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The impacts of media richness, blurriness, and beautification of online dating profile visual elements on dating outcomes

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Introduction: Online dating is a popular way for individuals to connect today, and the visual elements of an online dating profile have become an essential part of online dating. The current study examined how media richness, visual blurriness, and beautification of an online dating profile's visual elements would influence online dating outcomes.

Methods: We conducted an online dating experiment with 10 different conditions with younger adults between 18 and 35 ($n = 389$).

Results: The results showed that the richer visual elements and the beautified selfie in an online dating profile predicted a number of dating outcomes, including stronger perceived positive traits, more favorable profile assessments, and stronger dating intentions. Moreover, we found such impacts to be gendered, where beautification did not change the assessment of the male profiles but significantly improved all assessments of the female profiles.

Discussion: The findings suggested some differences in how visual variations impacted online dating and revealed some interesting differences in the expectations of online dating profile visuals.

Introduction

Tinder is arguably one of the most popular geosocial networking applications (GSNA) in the world. In 2024, Tinder reported an estimated 60 million mostly active users, and Tinder has the highest number of downloads in the global GSNA market share (Iqbal, 2025). People use Tinder for various reasons (Timmermans and De Caluwé, 2017), but Tinder has become an inseparable element of the online communication and dating ecology. Previous research has examined the influences of various factors related to Tinder use, such as Tinder profile, pick-up lines, and communication strategies, on several dating outcomes (e.g., Dai and Robbins, 2021; Ranzini and Rosenbaum, 2020; Sedgewick et al., 2017). Previous research has mainly focused on the visual elements of a Tinder profile, and differences in these visual elements often predicted different online dating outcomes (Alhabash et al., 2014; Dai and Robbins, 2021; McGloin and Denes, 2018; van der Zanden et al., 2021). For example, several studies (Dai and Robbins, 2021; McGloin and Denes, 2018; Mierke et al., 2011; Taubert et al., 2016) concluded that perceived attractiveness communicated through online dating profile pictures was a consistent and impactful predictor of several dating outcomes, such as positive perceptions (e.g., trustworthiness, kindness) and dating intentions. However, the research on

the influences of visual variations of an online dating profile, such as media richness and beautification, is quite lean. Yet, based on previous research, we know that the media richness of social media content and profiles influences persuasion, message effectiveness, and other communication outcomes. Thus, the current project examines how visual variations of a Tinder profile, including media richness, visual blurriness, and image beautification, influence various dating outcomes.

Literature review

GSNA profile

The profile is one of the most important elements of GSNAs, and most online daters primarily rely on the information in the profile to make decisions on communication. Different GSNAs afford different levels of information about the users. On Tinder, the profile allows users to see a condensed amount of demographic information (e.g., username, age, location, gender, sexual orientation, job, and school) along with a visual element (e.g., pictures, video). Users usually make a speedy decision to either swipe "left" or "right" based on their impressions; a match would be made if both users swipe "right," and more opportunities to chat and communicate would appear. A previous study (van der Zanden et al., 2021) used eye-tracking technologies to examine what people paid attention to in a dating profile. They concluded that while "both the pictorial and textual cues affected impression formation," pictures in a dating profile were more likely to grab people's initial attention, while textual information served as secondary cues for impression formation (van der Zanden et al., 2021). Undoubtedly, the visual element of a dating profile is highly important for self-representation and impression management for online dating (Hancock and Toma, 2009; Gibbs et al., 2016; Toma and Hancock, 2010). The previous literature has examined how several pictorial factors (e.g., perceived attractiveness) would influence online dating outcomes (Dai and Robbins, 2021; McGloin and Denes, 2018; Ranzini and Rosenbaum, 2020; Taubert et al., 2016). For example, Dai and Robbins (2021) conducted an online experiment with several different Tinder profiles and pick-up lines. They found that the profile pictures' perceived attractiveness was the strongest predictor of dating intention, especially among male Tinder daters. Perceived attractiveness was a stronger predictor than the perceived positive traits (e.g., kindness) and types of pick-up lines used.

Media richness

Media richness refers to the level of information a medium offers in the communication exchange (Daft and Lengel, 1986). The "richness" of a medium is based on "the availability of immediate feedback, multiple cues, language variety, and personal focus" (Ishii et al., 2019, p. 1). Traditional media richness research has primarily been conducted in the context of interprofessional communication and workplace productivity (Dennis and Kinney, 1998). Media richness has later been extended to interpersonal, educational, and social media communication contexts (Ishii et al., 2019). For example, a previous study tested Instagram users' perceptions and behavior (Lee and Borah, 2020). They found that perceived media richness

predicted self-representations on Instagram, which then predicted friendship development.

Previous research has examined the impacts of media richness in the online dating context. It was hypothesized that a richer media format would lead to a higher perceived social presence, leading to better impressions, better content recall, and a higher likelihood to engage (Lee et al., 2011; Mierke et al., 2011). In one study, participants were randomly assigned to a text-only, text-and-audio, or text-and-video dating profile (Lee et al., 2011). The results showed that the richer profile format predicted a stronger perceived social presence of the person in the dating profile and better recall of the content in the profile. In another study, Mierke et al. (2011) created online dating profiles of "a short video-clip, per audio-trace, in a written text that was accompanied by a photo or by written text only" (p. 49). They found that the video format of the dating profile generated a more favorable impression and intention to contact the person in the dating profile. Thus, based on media richness theory and the current literature, we propose the current hypothesis.

