, as suggested from their target group description, the non-mandatory categorization, the freedom of choice. The cluster named ternary, quoting Bivens and Haimson (2016), shows "the capacity for software to misgender users under the surface, burying this act of symbolic violence deep in the database" (p. 5).

The category of the 'other' may be seen as a step towards greater inclusivity, as it accommodates gender-non-conforming users better than a binary categorization (MacLeod and McArthur 2018). As noted by Bivens and Haimson (2016), when Google+ introduced the category of 'other' in the design of the sign-up page as the only non-binary possibility in 2011 was followed by public criticism (Truitt 2011), because "this classification system leaves the binary intact – in a privileged, normalized position- while relegating irrelevant anyone who does not identify with a catchall 'other' category" (p. 4). This categorization and similar ones have been rejected as a gender coding scheme by the GLBT round table of the American Library Association (GLBTRT Task Force on RDA, 2015, cited by Bivens and Haimson 2016). On MDAs of the ternary cluster, the category of the 'other' was not the only non-binary identity, but, 1) it was designed as an umbrella option under which all non-conforming genders were collated, relegating these identities to another page, not visible at first glance, 2) it 'nullifies the gender non-conforming option by forcing users to select a binary-aligned gender that the system and other users will use to view and comprehend them' (Garritano 2021). Consequently, gender non-conforming users may have to misgender themselves for the sake of the functionality of the app. Users employ other features to present themselves with the correct gender and/or sexuality, such as bios and pictures, often using queer culture symbols (e.g. rainbow), terms (e.g. femme), and appearance (e.g. clothing and posture) (Smith 2022). However, accounts from the popular press suggest that

queer and transgender users, frustrated with the strict categories and/or unexplained bannings of Tinder, move to apps like Her and OkCupid, which allow dynamic and plural self-categorizations of gender and sexuality (Shadel 2019).

As for sexuality, most apps frame it as ternary by allowing users to choose between three options (men, women, both) that determine the profiles that the user will be shown; few are the exception to this design, where sexual identity can be selected from a list of categories. Once again, this design materializes gender as a binary category, if people can either be interested in men, women, or both. Therefore, apps with a ternary design for gender identity and apps with ternary design for sexual identity continue to reproduce a binary understanding of gender by forcing users to define themselves and others as desirable for men, women, or both. Considering the availability of plural gender identity labels on the apps of the ternary cluster, the permanence of a binary categorization of gender is likely to be a deliberate data strategy connected with making gender intelligible to the app's algorithms, as I explore in the next paragraph. However, I find noteworthy that most apps frame sexuality as ternary, suggesting an overall acceptance of bisexuality which deserves to be further investigated.

Gender and sexual identity categories that users select during the creation of their profile appear to be a data collection strategy that informs the algorithm, more than self-presentation affordances (Bivens and Haimson 2016). Among the analyzed apps, only two showed gender and/or sexual identity on the profile (Feeld, Once), some allowed to show it or not (Her, Zoe, Grindr, Romeo, Tinder, Badoo), but the others (OkCupid, happn, Taimi, LOVOO) did not show it. Why is this information mandatory on most apps and what is its use? How does this affect the experience of users in general and, specifically, of gender-non-conforming users? "Affordances represent a way of understanding the role of the apps' interface in providing cues through which performances of identity are made intelligible to

users of the app and to the apps' algorithms," claim MacLeod and McArthur (2018, 5). Yet, little is known to date of how dating apps algorithms work.

Although all apps allowed users to change the sexuality identifiers, the apps of the binary cluster do not let users change their gender unless contacting support. According to MacLeod and McArthur (2018) dating apps that do not allow users to change their gender reify "the assumption that gender is both binary and static" (p.11), in an effort to prevent "men frustrated with the app's restriction on their messaging abilities from circumventing the restriction by temporarily adopting the female label" (p. 11). Differently, all the other apps (except for the miscellaneous Taimi) allowed to change gender at least twice, which accounts for a more dynamic understanding of gender identity.

Research and popular press suggest lesbian and queer women are continuously recommended cis-gender-presenting men, heterosexual couples, and heterosexual women, despite setting their profile to be shown only women (Smith 2022; Ferris and Duguay 2019; O'Hara 2019). When contacting the Tinder team for support, lesbian journalist O'Hara was told that:

> Tinder is the most used app by LGBTQ women and we are proud to serve this community. Inclusion is a core value and we are constantly working to optimize the user experience. We have identified that, sometimes, users may either purposely or inadvertently change their gender and consequently, are shown to users seeking other matches. The only way to prevent this from happening would be to restrict users from changing their gender, which is not a product change we are willing to make (O'Hara 2019).

