



# Sexting Among Men Who Have Sex with Men in Hong Kong and Taiwan: Roles of Sensation-Seeking, Gay Identity, and Muscularity Ideal

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## Abstract

Prior studies found that sexting was associated with risky sexual activities and that men who have sex with men (MSM) engaged in more frequent sexting than their heterosexual counterparts. Therefore, it is pertinent to understand what factors are associated with sexting among MSM. This study explored the relationships between sensation-seeking, gay identity confusion, and muscularity ideal with sexting behaviors. An online survey was administered to 355 and 448 18–34-year-old MSM in Hong Kong and Taiwan, respectively. While the number of sexting partners and the frequency of sexting were similar across the two regions, they had different associations with psychological factors. In Hong Kong, sensation-seeking was positively related to the number of sexting partners, while in Taiwan, it was positively related to the frequency of sending sexts. In Hong Kong, MSM who were more confused about their sexual orientation had fewer sexting partners. In both regions, MSM holding a stronger muscularity ideal also had more sexting partners. Gay identity confusion and muscularity ideal were associated with sexting under pressure in Taiwan; all three psychological factors concerned were associated with sexting under pressure in Hong Kong. Overall, these results showed that some MSM found sexting to be a sensation-fulfilling activity, but some were vulnerable to sexting under pressure. Counseling services to MSM about their sexual identity and concern for muscularity are needed to prevent them from becoming victims of forced sexting. Finally, the inconsistent results for the Hong Kong and Taiwanese samples indicated the importance of considering regional specificity in sexting research.

**Keywords** Sexting · Men who have sex with men · Sensation-seeking · Muscularity ideal · East Asia · Sexual orientation

## Introduction

Sexting, defined as “sending or receiving a sexually suggestive or sexually explicit text message, a partial nude photo or video, or a fully nude photo or video” (Currin & Hubach, 2017, p. 413), has attracted scholarly attention since the early 2010s (Kosenko et al., 2017). Sexting has been repeatedly found to be associated with risky sexual behaviors, such as unprotected sex and a greater number of sexual partners (Benotsch et al., 2013; Temple & Choi, 2014; Yeung et al., 2014). Therefore, it is pertinent to understand what factors are associated with sexting behaviors.

Sexting is often linked to adolescents when it is discussed in prior literature (Mori et al., 2020). The dominant discourse around teen sexting frames such behavior as risky, deviant, and requiring educational intervention and legal protection (Dir & Cyders, 2015). However, some scholars argue that sexting is just one of the many normal and healthy methods of sexual expression in the digital age applicable not only to adolescents (Burić et al., 2021). Indeed, empirical studies found that sexting could be both sexually gratifying and self-objectifying (Liong & Cheng, 2019).

Currin and Hubach (2017) observed that research into sexting among men who have sex with men (MSM) mostly focused on adolescents, with little research focusing on adult MSM’s sexting behaviors. Furthermore, sexting research among MSM has been conducted primarily in the Global North (e.g., North America and Europe; see Currin & Hubach, 2017; Morelli et al., 2021). This study contributes to the growing literature on sexting by examining 18–34-year-old MSM living in two East Asian regions: Hong Kong and

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Taiwan. Societal attitudes toward homosexuality vary across these two regions; therefore, sexting behaviors among MSM in these regions are expected to differ. This study explores how sensation-seeking, identity confusion, and muscularity ideal—the latter two of which are particularly relevant to the MSM community—are related to sexting.

## Literature Review

### Sexting: Voluntary or Under Pressure?

Van Ouytsel et al. (2018) argued for a nuanced perspective of sexting by summarizing four conditions of sexting. First, sexting within romantic relationships is used to pursue potential romantic partners and please current partners (Strohmaier et al., 2014). In cases of prolonged physical separation, such as in a long-distance relationship, sexting is used to maintain sexual engagement between partners (Walker et al., 2013). Second, sexting is used to initiate offline sex with people other than their partners (Drouin et al., 2013). In some cases, sexting is used to replace actual physical sex to avoid pregnancy or sexually transmitted diseases (Chalfen, 2009). Third, people send sexts because of peer pressure, which is particularly prevalent among adolescents (Upreti, 2017). Studies have found a positive link between perceiving peer pressure to sext and the intent to sext (Lee et al., 2016). Peer pressure leads younger boys into sexting with girls because they would otherwise be teased as being “gay” (Walker et al., 2013). Finally, scholars exploring media socialization have argued that the consumption of sexual media content is related to sexting (Curnutt, 2012). For example, the consumption of pornography and music videos was positively associated with sexting (Van Ouytsel et al., 2014).