H1: A Tinder profile with richer visual cues will predict a) a more favorable profile assessment, b) stronger perceived positive traits, and c) stronger dating intentions.

Visual blurriness

In addition to media richness as a potentially influential visual variation in a dating profile, previous studies have examined how different levels of visual quality in a dating profile influence online dating. For example, van der Zanden et al. (2020) tested the effects of having a visible versus blurred dating profile picture on online dating outcomes. They found that those who viewed a blurred profile picture reported less favorable perceptions of the physical attractiveness than those who viewed the same picture in the visible version. This is probably because blurred profiles may obscure users' identities (David and Cambre, 2016) and impede people from evaluating someone's physical appearance (van der Zanden et al., 2020). Therefore, users are more likely to present themselves fully through visible profiles and appreciate similar profiles (Su and Hu, 2019). Consequently, a study (Pruchniewska, 2020) found that most female users swiped left on blurry and obscured Tinder profiles due to a sense of untrustworthiness. Similarly, Degen and Kleeberg-Niepage (2021) referred to a profile with a person covered face by objects as the "incognito" type. Degen and Kleeberg-Niepage (2021) suggested that the "incognito" type of Tinder profiles constructs exclusivity and mystique, which may impede users from resonating with strangers they hardly recognize. Thus, we proposed the following hypothesis based on the current literature:

H2: A visible Tinder profile will predict a) a more favorable profile assessment, b) stronger perceived positive traits, and c) stronger dating intentions than a blurry one.

Visual beautification

Beautifying a dating profile picture is a common practice among online daters (Toma and Hancock, 2010), and it refers to enhancing

self-representation in online dating profile by emphasizing or embellishing the visual with more socially desirable beauty features (e.g., slim waistline) by using techniques such as cosmetic, image editing, styling, and so on. Two studies tested how image enhancement or "beautification" has impacted online dating (McGloin and Denes, 2018). For example, McGloin and Denes (2018) conducted a two (male and female) by two (enhanced and unenhanced profile picture) experiment to explore the effects of beautification on assessments of attractiveness in online dating. The result showed that beautified profiles were perceived as more attractive. In addition, women assessed men in beautified profiles as more trustworthy, whereas men assessed women in beautified profiles as less trustworthy. In terms of dating intentions, perceived attractiveness predicts individuals' dating desire; perceived trustworthiness positively affects users' dating desire, but the correlation is not significant (McGloin and Denes, 2018). However, this study reached inconclusive results regarding how picture beautification would affect online dating outcomes and called for future studies to examine this topic further. Thus, we ask the following research question based on the previous research.

RQ1: How would visual beautification of a Tinder profile picture affect a) profile assessment, b) perceived positive traits, and c) dating intentions?

Potential moderators

Gender, relevant demographic variables, perceived attractiveness, and media richness preferences could potentially moderate the relationship between profile picture richness and dating outcomes. First, gender differences have been well documented in online dating research in terms of profile constructions, profile enhancement, impression formation, and online dating outcomes, among others (Abramova et al., 2016; Dai and Robbins, 2021; Hancock and Toma, 2009; McGloin and Denes, 2018; Mierke et al., 2011; Sedgewick et al., 2017). Second, demographic differences such as relationship status (i.e., whether someone is in a monogamous relationship or not), sexual orientation, age, and race could be significant moderators in the context of the current study. Third, perceived attractiveness has been identified as a strong and significant moderator of online dating outcomes in many articles (Abramova et al., 2016; Dai and Robbins, 2021; McGloin and Denes, 2018; Mierke et al., 2011; Toma and Hancock, 2010; Van der Zanden et al., 2020). Studies have either manipulated the level of attractiveness in an online dating profile through textual/visual cues or controlled the perceived attractiveness statistically in the analyses. Nevertheless, perceived attractiveness was an important moderator of the relationships between online dating profiles and dating outcomes. Lastly, individual differences in preferences for media richness could also influence the outcomes of the current study. A previous study has shown that males and people with higher levels of extraversion and agreeableness preferred richer media (Dunaetz et al., 2015). Such preferences, although related to demographic variables, should be controlled for in the current study. Thus, based on the previous literature on moderators to online dating outcomes related to dating profiles, we ask the following research question.

RQ2: How do a) profile picture's gender, b) relevant demographic variables, c) perceived attractiveness, and d) media richness preferences moderate the relationships between dating outcomes and profile visual variations, including media richness, visual blurriness, and image beautification?

Methods

After a discussion with a formative focus group about the Tinder profile, the current study created different types of Tinder profiles reflecting different levels of media richness (three conditions: single picture, multiple pictures, video), visual blurriness (two conditions), and visual enhancement (two conditions). Each type of profile was then created with a male and a female model. Then, we selected the most representative and appropriate elements for each condition with one additional formative focus group. Lastly, we conducted an online between-subject experiment with participants between the ages of 18 and 35. The Institutional Review Board at our institute approved all research procedures.