Paradoxically, her discomfort was discarded framing the situation as an inclusivity issue (O'Hara 2019). Trying to make sense of this permeation within the boundaries of an imagined "gay tinder", queer women who participated in Ferris and Duguay's (2019) study hypothesized that some men set their gender to female

to appear in searches of Women who have Sex with Women (WSW) and "potentially sway their desire" (p. 8) or that it may be due to a glitch. Though apps that allow to change gender account for a dynamic understanding of gender, this affordance may indeed be used by frustrated users to increase their opportunities of matching. Alternative explanations accounting for the experience reported by O'Hara (2019) and Ferris and Duguay's (2019) participants may have to do with the algorithm of dating apps and the political economy of the platform. Demographic statistics of dating apps users suggest that the number of male-identifying users outnumbers female-identifying users at least two-to-one (Hess and Flores 2016). May the algorithm be pushing profiles of men to make up for the lack of 'cards' in the deck?

The Tinder support team told O'Hara that it was impossible that she was recommended profiles whose users identify (at least on the app) as cisgender men. What is known is that social media companies, including dating apps, combine demographic data with behavioral data collected through continuous surveillance, recalibrating categories based on digital traces (Zuboff 2020; Cheney-Lippold 2011). "This feedback loop has the effect of perpetually conditioning us through recommendation algorithms, imperceptibly nudging us toward conformity" (Bivens and Haimson 2016, 2). We also know that algorithms can be biased in a way that reproduces existing power relations, discrimination, and exclusion (Birhane 2022). May the algorithm be biased towards compulsive heterosexuality (Rich 1980)?

Courtois and Timmermans (2018) investigated the proprietary algorithm of Tinder using conceptual framework that considers the relations between platform designers and developers, users, and algorithms. The authors showed that the association between swipe activity and number of matches is curvilinear, meaning that increasingly swiping does not necessarily bring to more matches. They suggest that

Tinder may be deliberately incorporating mechanisms that "frustrate users to convert them into paying customers" (p. 13). May the platform purposefully frustrate user by showing them undesirable profiles to nudge buying a premium profile?

Future research should investigate the experience of queer and lesbian women to understand how common it is to experience this permeation of cis-looking men and heterosexual women within their 'gay tinder' (Ferris and Duguay 2019), and address the experience of queer, transgender and non-binary users in the process of self-categorization. Indeed, there is a need of more research that looks at the experience of lesbian, queer, bisexual women, and transgender and non-binary people. Likewise, future research should further elucidate the functioning of dating apps algorithms, to understand how they influence the experience of users.

6. Conclusions

This study investigated how gender and sexuality are materialized through self-categorization affordances in the profile creation of a new user of Mobile Dating Apps, with a cross-platform analysis of 12 dating apps. Findings show that some apps materialize a clearly binary and static understanding of gender, while others account for gender and sexual pluralism by not forcing self-definition, granting changes, and providing a list of gender and sexual identity labels. However, popular apps like Tinder and Badoo hide a binary construction of gender, probably collected to inform the recommendation algorithm of the app, possibly affecting the experience of gender non-conforming users with misgendering. To our knowledge, this is the first study that considers and compares such a variety of apps. While the technical walkthrough of the apps' interfaces is extended and thorough, the analysis of the environment of use is limited, and should be expanded with further consideration of the governance of each app. Future studies should involve LGBTQ+ users in co-constructed research to understand how their experience of dating apps

_____

is influenced by gender and sexuality self-categorization affordances, further exploring the nexus with recommender systems.

References

American Psychological Association (2015), Guidelines for Psychological Practice with Transgender and Gender Nonconforming People, in *American Psychologist*, vol. 70, no. 9, pp. 832-864.

Aviles, G. (2019), Tinder introduces safety feature to protect LGBTQ travelers, in "NBC News" - https://www.nbcnews.com/feature/nbc-out/tinder-introduces-safety-feature-protect-lgbtq-travelers-n1034191

Blackwell, C., Birnholtz, J., and Abbott, C. (2015), Seeing and being seen: Co-situation and impression formation using Grindr, a location-aware gay dating app, in *New Media and Society*, vol. 17, no. 7, pp. 1117–1136 - https://doi.org/10.1177/1461444814521595

Barroso, A., and Brown, A. (2021), *For Valentine's Day, 5 facts on relationships and dating in the U.S. In Pew Research Center* - https://www.pewresearch.org/fact-tank/2021/02/11/for-valentines-day-5-facts-on-relationships-and-dating-in-the-u-s/

Birhane, A. (2022), The unseen Black faces of AI algorithms, in *Nature*, vol. 610, pp. 451-453.