Other scholars have developed a typology for describing sexting motivations. For example, Bianchi et al. (2016) identified a three-factor model for sexting motivations, which includes sexual purposes (i.e., sending sexts for sexual goals), instrumental/aggravated reasons (i.e., sexting for aims unrelated to sexuality, including sexting for money or sexting under pressure), and body image reinforcement (i.e., sexting to gain social recognition).

While studies developed different methods for classifying sexting behaviors, a common distinction made is between sexting voluntarily versus sexting under pressure. This distinction is critical because sexting voluntarily with partners or strangers could be a gratifying experience that leads to intimate feelings and sexual satisfaction, whereas sexting under pressure has been associated with being threatened to have unsafe and unwanted sex, lower self-esteem, and higher levels of depression and anxiety (Kernsmith et al., 2018; Klettke et al., 2019). Psychological studies have demonstrated that pressure to reciprocate can drive compliance with a request (Regan, 1971); thus, when people receive sexts, they may feel

pressure to reciprocate. In addition, people with high anxiety tend to reciprocate because they expect that doing so may improve their relationship or avoid potential conflicts with the other person (Drouin & Tobin, 2014; Klettke et al., 2019).

### Sexting Among Men Who Have Sex with Men

In general, sexual minorities were found to sext more often than their heterosexual counterparts. In their study of adolescents and young adults in Italy, Morelli et al. (2016) found that nonheterosexual participants were more likely to be classified as “heavy users of sexting” (p. 140) than heterosexual participants. In another study among Italian adolescents and young adults, Bianchi et al. (2021) explored the different motivations for sexting by comparing heterosexual and nonheterosexual participants’ reasons for sexting. Nonheterosexual participants were found to sext more often for sexual purposes and body image reinforcement than their heterosexual counterparts.

As sexual minorities sext more frequently, they may be more susceptible to online sexual victimization, which includes the pressure to share sexually explicit images of themselves and the dissemination of their sexual images without their consent. A study among Spanish adults found that nonheterosexual participants were more likely to report online sexual victimization (Gámez-Guadix et al., 2015). Similarly, Van Ouytsel et al. (2021) found that compared to heterosexual youths, lesbian, gay, and bisexual youths were more likely to have sexted under pressure.

Several studies from the Global North have demonstrated the prevalence of sexting among MSM. In their study of 1502 young MSM in the USA, Bauermeister et al. (2014) found that 87.5% of the participants reported having sexted. Another study of 213 MSM aged 18 to 70 years old in the USA found that 62.4% of the participants had sexted (Currin & Hubach, 2017). In a Belgian study of 684 nonheterosexual men aged 18 to 77 years old, 66.4% of the participants had ever sent a sext (Van Ouytsel & Dhoest, 2022). Currin and Hubach (2019) found that American sexual-minority men sexted more often for body image reinforcement than their heterosexual counterparts, which may be due to a greater emphasis on physical perfection in urban gay culture.

### Predicting Sexting: Sensation-Seeking, Gay Identity Confusion, and Muscularity Ideal

Although scholars agree that MSM engage in more frequent sexting behavior than heterosexual people, it is still unclear what factors are associated with sexting behaviors among MSM. This study identifies three possible psychological factors.

The personality trait of sensation-seeking refers to “the seeking of varied, novel, complex, and intense sensations

and experiences and the willingness to take physical, social, legal, and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). On the one hand, this personality trait has been linked to risk-taking behaviors. For instance, a survey of 375 16–25-year-old Chinese MSM by Wang et al. (2021) found that sensation-seeking was associated with less favorable attitudes toward condom use and more unprotected sex. These associations show that sensation-seeking has predisposed MSM to engage in high-risk activities. On the other hand, people with a stronger sensation-seeking trait enjoy experimenting with novel activities to experience more intense sensations. For instance, researchers have demonstrated links between sensation-seeking behavior and the use of online dating sites and apps (Chan, 2017; Valkenburg & Peter, 2007).