Materials creation

We selected Caucasian/White as the race for both models to control potential racial bias in online dating. Some evidence showed that White women reported lower preferences for dating minority men, especially Asian men, in heterosexual romantic relationships (Hwang, 2013). A panel of researchers selected the final two models as they were believed to be the most appropriate representations of "typical" Tinder users. We then conducted a formative with eight young adults between the ages of 18 and 35 who self-identified as experienced Tinder users. The focus group participants reported an average age of 24.25 ($SD = 4.13$) and an average of 3 years of experience using Tinder. Participants confirmed that a selfie was the most common type of picture you see on Tinder. They agreed that a Tinder user would often see a profile with multiple pictures of different types. They also agreed that a Tinder loop (a short repeating video) was becoming increasingly popular among highly engaged Tinder users. We then asked about two other formats of dating profiles from the previous research: audio profiles and text-only profiles. Participants said and later confirmed by the research team that an audio profile was not an option on Tinder. An interesting discussion regarding the text-only (i.e., "pictureless") Tinder profile took place. The consensus among the participants was that while a dating profile without a visual element might appear on Tinder, it would be highly unfavorably perceived by most Tinder users.

Thus, based on the focus group discussion, we operationalized media richness as three different levels of visual element that Tinder affords its users: a single picture profile, a multi-picture profile, and a video (i.e., a Tinder loop). The single profile picture that we selected was a selfie, which was the most common Tinder profile picture according to the previous research (Sedgewick et al., 2017) and our focus group participants. The multi-picture consisted of five different types of profile pictures, including a selfie, a picture with a dog, a social gathering picture, a travel picture, and a formal event picture. The video, also known as a Tinder loop, was a short repeating 3-s video, like Tinder's official advertisement. We hired one male and one female model to be featured in our Tinder profiles. We used the selfie created as the baseline for manipulations of visual blurriness and

beautification. We conceptualized visual blurriness as a blurry or visible selfie (the same one we mentioned above) and visual enhancement as a beautified or untouched selfie (the same one we mentioned above). These manipulations were achieved using Meitu, an application commonly used to digitally enhance photos. We manipulated five varying levels of blurriness and beautification using one example of a male selfie and one example of a female selfie. These different visuals were presented to the material selection focus group.

Material selection

We recruited 12 active Tinder users (no overlap with previous focus groups) to form one formative focus group to select the study's final images. The first task of the focus group was to "select the most representative and appropriate visual for each type of Tinder profile," and the participants were informed that the study was looking for "the typical profile that you would see on Tinder." Then, we presented five different examples of each profile type that we created for the focus group. The second task was to determine the appropriate level of profile picture blurriness and beatifications. The focus group selected one selfie, one profile with multiple pictures, one blurry selfie, one beautified selfie, and one video for each gender. The participants (7 women and five men) reported an average age of 24.10 ($SD = 3.17$) and were identified as active Tinder users. The final profiles will be attached as Supplementary files in the manuscript submission (which will be placed in a permanent public file repository upon publication).

Main experiment

Procedures

We conducted a between-subject experiment online. The experiment had five different types of Tinder profiles (i.e., selfie, profile with multiple pictures, blurry selfie, beautified selfie, video profile), and each type was multiplied by two genders (i.e., male, female). The participants were recruited through seven large universities in the U.S. and social media posts. Participants were first screened by their age and current residence. Only people between the ages of 18 and 35 who were living in the United States were eligible to participate. We sampled this group as our study population due to the highest usage/penetration rate of Tinder compared to any other age group. Iqbal (2025) estimated a use rate of 40% for those between the ages of 18 and 24 and 25% for those between the ages of 25 and 35. After the consent process, participants reported their age, gender, race, sexual orientation, relationship status, Tinder use, and media richness preferences. Then, we asked the participant, "For the next screen, we are going to show you someone's Tinder profile, and we are going to ask you a series of questions based on the profile that you have seen. Can you please tell us the sex of the Tinder profile you would like to see?" with three options: male, female, or both. A participant randomly viewed one of the five male profiles and then one of the five female profiles when "both" was selected. After seeing the Tinder profile(s), the survey asked a series of questions about online dating outcomes, including profile assessment, perceived positive personality traits, and dating intentions.

Participants

The final sample consisted of 489 younger adults between the ages of 18 and 35 who lived in the United States. The average age of the participants was 24.45 ($SD = 4.39$). The final sample had 202 (51.9%) respondents who identified as female, 175 (51.9%) participants identified as male, and 12 (3.2%) participants identified as gender non-binary. Approximately half of the participants ($n = 215$; 55.3%) identified as White/Caucasian. The majority of participants ($n = 316$; 81.2%) identified as heterosexual or straight. Approximately half of the participants ($n = 198$; 50.9%) reported being single. Most participants either lived by themselves ($n = 110$; 28.3%), with a roommate(s) ($n = 96$; 24.7%), or with the family ($n = 94$; 24.2%). Only a small percentage of participants reported having a child ($n = 40$; 10.3%). About half the participants were current college students ($n = 223$; 57.3%), and about half of the participants said they were religious ($n = 203$; 52.2%). The full report of demographic information is presented in Table 1.