Birnholtz, J., Rawat S., Vashista R., Baruah D., Dange A. and Boyer A.-M. (2020), Layers of Marginality: An Exploration of Visibility, Impressions, and Cultural Context on Geospatial Apps for Men Who Have Sex with Men in Mumbai, India, in *Social Media*, 11.

Bivens, R. (2015), The gender binary will not be deprogrammed: Ten years of coding gender on Facebook, in *New Media & Society*. Advance online publication - https://doi.org/10.1177/1461444815621527

Bivens, R., and Haimson, O.L. (2016), Baking Gender into Social Media Design: How Platforms Shape Categories for Users and Advertisers, in *Social Media + Society*, vol. 2, no. 4, 205630511667248 - https://doi.org/10.1177/2056305116672486

Brake, E. (2012), *Minimizing Marriage. Marriage, Morality, and the Law*, Oxford University Press, Oxford.

Bumble, Privacy Policy. (Mar 16, 2023) -https://bumble.com/it/privacy

Burgess, J., Light, B., and Duguay, S. (2015, May), Towards hookup apps studies: Sexual cultures, digital queers, locative media. Paper presented at the *ICA Conference*, San Juan, Puerto Rico.

Butler, J. (1990), *Gender Trouble: Feminism and the Subversion of Identity*, New York, Routledge.

Cheney-Lippold, J. (2011), A new algorithmic identity soft biopolitics and the modulation of control, in *Theory, Culture & Society*, vol. 28, pp. 164–181 - https://doi.org/10.1177/0263276411424420

Courtois, C., and Timmermans, E. (2018), Cracking the Tinder code: An experience sampling approach to the dynamics and impact of platform governing algorithms, in *Journal of Computer-Mediated Communication*, vol. 23, no. 1, pp. 1–16 - https://doi.org/10.1093/jcmc/zmx001

Crenshaw, K. (1991), Mapping the margins: Intersectionality, identity politics, and violence against women of color, in *Stanford Law Review*, vol. 43, no. 6, pp. 1241–1299.

_____

Curington, C.V., Lundquist, J.H., and Lin, K.H. (2021), *The dating divide*: *Race and desire in the era of online romance,* University of California Press.

Curry, D. (2022), Dating App Revenue and Usage Statistics 2022. On Business of Apps - https://www.businessofapps.com/data/dating-app-market/

Evans, S.K., Pearce, K.E., Vitak, J., and Treem, J.W. (2017), Explicating Affordances: A Conceptual Framework for Understanding Affordances in Communication Research: EXPLICATING AFFORDANCES, in *Journal of Computer-Mediated Communication*, vol. 22, no. 1, pp. 35–52 - https://doi.org/10.1111/jcc4.12180

Ferris, L., and Duguay, S. (2020), Tinder's lesbian digital imaginary: Investigating (im)permeable boundaries of sexual identity on a popular dating app, in *New Media & Society*, vol. 22, no. 3, pp. 489–506 - https://doi.org/10.1177/1461444819864903

Garritano, A. (2021), Inside a binary interface: the construction of gender and identity in mainstream dating apps. *Occam's Razor,* June 7, 2021 - http://occamsrazorwwu.org/volume-11-1/2021/6/6/inside-a-binary-interface-the-construction-of-gender-and-identity-in-mainstream-dating-apps

Garda, M.B., and Karhulahti, V.-M. (2021), Let's Play Tinder! Aesthetics of a Dating App, in *Games and Culture*, vol. 16, no. 2, pp. 248–261 - https://doi.org/10.1177/1555412019891328

Gillett, R. (2018), Intimate intrusions online: Studying the normalisation of abuse in dating apps, in *Women's Studies International Forum*, vol. 69, pp. 212–219 - https://doi.org/10.1016/j.wsif.2018.04.005

Hollway, W. (1984), Women's power in heterosexual sex, in *Women's Studies International Forum*, vol. 7, no. 1, pp. 63–68 - https://doi.org/10.1016/0277-5395(84)90085-2