Sexting may fulfill the need for sensation-seeking. First, sexting often leads to casual sex (Drouin et al., 2013; Van Ouytsel et al., 2018), which can be pleasurable and exciting because it has no obligation attached and is potentially transgressive (Farvid & Braun, 2017). Second, sexting may come with potential risks. Even in the case of voluntary sexting, the possibility that the receiver may forward the sender’s sexually explicit images to other people without their consent cannot be ruled out (Gámez-Guadix et al., 2015). In the case of sexting under pressure, this concern might lead to various negative psychological symptoms, such as anxiety and depression (Dodaj et al., 2020; Klettke et al., 2019). The thrill of developing a casual sex relationship combined with its potential risks make sexting a sensation-fulfilling activity. Champion and Pedersen’s (2015) study of predominantly straight Canadians found that people who had engaged in sexting had higher sensation-seeking needs than people who had never sexted. Similarly, a positive association between sensation-seeking and sexting behaviors may be observed among Hong Kong and Taiwanese MSM.

Apart from sensation-seeking, the extent to which MSM comfortably identify with their sexual orientation may play a role in predicting their sexting behavior. Many societies still have heteronormative assumptions about sexuality, particularly those in the Global South, where same-sex relationships are not widely embraced. Therefore, MSM are often regarded as being straight by their family and peers and struggle to accept their own sexuality (Hoang, 2019; Wang et al., 2021). According to Song et al. (2022), due to a limited discussion of homosexuality and a strong heterosexual assumption in China, some Chinese MSM were unaware of their sexuality until they were married to a woman. In a case reported by Song et al. (2022), a man only became aware of his same-sex desire ten years into his heterosexual marriage. While Cass’s six-stage model for gay identity formation was heavily criticized for its rigid linear fashion and lack of regional specificity (Goodrich & Brammer, 2021), the notion of identity confusion still matches the experience of Chinese MSM.

Gay identity is related to the use of gay-themed media by MSM. For instance, pornography is pertinent to gay identity development because it offers gay men a channel to explore their sexual interests (Giano, 2021). Chan (2017) identified a complex mechanism where gay identity confusion was associated with the number of casual sex partners one met on dating apps. He found that the intensity of dating app use moderated the relationship between sex-seeking on dating apps and the number of casual sex partners *only* among MSM who were confused about their sexual identity. His results suggested that confused individuals might use dating apps to enrich their sexual experiences and explore their sexuality (Chan, 2017). Sexting may present an opportunity for MSM who are confused about their sexual orientation to explore their identity.

Finally, this study considers the role of muscularity ideal among MSM in predicting their sexting behaviors. Masculinity and muscularity are closely related. For example, men holding more traditional gender attitudes and feeling more stressed about fulfilling masculine expectations have a greater desire to become more muscular (McCreary et al., 2005; Mussap, 2008). Connell (1992) showed that while gay men subverted the very core of hegemonic masculinity via their objects of sexual desire, their behaviors were closely in line with hegemonic masculinity: they “[acted] like a guy” (p. 748). Therefore, it is not surprising that muscularity, leanness, and athleticism are highly celebrated in contemporary gay culture (Lanzieri & Hildebrandt, 2011).

Kong (2012) observed that gay venues in Hong Kong, such as saunas, also privileged muscular bodies, while older bodies were rejected. This emphasis on muscularity is also evident in Taiwan, where, for example, gay clients mainly prefer masseurs with muscular and athletic bodies (Chen, 2018). These regional studies suggest that muscularity ideal has also pervaded the local gay culture in these societies.

Studies have explored the relationship between body image and sexting behaviors. For example, Bianchi et al. (2017) found that the greater the internalization of media models by young adults, the more they sexted to receive positive body image reinforcement. This result suggests that sexting may help individuals gain recognition about their bodies because they believe their bodies should conform to the types of sexuality portrayed in the media. A study focusing specifically on men found that higher exposure to media representations of ideal male bodies was related to their pursuit of muscularity ideal (Daniel & Bridges, 2010). Howard et al. (2021) found that people feeling unconfident about their body image had lower sexual agency; therefore, they were prone to face more pressure to engage in sex-related activities that they did not want. Based on gay culture and the media portrayal discussed above, MSM may have developed particular muscularity ideal. When perceiving being muscular as the norm in the gay community, MSM may sext less because

they feel less muscular than the ideal. However, they may sext more often to verify their attractiveness (Howard et al., 2021); therefore, the direction of association between muscularity ideal and sexting is uncertain.

## The Present Study

The present study has two main objectives: (1) to assess the prevalence of sexting among MSM in Hong Kong and Taiwan and (2) to examine the psychological factors that are associated with sexting behaviors among MSM in these regions.