Participants were randomly assigned to one of the 10 conditions (two profile genders by five profile types), and the number of participants who viewed each condition is presented in Table 2. Out of 389 participants, 163 (41.9%) selected to view a male profile, 164 (42.2%) selected to view a female profile, 61 (15.7%) selected to view both male and female profiles. We treated those who viewed both a male and a female profile as two individual survey responses, so we had a total of 450 responses from 389 participants.

Measures

Profile assessment

We created six items to measure participants' assessment of the visual contents in the profile. The items measured participants' evaluations of the visual contents in the profile being appropriate, appealing, fun, boring (recoded), attractive, and expressive on a 7-point Likert scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*). The higher values on the scale indicated more favorable assessments of the visual contents in the profile. The items formed a measure ($M = 4.48$, $SD = 0.98$) with acceptable reliability ($\alpha = 0.80$).

Perceived positive traits

Based on previous research (Alhabash et al., 2014), we used eight items to measure participants' perceptions of positive traits toward the person in the profile. The items measured participants' evaluations of the person in the profile as genuine, trustworthy, warm, kind, friendly, intelligent, confident, and fun on a 7-point Likert scale (1 = *Not at all*, 7 = *Extremely*). The higher values indicated more favorable perceptions of positive traits regarding the person in the Tinder profile. The items formed a measure ($M = 5.09$, $SD = 1.03$) with great reliability ($\alpha = 0.92$).

Dating intentions

We used 11 items to measure participants' likelihood of engaging in online and offline behaviors with the person in the Tinder profile (Alhabash et al., 2014). The items were modified based on the possible dating outcomes on Tinder. These items measured participants' likelihood to like him/her, swipe left (NO match) on the profile (recoded), swipe left (MATCH) on the profile, chat with him/her, ask him/her out on a date, ask to meet him/her, make out with him/her,

TABLE 1 Demographic information (total *n* = 389).

	Count (percentage)		Count (percentage)
Gender			
Male	175 (45.0%)	Non-binary	12 (3.1%)
Female	202 (51.9%)		
Race			
Caucasian/White	215 (55.3%)	Native American	20 (5.1%)
Black/African American	73 (18.8%)	Multi-racial	13 (3.3%)
Hispanic/Latinx	38 (9.8%)	Middle Eastern	8 (2.1%)
Asian/Pacific Islander	22 (5.7%)	Other	0 (0%)
Sexual orientation			
Straight	316 (81.2%)	Pansexual	6 (1.5%)
Gay/Lesbian	21 (5.4%)	Asexual	4 (1.0%)
Bisexual	37 (9.5%)	Other	5 (1.3%)
Relationship status			
Single	198 (50.9%)	Monogamous marriage	24 (6.2%)
Monogamous relationship	105 (27.0%)	Open marriage	3 (0.8%)
Open relationship	31 (8.0%)	Polyamorous	10 (2.6%)
Casual relationship	16 (4.1%)	Other	2 (0.5%)
Living situation			
By yourself	110 (28.3%)	With family	94 (24.2%)
With roommate(s)	96 (24.7%)	On campus	22 (5.7%)
With romantic partner	67 (17.2%)	Other	0 (0%)
Residency			
Urban	215 (55.3%)	Rural	24 (6.2%)
Suburban	150 (38.6%)		
Religious			
Yes	203 (52.2%)	No	186 (47.8%)
Raising child(ren)			
Yes	40 (10.3%)	No	349 (89.7%)
College student			
Yes	223 (57.3%)	No	166 (42.7%)

TABLE 2 Manipulation condition count and percentage (*n* = 450).

		Total	Profile gender	
			Male	Female
Profile type	Selfie	105 (23.3%)	52 (11.6%)	53 (11.8%)
	Multiple pictures	88 (19.6%)	42 (9.3%)	46 (10.2%)
	Video	82 (18.2%)	40 (8.9%)	42 (9.3%)
	Blurry selfie	86 (19.1%)	40 (8.9%)	46 (10.2%)
	Beautified selfie	89 (19.8%)	39 (8.7%)	50 (11.1%)
	Total	450 (100%)	215 (47.8%)	225 (52.2%)

have sex with him/her, ask for his/her phone number, video chat with him/her, call him/her, date him/her short-term, and date him/her long-term. The items were measured on a 7-point Likert scale (1 = *Extremely Unlikely*, 7 = *Extremely Likely*). Some items were recoded to where higher values indicated stronger dating intentions with the person in the Tinder profile. The items formed a measure (*M* = 4.11, *SD* = 1.68) with great reliability (α = 0.95).

Moderators

Perceived attractiveness was measured using five items from previous research (Dai and Robbins, 2021; e.g., "This person has an attractive face"). The items were measured on a 7-point Likert scale (*Strongly Disagree – Strongly Agree*). The items formed a measure (*M* = 5.06, *SD* = 1.23) with great reliability (α = 0.91). We modified an established measure (Dunaetz et al., 2015) to assess participant's preferences for media richness. Six items (e.g., "In general, I prefer communicating face to face more than by phone") were measured on a 7-point Likert scale (*Strongly Disagree – Strongly Agree*). The items formed a measure (*M* = 3.92, *SD* = 1.98) with acceptable reliability (α = 0.86).