Jozsa, K., Kraus, A., Korpak, A.K., Birnholtz, J., Moskowitz, D.A., and Macapagal, K. (2021), "Safe behind my screen": Adolescent sexual minority males' perceptions of safety and trustworthiness on geosocial and social networking apps, in *Archives of Sexual Behavior*, vol. 50, no. 7, pp. 2965–2980 - https://doi.org/10.1007/s10508-021-01962-5

Keegan, J. (2022), *How political campaigns use your phone's location to target you. The Markup* - https://themarkup.org/privacy/2022/11/08/how-political-campaigns-use-your-phones-location-to-target-you

MacLeod, C., and McArthur, V. (2019), The construction of gender in dating apps: An interface analysis of Tinder and Bumble, in *Feminist Media Studies*, vol. 19, no. 6, pp. 822–840 - https://doi.org/10.1080/14680777.2018.1494618

Malhotra, N.A., Hussen, T.S., and Fossatti, M. (2022), How to Build a Feminist Internet and Why It Matters, in *APRIA Journal*, vol. 4, no. 4, pp. 3–22 - https://doi.org/10.37198/APRIA.04.04.a1

Marazza, S. (2022), Cuori solitari sulle app di incontri. Una foto del dating online in Italia. [Lonely hearts on dating apps. A picture of online dating in Italy], in *time2play* - https://time2play.com/it/blog/cuori-solitari-su-app-incontri-una-foto-del-dating-online-in-italia/

Mackinnon, L. (2022), Love, games and gamification: Gambling and gaming as techniques of modern romantic love, in *Theory, Culture and Society*, pp.1-17 - https://doi.org/10.1177/02632764221078258

McPherson, T. (2014), Designing for difference, in *Differences*, vol. 25, pp. 177–188 - https://doi.org/10.1215/10407391-2420039

Miles, S. (2018), Still getting it on online: Thirty years of queer male spaces brokered through digital technologies, in *Geography Compass*, vol. 12, no. 11 - https://doi.org/10.1111/gec3.12407

Narr, G., and Luong, A. (2022), Bored ghosts in the dating app assemblage: How dating app algorithms couple ghosting behaviors with a mood of boredom, in

The Communication Review, pp. 1–23 - https://doi.org/10.1080/10714421.2022.2129949

Lievrouw, L.A. (2014), "Materiality and media in communication and technology studies: An unfinished project", in Gillespie, T., Boczkowski, P.J., and Foot, K.A. (eds.), *Media technologies: Essays on communication, materiality, and society*, MIT Press, pp. 21-51.

Light, B., Burgess, J., & Duguay, S. (2018). The walkthrough method: An approach to the study of apps. *New Media & Society*, vol. 20, no. 3, pp. 881–900 - https://doi.org/10.1177/1461444816675438

Lutz, C., and Ranzini, G. (s.d.), Where Dating Meets Data: Investigating Social and Institutional Privacy Concerns on Tinder, in *Social Media*, 12.

Noyb (2021), NCC and noyb GDPR complaint: Grindr fined € 6.3 Mio over illegal data sharing, in *noyb.eu* - https://noyb.eu/en/ncc-noyb-gdpr-complaint-grindr-fined-eu-63-mio-over-illegal-data-sharing

O'Hara, M.E. (Sept. 2, 2019), Looking for love on Tinder? Lesbians must first swipe past a parade of straight men. On Think, in *NBC News* - https://www.nbcnews.com/think/opinion/looking-love-tinder-lesbians-must-first-swipe-past-parade-straight-ncna1047721

Owens, C., Shrodes, A., Kraus, A., Birnholtz, J., Moskowitz, D.A., and Macapagal, K. (2021), Motivations to start and stop using sexual networking applications among adolescent sexual minority men, in *Sexuality Research and Social Policy* - https://doi.org/10.1007/s13178-021-00641-3

Oishi, T.F. (2019), *Tinder-ing desire: The circuit of culture, gamified dating and creating desirable selves* - http://hdl.handle.net/1773/45157

Privacy International, *Gender,* https://privacyinternational.org/topics/gender (Last visited Oct. 21, 2020).

Pinch, A., Birnholtz, J., Rawat, S., Bhatter, A., Baruah, D., and Dange, A. (2022), "Someone Else Is Behind the Screen": Visibility, Privacy, and Trust on Geosocial Networking Apps in India, in *Social Media*, 15.