Regarding the first objective, policies and attitudes toward same-sex relationships vary across the two regions. Taiwan is the only Asian jurisdiction that officially recognizes same-sex marriage, while no same-sex marriage or any form of civil partnerships is available in Hong Kong. However, having legal recognition does not imply social acceptance in Taiwan. According to the World Values Survey Wave 7 (Haerpfer et al., 2020), 41.6% of the survey respondents in Taiwan mentioned “homosexuals” as the group of people they would not like to have as neighbors; this figure was just 23.9% in Hong Kong. These figures above show that public attitude toward same-sex relationships in Taiwan is not as favorable as that of Hong Kong. Given that legal and social acceptance of homosexuality in Hong Kong and Taiwan varies, this study asks:

**RQ1:** Was sexting among MSM in Hong Kong more, equally, or less prevalent than sexting among MSM in Taiwan?

Regarding the second objective, prior scholarship reviewed above suggests possible associations between sensation-seeking, gay identity confusion, muscularity ideal, and sexting behaviors. This study is also concerned with sexting under pressure and how receiving sexts from others may constitute pressure to reciprocate (Bianchi et al., 2016; Klettke et al., 2019; Van Ouytsel et al., 2018). Three research questions are therefore proposed:

**RQ2:** How were (a) sensation-seeking, (b) gay identity confusion, and (c) muscularity ideal related to the number of sexting partners among MSM in Hong Kong and Taiwan, respectively?

**RQ3:** How were (a) sensation-seeking, (b) gay identity confusion, and (c) muscularity ideal related to the frequency of sending sexts among MSM in Hong Kong and Taiwan, respectively?

**RQ4:** How were (a) sensation-seeking, (b) gay identity confusion, (c) muscularity ideal, and (d) receiving sexts related to the frequency of sexting under pressure among MSM in Hong Kong and Taiwan, respectively?

## Method

### Participants

Participants must (1) be 18–34 years old, (2) self-identify as MSM, (3) reside in the place where the survey was conducted for the past year, (4) have either Cantonese or Mandarin as their mother tongue, and (5) be a smartphone user. In Hong Kong, the study was promoted via Facebook advertisements, gay discussion groups on the Telegram app, and the research team members’ own social media accounts. In Taiwan, the study was promoted via the gay webpages on PTT (a Reddit-like online bulletin board forum popular in Taiwan) and the research team members’ social media accounts. By clicking on a link in the promotional message, participants were led to an online survey. Although the data were drawn from a non-random internet sample, this sampling method is considered effective in accessing the hard-to-reach populations such as MSM and offering great anonymity to participants answering sensitive questions (Gama et al., 2017).

A total of 1171 survey responses were collected: 493 from Hong Kong and 678 from Taiwan. Incomplete responses, responses coming from duplicate IP addresses, and responses failing to pass the validation check were removed. IP addresses were then permanently deleted from the dataset. The final dataset consisted of 355 responses from Hong Kong and 448 responses from Taiwan; all responses were fully anonymized.

### Measures

#### Dependent Variables

##### Number of Sexting Partners

The participants were asked to report the number of sexting partners they had had in the last three months. Sexting partners were defined as people whom the participants had sent their own sexual messages, videos, or images or people who had sent the participants their own sexual messages, videos, or images.

##### Frequency of Sending Sexts and Frequency of Sexting Under Pressure

A section of the Sexting Behavior and Motives Questionnaire (Del Rey et al., 2021) was used to measure how frequently the participants had experienced certain sexting behaviors in the last three months. Their answers were 1 = *Never*, 2 = *Less than once a month*, 3 = *Monthly*, 4 = *Weekly*, and 5 = *Daily*. The answers to the related items were averaged to create an index. Six items assessed sending sexts, including sending



text messages, videos, and images to partners, people that the participants fancied, and friends. The Cronbach's alphas were 0.84/0.82.<sup>1</sup> The range of the composite measure was between 1 and 5, where a larger number indicated sending sexts more frequently.

Three items assessed sexting under pressure: "I have sent suggestive or sexual text messages, videos, or images because I felt pressured by my partner or someone I fancied," "...because I felt pressured by friends," and "...because I was threatened/blackmailed." The Cronbach's alphas were 0.93/0.82. The range of the composite measure was also between 1 and 5, where a larger number indicated more sexting under pressure.