Analysis plans

To test H1 and H2 and answer RQ1, we ran three factorial multivariate analyses of covariance (MANCOVAs). Profile assessment, perceived positive traits, and dating intention were entered as the dependent variable in each of the models. In all three models, we tested the main effects of profile gender; in each of the three models, we tested the main effects of media richness (1 = selfie, 2 = profile with multiple pictures, 3 = video), main effects of blurriness, or main effects of visual beautification. The interaction effects between profile gender and the three visual variations (i.e., richness, blurriness, and beautification) in each of the three models were tested. The covariates in all models included four recoded relevant demographic variables, perceived attractiveness, and media richness preferences. The demographic variables in the model included age, recoded sexual orientation, recoded relationship status, and recoded race. Participants' sexual orientation was dummy coded where 1 included those identified as straight (n = 350; 77.8%) and 0 included all other sexual orientations. Relationship status was dummy coded where 1 included those who were in a monogamous relationship or marriage (n = 160; 35.6%) and 0 included other relationship statuses (e.g., single, open relationship). To control for interracial influences, we dummy coded race where 1 included those who identified as White/Caucasian (n = 260; 57.8%) and 0 included all other races. We used Wilk's Lambda value, the F value, and Lambda's p-value to determine the results at the multivariate level. At the univariate level for each dependent variable, we used the F value, the p-value, and partial eta squared to determine the results. In order to further understand the main and interaction effects, we used the estimated marginal mean (EMM) and the Bonferroni pairwise comparisons of the EMMs to test whether there were significant differences between two specific manipulation conditions in a given dependent variable. The unit of analysis was recorded response (n = 450), where a participant who viewed both male and female profiles was treated as two separate responses. All results were analyzed using SPSS 27.

Results

Media richness factorial MANCOVA model

To save space, the full results of all MANCOVA models were presented in Table 3, and the full results of all univariate analyses of each MANCOVA model were presented in Table 4. In this two (profile gender) by three (profile richness) factorial MANCOVA model, there were significant main effects from profile richness and profile gender on the three dependent variables, but no significant interaction effects. In the univariate analysis of profile assessment, profile richness had significant main effects on profile assessment, but not profile gender or any significant interaction effects. The pairwise comparisons showed that participants who viewed the video profile (EMM = 5.09) reported a more favorable assessment than those who viewed the profile with multiple pictures (EMM = 4.82; p < 0.05) and the profile with one picture (EMM = 4.70; p < 0.05). There was no statistically significant comparison between the profile with multiple pictures and the profile with one picture (p = 0.18).

In the univariate analysis of perceived positive traits, profile richness and profile gender had significant main effects on perceived positive traits, but no significant interaction effects. The pairwise comparisons showed that participants who viewed a male Tinder

profile (EMM = 5.25) reported more perceived positive traits (p < 0.05) than those who viewed a female profile (EMM = 4.99). In addition, the results showed that participants who viewed the video profile (EMM = 5.25; p < 0.05) and those who viewed the profile with multiple pictures (EMM = 5.17; p < 0.05) both reported more perceived positive traits than those who viewed the profile with one picture (EMM = 4.91). There was no statistically significant comparison between the profile with multiple pictures and the video profile (p = 0.61).

In the univariate analysis of dating, profile richness and profile gender had significant main effects on dating intentions, but no significant interaction effects. Interestingly, participants who viewed a female Tinder profile (EMM = 4.29) reported stronger dating intentions (p < 0.05) than those who viewed a male profile (EMM = 3.88). Moreover, the results showed that participants who viewed the video profile (EMM = 4.25; p < 0.05) and the profile with multiple pictures (EMM = 4.10; p < 0.05) and reported higher dating intentions than those who viewed the profile with one picture (EMM = 3.68, p < 0.05). There was no statistically significant comparison between the video profile and the profile with multiple pictures (p = 0.26). Thus, H1 was partially supported by the results.

Visual blurriness factorial MANCOVA model

In this two (profile gender) by two (visual blurriness) factorial MANCOVA model, there were *no* statistically significant main effects of profile blurriness on the three dependent variables. There were statistically significant main effects of profile gender on the three dependent variables. There were no statistically significant interaction effects of profile picture type and profile gender on the three dependent variables. The univariate analysis results are presented in Table 4. Thus, H2 was not supported by the data.

Visual beautification factorial MANCOVA model

In this two (profile gender) by two (visual beautification) factorial MANCOVA model, there were significant main effects from visual beautification and profile gender on the three dependent variables, along with significant interaction effects. In the univariate analysis of profile assessment, visual beautification had significant main effects on profile assessment, but not profile gender or any significant interaction effects. The pairwise comparisons showed that participants who viewed the beautified selfie (EMM = 5.00) reported a more favorable assessment than those who viewed the unbeautified one (EMM = 4.62; p < 0.01). Examining the interaction effects closer, we found that the profile assessment on the male profile remained relatively unchanged whether the profile picture was beautified (EMM = 4.80) or not (EMM = 4.74), but the profile assessment on the female profile for the beautified version (EMM = 5.20) was significantly more favorable (p < 0.05) than the unbeautified version (EMM = 4.81).