Ranzini, G., and Lutz, C. (2016), Love at first swipe? Explaining Tinder self-presentation and motives, in *Mobile Media and Communication*, vol. 5, no. 1, pp. 80–101 - https://doi.org/10.1177/2050157916664559

Rich, A. (1980), Compulsory heterosexuality and lesbian existence, in *Women: Sex and Sexuality*, vol. 5, no. 4, pp. 631-660 - https://www.jstor.org/stable/3173834

Schwartz, B., and Neff, G. (2019), The gendered affordances of Craigslist "new-in-town girls wanted" ads, in *New Media & Society*, vol. 21, no. 11–12, pp. 2404–2421 - https://doi.org/10.1177/1461444819849897

Shadel, J.D.(2019), A queer user's guide to the wild and terrifying world of LGBTQ dating apps, in *The Washington Post,* (October 8, 2019) - https://www.washingtonpost.com/lifestyle/2019/10/08/queer-users-guide-wild-terrifying-world-lgbt-dating-apps/

Shively, M.G., and De Cecco, J.P. (1977), Component of sexual identity, in *Journal of Homosexuality*, vol. 3, pp. 41–48- http://dx.doi.org/10.1300/J082v03n01_04

Smith, M.G. (2022), Queer enough to swipe right? Dating app experiences of sexual minority women: A cross-disciplinary review, in *Computers in Human Behavior Reports*, *8*, 100238 - https://doi.org/10.1016/j.chbr.2022.100238

Steinfield, J. (2020), Forced out of the closet, in *Index on censorship*, vol. 49, no. 2, pp. 101-104 - https://doi.org/10.1177/0306422020935360

Stephure, R.J., Boon, S.D., MacKinnon, S.L., and Deveau, V.L. (2009), Internet Initiated Relationships: Associations Between Age and Involvement in Online Dating, in *Journal of Computer-Mediated Communication*, vol. 14, no. 3, pp. 658–681 - https://doi.org/10.1111/j.1083-6101.2009.01457.x

Steinfeld, J. (2020), Forced out of the closet: As people live out more of their lives online right now, our report highlights how LGBTQ dating apps can put people's lives at risk, in *Index on Censorship*, vol. 49, no. 2, pp. 101–104 - https://doi.org/10.1177/0306422020935360

Stevanin, E. (2021), La diffusione delle app di incontri in Italia. [The diffusion of dating apps in Italy], in *YouGov* - https://it.yougov.com/news/2021/01/27/la-diffusione-delle-app-di-incontri-italia/

Tiffany, K. (2019), The Tinder algorithm, explained, in *Vox* - https://www.vox.com/2019/2/7/18210998/tinder-algorithm-swiping-tips-dating-app-science

Timmermans, E., Hermans, A.-M., and Opree, S.J. (2021), Gone with the wind: Exploring mobile daters' ghosting experiences, in *Journal of Social and Personal Relationships*, vol. 38, no. 2, pp. 783–801 - https://doi.org/10.1177/0265407520970287

Tinder, Safety and Terms of Use, *Tinder Safety and Policy Center* (March 16, 2023, 2 pm) - https://policies.tinder.com/safety-and-policy/intl/en

Truitt, J. (2011), Google+ has a gender problem - https://feministing.com/2011/07/12/google-has-a-gender-problem

Tyson, G., Perta, V.C., Haddadi, H., and Seto, M.C. (2016), A first look at user activity on tinder, in *2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pp. 461–466 - https://doi.org/10.1109/ASONAM.2016.7752275

Vickery, J.R. and Everbach, T. (2018), *Mediating Misogyny*. Springer International Publishing - https://doi.org/10.1007/978-3-319-72917-6

Waldman, A.E. (2019), Law, privacy, and online dating: 'Revenge porn' in gay online communities, in *Law and Social Inquiry*, vol. 44, no. 04, pp. 987–1018 - https://doi.org/10.1017/lsi.2018.29

Wiley, S. (2023), Automated Decision Making at Grindr. Grindr's blog (Feb 1, 2023) - https://blog.grindr.com/blog/automated-decision-making-and-grindr

Wu, S., and Ward, J. (2018), The mediation of gay men's lives: A review on gay dating app studies, in *Sociology Compass*, vol. 12, no. 2 - https://doi.org/10.1111/soc4.12560

Zuboff, S. (2020), *The age of surveillance capitalism: The fight for a human future at the new frontier of power* (First Trade Paperback Edition). PublicAffairs.