## Independent Variables

### Sensation-Seeking

The 3-item sensation-seeking subscale of the Impulsivity and Sensation Seeking Scale (Harden & Tucker-Drob, 2011) was used to assess the participants' sensation-seeking trait. A sample item was "Life with no danger in it would be too dull for me." The items were rated on a 5-point Likert scale, where 1 = *Strongly Disagree* and 5 = *Strongly Agree*. The Cronbach's alphas were 0.81/0.80. The composite measure ranged from 1 to 5, where a larger number meant a stronger sensation-seeking trait.

### Gay Identity Confusion

The 3-item identity confusion subscale of the Lesbian and Gay Identity Scale (Mohr & Fassinger, 2000) was used to evaluate the participants' gay identity. A sample item was "I keep changing my mind about my sexual orientation." The items were rated on a 5-point Likert scale, where 1 = *Strongly Disagree* and 5 = *Strongly Agree*. The Cronbach's alphas were 0.87/0.82. The composite measure ranged from 1 to 5, where a larger number meant a more confused identity.

### Muscularity Ideal

An original scale consisting of five items was created to assess the participants' perception of muscularity ideal in the gay community. These items were generated from a pilot interview study with 18 MSM living in Taiwan. The five items were: "Everyone in the gay community wants to be muscular," "Attractive men in the gay community are usually muscular men," "Gay men like to show off their physique," "Having a muscular physique is the trend in the gay

community," and "Having a muscular physique is important in the gay community." These items were rated on a 5-point Likert scale, where 1 = *Strongly Disagree* and 5 = *Strongly Agree*. The Cronbach's alphas were 0.81/0.78. The composite measure ranged from 1 to 5, where a larger number meant stronger muscularity ideal for the MSM community.

### Frequency of Receiving Sexts

A section of the Sexting Behavior and Motives Questionnaire (Del Rey et al., 2021) was used to measure how frequently the participants received sexts in the last three months. Their answers were 1 = *Never*, 2 = *Less than once a month*, 3 = *Monthly*, 4 = *Weekly*, and 5 = *Daily*. The answers to the related items were averaged to create an index. Six items assessed receiving sexts, including receiving text messages, videos, and images from partners, people that the participants fancied, and friends. The Cronbach's alphas were 0.87/0.84. The range of the composite measure was between 1 and 5, where a larger number indicated receiving sexts more frequently.

### Control Variables

To account for the potential influence of age and relationship status (Bianchi et al., 2021; Currin & Hubach, 2017; Van Ouytsel et al., 2021), this study included these factors as control variables. A quadratic term was created for age to capture any potential curvilinear effect. This study controlled for the number of physical sexual activities (including anal sex, oral sex, and mutual masturbation) that the participants had experienced in the last three months. Finally, this study also controlled for social media use. Using a single item for each social media, this study asked the participants for their log-on frequencies for gay dating apps (e.g., Grindr, Jack'd), mainstream dating apps (e.g., Tinder), Instagram, and Twitter. The answers ranged from 0 = *Never* to 6 = *Several times a day*.

### Procedure

This study is part of a larger research project on the use of social media and dating apps among 18–34-year-old MSM in East Asia during the COVID-19 pandemic. The survey was first developed in English and then translated into Chinese. A back-translation procedure was followed to ensure that the original English meaning was retained (McGorry, 2000). The data used in this study were collected from Hong Kong and Taiwan in August and September 2021. The survey took 15–20 min to complete. The participants were compensated with HKD120 (around USD15) in Hong Kong or TWD200 (around USD7) in Taiwan. The study was approved by the

<sup>1</sup> The first and second figures refer to the Hong Kong and Taiwanese samples, respectively. The same applies to the following statistics.