In the univariate analysis of perceived positive traits, profile gender had significant main effects on perceived positive traits, but not visual beautification or any significant interaction effects. The pairwise comparisons showed that participants who viewed a male Tinder profile (EMM = 5.26) reported stronger perceived positive traits (p < 0.01) than those who viewed a female profile (EMM = 4.89).

TABLE 3 MANCOVA results.

IV/Covariate	F	p	Wilk's Λ	Partial η^2
Media richness model				
Media richness	7.88	< 0.05	0.90	0.04
Profile gender	15.31	< 0.01	0.82	0.11
Media richness * profile gender	0.78	0.58	0.99	0.01
Perceived attractiveness	179.18	< 0.001	0.40	0.59
Age	8.33	< 0.001	0.94	0.07
Sexual orientation	6.22	< 0.001	0.95	0.05
Relationship status	4.17	0.06	0.82	0.03
Race	0.70	0.56	0.99	0.01
Media richness preference	5.79	0.27	0.98	0.02
Visual blurriness model				
Visual blurriness	0.43	0.73	0.99	0.01
Profile gender	3.80	< 0.05	0.96	0.03
Visual blurriness * profile gender	0.74	0.53	0.99	0.01
Perceived attractiveness	171.77	< 0.001	0.37	0.63
Age	5.71	< 0.01	0.95	0.05
Sexual orientation	5.40	< 0.001	0.95	0.05
Relationship status	3.01	< 0.05	0.97	0.03
Race	0.43	0.73	0.99	0.01
Media richness preference	1.49	0.22	0.99	0.01
Visual beautification model				
Visual beautification	4.05	<0.01	0.91	0.05
Profile gender	4.55	<0.01	0.91	0.09
Visual beautification * profile gender	2.19	<0.05	0.96	0.02
Perceived attractiveness	177.12	<0.001	0.38	0.65
Age	5.89	<0.001	0.95	0.06
Sexual orientation	7.15	<0.001	0.93	0.07
Relationship status	1.64	0.18	0.98	0.01
Race	0.38	0.77	0.99	0.01
Media richness preference	1.45	0.23	0.99	0.01

IV, independent variable.

In the univariate analysis of dating intentions, visual beautification and profile gender had significant main effects on dating intentions, but no significant interaction effects. The pairwise comparisons showed that participants who viewed a female Tinder profile ($EMM = 4.35$) reported stronger dating intentions ($p < 0.01$) than those who viewed a male profile ($EMM = 3.92$). Moreover, the results showed that participants who viewed a beautified selfie ($EMM = 4.66$) reported stronger dating intentions than those who viewed an unbeautified one ($EMM = 4.14$; $p < 0.01$).

Discussion

In June 2021, Tinder announced its new feature that allows users to add the Tinder loop in profiles. It stated that Tinder is developing to be a more interactive dating environment in the post-Covid world (Bursztynsky, 2021). The new feature suggested an increasingly significant role of visual elements in the virtual dating context. Thus, the current study investigated the effects of three visual factors (i.e., profile richness, visual blurriness, and beautification) on online dating outcomes (i.e., perceived positive traits, profile assessments, and dating intentions). The result showed that a higher level of profile richness and the beautified selfie contributed to stronger perceived positive traits, more favorable profile assessments, and stronger dating intentions. Concerning gender differences, our result suggested that the beautified version of the male selfie received relatively unchanged assessments, but the beautified version of the female selfie received significantly higher assessments than the unbeautified version. The male profile pictures were perceived to have more positive traits

TABLE 4 Univariate results of MANCOVA models.

IV	DV	F	p	Partial η^2
Media richness model				
Media richness	Profile assessment	4.04	<0.01	0.04
Profile gender		2.10	0.45	0.01
Media richness * profile gender		0.82	0.63	0.01
Media richness	Perceived positive traits	4.45	<0.05	0.03
Profile gender		3.78	<0.05	0.03
Media richness * profile gender		1.06	0.29	0.01
Media richness	Dating Intentions	7.22	<0.01	0.07
Profile gender		4.48	<0.05	0.03
Media richness * profile gender		0.95	0.56	0.01
Visual blurriness model				
Visual blurriness	Profile assessment	1.12	0.30	0.01
Profile gender		1.59	0.35	0.02
Visual blurriness * profile gender		1.71	0.14	0.01
Visual blurriness	Perceived positive traits	0.88	0.65	0.01
Profile gender		2.39	<0.05	0.03
Visual blurriness * profile gender		1.03	0.53	0.01
Visual blurriness	Dating intentions	0.62	0.72	0.00
Profile gender		4.10	<0.05	0.03
Visual blurriness * profile gender		0.78	0.58	0.01
Visual beautification model				
Visual beautification	Profile assessment	3.98	<0.01	0.05
Profile gender		2.22	0.12	0.01
Visual beautification * profile gender		2.71	<0.05	0.04
Visual beautification	Perceived positive traits	1.19	0.77	0.01
Profile gender		4.69	<0.05	0.03
Visual beautification * profile gender		0.98	0.79	0.01
Visual beautification	Dating Intentions	3.98	<0.01	0.05
Profile gender		4.98	<0.01	0.06
Visual beautification * profile gender		1.15	0.09	0.02

IV, Independent Variable; DV, Dependent Variable. Each models specified six covariates, including perceived attractiveness, age, recoded relationship status, recoded sexual orientation, recoded race, and participant's media richness preferences.

than the female profile pictures, but respondents who viewed the female profile reported higher dating intentions. Our results did not find significant effects of visual blurriness on the dating outcomes. Perceived attractiveness, recoded sexual orientation, age, and recoded relationship status were identified as significant moderators of the dating outcomes.