**Table 1** Survey participants' demographics, social media use, psychological measures, and sexting practices

	Hong Kong ( <i>n</i> = 355)		Taiwan ( <i>n</i> = 448)	
	%	<i>M</i> ( <i>SD</i> )	%	<i>M</i> ( <i>SD</i> )
Age		25.99 (4.20)		27.81 (3.58)
Number of physical sexual activities		7.94 (8.24)		5.76 (8.16)
<i>Relationship status</i>				
Single	62.0		54.2	
Close relationship	31.5		35.7	
Open relationship	6.5		10.0	
<i>Log-on frequency (range: 0–6)</i>				
Gay dating apps		2.52 (2.53)		2.94 (2.46)
Mainstream dating apps		1.50 (2.10)		1.55 (2.22)
Instagram		5.69 (1.07)		5.26 (1.60)
Twitter		3.78 (2.05)		3.44 (2.18)
Sensation seeking (range: 1–5)		3.13 (0.90)		3.13 (0.89)
Gay identity confusion (range: 1–5)		2.18 (1.10)		2.05 (0.98)
Muscularity ideal (range: 1–5)		3.97 (0.65)		3.94 (0.64)
Number of sexting partners		3.94 (6.25)		4.49 (6.40)
Receiving sexts (range: 1–5)		2.13 (0.92)		2.03 (0.82)
Sending sexts (range: 1–5)		2.07 (0.89)		2.00 (0.80)
Sexting under pressure (range: 1–5)		1.17 (0.59)		1.15 (0.43)

Survey and Behavioral Research Ethics Board at the first author's institute.

The required sample size was pre-computed using G\*Power 3.1.9.2 software. Regression coefficients from prior studies examining sending sexts were used as references (Bianchi et al., 2016; Howard et al., 2021).<sup>2</sup> Taking (1) the expected power of the analysis as 0.95, (2) the desired level of type-I error as 0.05, (3) the number of predictors as 12, and (4) the expected effect size as 0.14 (a conservative estimate), the minimum sample size per region was 196.

## Data Analysis

The data were analyzed using SPSS software (v. 20). For RQ1, independent *t*-tests were conducted to compare the number of sexting partners and the frequency of sending sexts between MSM in Hong Kong and MSM in Taiwan. RQ2 was concerned with the number of the participants' sexting partners. Because the number of sexting partners was a count variable, a negative binomial regression analysis with a log link function was conducted. The number

of sexting partners was set as the dependent variable. RQ3 and RQ4 were addressed using two separate multiple linear regressions, setting the frequency of sending sexts and the frequency of sexting under pressure as the dependent variables, respectively.

## Results

RQ1 compared the sexting behaviors between MSM in Hong Kong and MSM in Taiwan. Table 1 provides a summary of the participants' sexting behaviors. In the Hong Kong sample, 67.3% of the participants reported having at least one sexting partner in the last three months before they completed the survey; in the Taiwanese sample, 74.3% of the participants reported having at least one sexting partner. On average, participants in Hong Kong had 3.94 sexting partners, and participants in Taiwan had 4.49 sexting partners during the same period. The independent *t*-test showed no significant difference,  $t(801) = -1.22, p = 0.22$ , in terms of the number of sexting partners between MSM in the two regions. Regarding the frequencies of sending sexts, receiving sexts, and sexting under pressure, *t*-tests showed no significant differences between the two regions either: sending sexts, equal variances not assumed,  $t(719.791) = 1.01, p = 0.313$ ; receiving sexts, equal variances not assumed,  $t(717.405) = 1.59, p = 0.112$ ; and sexting under pressure,  $t(801) = 0.62, p = 0.534$ .

Table 2 shows the zero-order correlations between the major variables. The correlations between the independent

<sup>2</sup> Prior studies did not examine the associations of the three psychological factors this study covers and sexting behaviors. However, Bianchi et al. (2016) found that sexual purposes, instrumental/aggravated reasons, and body image reinforcement were all positively related to sending sexts (all *b*s = .14, *p*s < .01); Howard et al. (2021) found that sexual risk-taking was positively associated with sending sexts (*b* = .36, *p* < .001).

**Table 2** Means, standard deviations, and zero-order correlations of major variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Sensation seeking	–	.05	.03	.13*	.12*	.07	.12*
(2) Gay identity confusion	.09	–	–.05	–.12*	.00	–.05	.06
(3) Muscularity ideal	.01	–.02	–	.16**	.05	.03	.16**
(4) Number of sexting partners	.06	.00	.14**	–	.28***	.25***	–.03
(5) Sending sexts	.15***	.03	.10*	.35***	–	.81***	.31***
(6) Receiving sexts	.20***	.04	.09	.35***	.83***	–	.35***
(7) Sexting under pressure	.11*	.11*	.10*	.06	.36***	.35***	–

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Values above the diagonal are from the Hong Kong sample while those below the diagonal are from the Taiwanese sample

**Table 3** Negative binomial regression analysis for predicting the number of sexting partners

Variable	Hong Kong			Taiwan				
	<i>b</i>	95% Wald Confidence Interval	<i>p</i>	<i>b</i>	95% Wald Confidence Interval	<i>p</i>		
		Lower	Upper		Lower	Upper		
Age	–.01	–.37	.34	.941	.38	–.05	.82	.085
Age <sup>2</sup>	.00	–.01	.01	.955	–.01	–.02	.00	.097
<i>Relationship status (reference: single)</i>								
Close relationship	–.17	–.48	.13	.270	–.19	–.47	.09	.181
Open relationship	–.04	–.54	.46	.882	.78	.42	1.14	< .001
Number of physical sexual acts	.04	.02	.05	< .001	.00	–.01	.02	.614
<i>Log-on frequency</i>								
Gay dating apps	.23	.17	.29	< .001	.18	.12	.23	< .001
Mainstream dating apps	.02	–.05	.09	.526	.04	–.01	.10	.146
Instagram	–.06	–.17	.06	.347	–.03	–.11	.05	.442
Twitter	.11	.04	.17	< .001	.16	.11	.22	< .001
Sensation seeking	.23	.09	.38	.001	.11	–.02	.24	.096
Gay identity confusion	–.12	–.24	–.01	.042	.05	–.06	.17	.372
Muscularity ideal	.21	.00	.41	.046	.25	.07	.42	.005

variables were weak. Multicollinearity was further examined through computing the variance inflation factors, which were all below 2, suggesting that no multicollinearity was present in the dataset.

RQ2 asked how the various psychological variables were related to the number of sexting partners among MSM in Hong Kong and Taiwan, respectively. Table 3 presents the results of the negative binomial regression analysis. The Hong Kong sample showed that sensation-seeking ( $b = 0.23$ , 95% CI [0.09, 0.38],  $p < 0.001$ ) was positively related to the number of sexting partners; gay identity confusion ( $b = -0.12$ , 95% CI [–0.24, –0.01],  $p < 0.05$ ) was negatively related to the number of sexting partners; and muscularity ideal was positively related to the number of sexting partners ( $b = 0.21$ , 95% CI [0.00, 0.41],  $p < 0.05$ ). In the Taiwanese sample, neither sensation-seeking nor gay identity were related to the number of sexting partners, but muscularity

ideal was positively related to the number of sexting partners ( $b = 0.25$ , 95% CI [0.07, 0.42],  $p < 0.01$ ).

RQ3 asked how the various psychological variables were related to the frequency of sending sexts among MSM in Hong Kong and Taiwan, respectively. Table 4 presents the results of the multiple regression analysis. Only sensation-seeking ( $b = 0.12$ , 95% CI [0.04, 0.20],  $p < 0.01$ ) was positively associated with sending sexts in the Taiwanese sample.

Finally, RQ4 asked how the frequency of sexting under pressure was related to the three psychological factors and receiving sexts from others. Table 5 presents the results of the multiple regression analysis. Sensation-seeking ( $b = 0.07$ , 95% CI [0.00, 0.13],  $p < 0.05$ ) and muscularity ideal ( $b = 0.13$ , 95% CI [0.04, 0.22],  $p < 0.01$ ) had positive associations with sexting under pressure in the Hong Kong sample, while gay identity confusion ( $b = 0.04$ , 95% CI [0.00,

**Table 4** Multiple regression analysis for the frequency of sending sexts

Variable	Hong Kong				Taiwan			
	<i>b</i>	95% Confidence Interval		<i>p</i>	<i>b</i>	95% Confidence Interval		<i>p</i>
		Lower	Upper			Lower	Upper	
Age	.29	.07	.54	.025	.12	-.16	.40	.411
Age <sup>2</sup>	-.01	-.01	-.00	.015	-.00	-.01	.00	.352
<i>Relationship status (reference: single)</i>								
Close relationship	.30	.10	.51	.003	.30	.12	.48	.001
Open relationship	.29	-.07	.66	.112	.58	.34	.83	< .001
Number of physical sexual acts	.03	.01	.04	< .001	.01	.00	.02	.024
<i>Log-on frequency</i>								
Gay dating apps	.04	-.00	.08	.078	.07	.04	.10	< .001
Mainstream dating apps	.04	-.00	.09	.075	-.03	-.06	.01	.152
Instagram	.05	-.03	.13	.208	-.00	-.05	.04	.940
Twitter	.10	.05	.14	< .001	.06	.03	.10	< .001
Sensation seeking	.07	-.02	.17	.135	.12	.04	.20	.002
Gay identity confusion	.03	-.05	.11	.435	.02	-.05	.09	.548
Muscularity ideal	-.04	-.17	.10	.584	.07	-.04	.18	.211
<i>F</i> value	7.50			< .001	8.75			< .001
<i>R</i> <sup>2</sup>	.21				.19			
Adjusted <i>R</i> <sup>2</sup>	.18				.17			