Impacts of visual elements on online dating outcomes

The current study contributed to the lean literature by investigating how media richness influences dating outcomes in the online dating context. Unlike previous studies (e.g., Lee et al., 2011) that investigated the effects of different types of modalities (e.g., texts, audio, and video) used in online profiles, the current study focused on the variations of the visual elements of an online dating profile. We consider it especially relevant given that visual profiles play a central role in user interactions on Tinder (Krüger and Charlotte Spilde, 2020). Our study responded to McGloin and Denes (2018) call for future research to conduct controlled experiments with an examination of multiple photos, given that many users choose to self-present through multiple pictures (McGloin and Denes, 2018).

Aligned with the findings in previous research, our results showed that a higher level of profile richness contributed to stronger dating intentions, stronger perceived positive traits, and more favorable profile assessment (H1 supported). An ecological approach to social perceptions in online dating ecology could explain the result as appearances shown in visual profiles provide Tinder users with adaptive information, and "dynamic and multimodal stimulus information should have the strongest impact on perceptions" (Zebrowitz and Montepare, 2008, p. 11). The perceptions could

be senses of trustworthiness, social presence, or intimacy, which could lead to individuals' dating desire and outcomes (e.g., McGloin and Denes, 2018; Ramirez et al., 2015). It could be especially true in mobile-mediated dating environments: people desire more trust when they seek and navigate the so-called "digital transformation of intimacy" (Hobbs et al., 2017, p. 271) or "mediated intimacies" (Soro, 2019, p. 93) with others they have never met face-to-face before. On Tinder, users may experience tension between their desire for intimate relationships and their initiative to suspect others' authenticity. In other words, users may experience "mediated processes of connection and disconnection" (Keightley and Reading, 2014, p. 295). Richer media elements may provide users with more clues to create impressions, gain greater control over uncertainty grounded in the CMC dating environment, and build a stronger sense of trustworthiness and mediated intimacies (Soro, 2019). However, we did not find significant differences between a video profile and a profile with multiple pictures regarding dating intentions and perceived positive traits. One possible explanation is that profiles with multiple pictures have abundant enough media cues for Tinder users to make the assessment, especially when they view in a limited time during the accelerated swiping processes. Another possible explanation is the length of the video in the dating profile. A Tinder loop is a two-second video played on a repeated loop, and whether such a short video can provide more richness and generate better mediate intimacies should be further studied.

The current study also contributed to the literature on the effects of visual beautification on dating outcomes. Our result showed that a higher level of profile beautification leads to stronger perceived positive traits, more favorable profile assessment, and stronger dating intentions (RQ1 answered and positively supported). These results align with evolutionary theories and might not be surprising under the lens of these theories (Toma and Hancock, 2010). An evolutionary perspective holds that certain physical traits deliver clues to not only one's biological health (e.g., genetic quality and capacity to reproduce; McGloin and Denes, 2018) but also a broader range of prosocial traits (e.g., stronger social skills, favorable personalities, and higher moral performances; Griffin and Langlois, 2006). Both types of traits are important when one is searching for a date or spouse. Therefore, profiles reflecting more socially recognized beauty features may lead to better assessment and better dating outcomes. Moreover, in the current study, we only included an appropriate level of beatification decided by our formative focus group, and we did not explore profiles that are too beautiful (like McGloin and Denes, 2018). However, one should not neglect the fact that highly beautified profiles may also propose concerns of trustworthiness and profile authenticity in the CMC dating environment (Lo et al., 2013; McGloin and Denes, 2018). Highly beautified profiles can be attractive but may also bring suspicions of profile manipulation and even deception (Lo et al., 2013; McGloin and Denes, 2018).

The results did not support H2 and showed no significant effects of visual blurriness on dating intentions, positive traits, and profile assessment. One possible reason may be that we failed to manipulate the experiment stimulus to be blurry enough. As many participants could have participated in the survey over their smartphones, the differences in blurriness, which might be more apparent on a larger screen, might have become less discernible. Therefore, even those who viewed a blurry profile could still recognize the model's basic facial characteristics, gestures, poses, colors and styles of wearing, and the general atmosphere of the photo. The results may suggest that Tinder

users, especially young adults, could potentially assess and connect to online dating profiles through a sense of "romantic chemistry" (Nexø and Strandell, 2020) based on general moods and atmospheres in profiles, no matter the profiles are clear enough or not.

Gender differences in dating profile visual assessments

Previous studies have shown various gender differences in online dating regarding motivations (Sumter et al., 2017), mating preferences (Neyt et al., 2020), predictors of dating intentions (Dai and Robbins, 2021), and so on. A great number of studies have further pointed out how Tinder underlines and reinforces gender norms (Fullick, 2013), toxic masculine performances (Hess and Flores, 2018), and sexism (Amundsen, 2021). To answer RQ2, our study found significant differences in how male and female online dating profiles were perceived. First, our study revealed significant interaction effects of visual beautification and profile gender on dating intentions, positive traits, and profile assessment. Specifically, beautified male profiles received relatively unchanged assessments, whereas beautified female profiles received much more favorable assessments. Given that heterosexual participants composed the majority of our sample, the findings revealed some gender differences in what might be considered appealing or attractive in online dating profile visuals from a male versus a female user. Male daters were more attracted to beautified versions of female dating profile visuals, which further revealed gendered social norms in the mate selection process. These findings largely aligned with previous research that found men tended to place more value on facial prominence and physical appearance than women in dating (Prieler and Kohlbacher, 2017; Toma and Hancock, 2010). As evolutionary theories suggest, when searching for a prospective mate, men place greater importance on facial and body attractiveness (Toma and Hancock, 2010), while women place greater importance on resources (Buss and Schmitt, 1993). For men, attractiveness assessments derive from reproductively important traits of face and body (Fink et al., 2014). Supported by sexual objectification theory (Fredrickson and Roberts, 1997), our results underlined concerns over sexual objectification of women by showing how women's enhanced physical appearance on profiles adds worth to their values on Tinder. Notably, studies pointed out that women respond to men's preferences through self-presentation (Toma and Hancock, 2010). They also compete with other females whose larger breasts, feminine facial features, and lower waist-to-hip ratio meet men's preferences (Fink et al., 2014). In addition, while chatting in online dating, women pay attention to both their requirements for men and men's expectations of women (Su and Hu, 2019). By contrast, men only pay attention to their requirements for women (Su and Hu, 2019).

Interestingly, our result showed that respondents who viewed a male Tinder profile reported more perceived positive traits than those who viewed a female profile, but respondents who viewed a female Tinder profile reported stronger dating intentions than those who viewed a male profile. Our result indicated that male Tinder users exhibited stronger dating intentions, even though they perceived female profiles with less positive traits. The result supported previous findings of men being "chasers" and "initiators" in dating environments to perform their masculinity and gender roles among women and other men (Amundsen, 2021; Timmermans and Courtois, 2018). For example, McGloin and Denes (2018) showed that men are still willing

to message and date women with attractive profiles regardless of declining perceptions of trust. This can be led by the highly male-skewed demographics on Tinder (Dolan, 2020; Erevik et al., 2020). Men face a rather competitive dating environment, and they may need to swipe right to more profiles in order to get more matches. Another possible reason is men showed a higher motivation for casual sex and the thrill of excitement than women on Tinder (Sumter et al., 2017).

Limitations and future studies

The current study should be interpreted within its limitations. First, participants were randomly assigned to one of the 10 conditions and asked to assess profiles with unlimited time to view the profile. However, in the real-life Tinder environment, participants would swipe rapidly and continuously instead of viewing a single picture for a long time. The data was collected in a controlled experiment and might not reflect the influences of continuous Tinder usage, where perceptions of the person in a dating profile could be influenced by the people's face previously seen, known as identity invariance (Taubert et al., 2016). Therefore, future studies could further examine these visual variations through continuous profile sets and in an experiment environment that more accurately mimics the real-life Tinder experiences.

Second, the current study could have been more sensitive to the cultural differences in visual assessment, given that visual aesthetics could be culture-specific. For example, Chinese heterosexual men hold relatively conservative attitudes toward and would prefer static photo profile(s) reflecting more reservedness than video profiles reflecting more interactivity and openness (Blair and Madigan, 2016). Certain visuals used in the experiment, especially those used in the multiple-images condition, might be evaluated (by the formative focus group in the case of the current study) as off-putting or inappropriate for certain subgroups of daters. Given Tinder is a popular worldwide GSNA, it is important to interpret our findings within the characteristics of our sample, and future studies could examine the cross-cultural differences in the roles of visual elements in online dating. Lastly, there are rapid changes in GSNA platform usage trends globally and within the design of Tinder itself, so it is essential to contextualize the results when the study was conducted in 2022. Future studies could replicate the study of media richness and beatification with new GSNA platform usage trends and/or design.

Conclusion

Visual variations are prominent in Tinder users' interactions. The current study examined the impacts of visual variations on dating outcomes in mobile dating ecology and analyzed the results from social-psychological perspectives. Future studies are expected to keep exploring the visual variations and their effects on user interactions in the mobile dating ecology.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Institutional Review Board at Kennesaw State University. A waiver for written informed consent was approved by the Institutional Board at Kennesaw State University, as the data was fully collected online. Written informed consent and copyright agreements were obtained from the individuals for the publication of any potentially identifiable images or data included in this article.

Author contributions

MD: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. SX: Software, Validation, Visualization, Writing – original draft, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

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Supplementary material

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