**Table 5** Multiple regression analysis for sexting under pressure

Variable	Hong Kong				Taiwan			
	<i>b</i>	95% Confidence interval		<i>p</i>	<i>b</i>	95% Confidence interval		<i>p</i>
		Lower	Upper			Lower	Upper	
Age	-.03	-.20	.14	.743	-.09	-.24	.07	.273
Age <sup>2</sup>	.00	-.00	.00	.665	.00	-.00	.00	.277
<i>Relationship status (reference: single)</i>								
Close relationship	-.07	-.21	.07	.311	.05	-.04	.15	.273
Open relationship	.19	-.05	.44	.121	-.05	-.19	.08	.450
Number of physical sexual acts	.00	-.02	.00	.057	.00	-.01	.00	.068
<i>Log-on frequency</i>								
Gay dating apps	-.01	-.04	.02	.401	.00	-.02	.02	.745
Mainstream dating apps	.01	-.02	.04	.428	.00	-.02	.02	.656
Instagram	-.03	-.09	.02	.232	.00	-.02	.03	.760
Twitter	.01	-.02	.04	.585	-.01	-.03	.01	.267
Sensation seeking	.07	.00	.13	.040	.02	-.02	.06	.351
Gay identity confusion	.04	-.02	.09	.170	.04	.00	.08	.042
Muscularity ideal	.13	.04	.22	.005	.06	.00	.12	.046
Receiving sexts	.23	.17	.30	< .001	.19	.14	.24	< .001
<i>F</i> value	6.10			< .001	6.09			< .001
<i>R</i> <sup>2</sup>	.19				.15			
Adjusted <i>R</i> <sup>2</sup>	.16				.13			



0.08],  $p < 0.05$ ) and muscularity ideal ( $b = 0.06$ , 95% CI [0.00, 0.12],  $p < 0.05$ ) were positively related to sexting under pressure in the Taiwanese sample. Receiving sexts was positively associated with sexting under pressure in both Hong Kong ( $b = 0.23$ , 95% CI [0.17, 0.30],  $p < 0.001$ ) and Taiwan ( $b = 0.19$ , 95% CI [0.14, 0.24],  $p < 0.001$ ).

## Discussion

Studies have consistently demonstrated that MSM participated in sexting more often than their heterosexual counterparts did (Bianchi et al., 2021; Morelli et al., 2016). Based on these findings, this study examined the factors leading to sexting among MSM. The study's focus on Hong Kong and Taiwan also complemented the predominantly Global North-focused literature. This study explored how sensation-seeking, gay identity confusion, and muscularity ideal were related to the number of sexting partners and the frequencies of sending sexts and sexting under pressure. The results showed that some MSM found sexting to be a sensation-fulfilling activity, but some were vulnerable to sexting under pressure. The results for the Hong Kong and Taiwanese samples were not always consistent, which indicated the importance of considering regional specificity in sexting research.

### Predicting the Number of Sexting Partners and Sexting Frequency

Prior research showed that sensation-seeking was associated with risky sexual activities, such as unprotected sex, and novel activities, such as the use of online dating (Chan, 2017; Valkenburg & Peter, 2007; Wang et al., 2021). This study found that, interestingly, MSM with a stronger sensation-seeking trait in Hong Kong had more sexting partners but were not more engaged in sending sexts. However, MSM with a stronger sensation-seeking trait in Taiwan were more engaged in sending sexts but did not have more sexting partners. These inconsistent results reflect that the same psychological traits can have different behavioral manifestations in different regions.

A potential explanation for these different results is related to the affordance of different social media platforms, which enables or constrains certain behaviors (Evans et al., 2017). For example, the dominant design of Grindr relies on geographic proximity; it enables users to easily locate other MSM nearby and facilitate hookup behaviors. By comparing the frequencies between the two samples in Table 1, Taiwanese MSM were found to log onto gay dating apps such as Grindr more frequently than their Hong Kong counterparts ( $t[797] = -2.47$ ,  $p < 0.05$ ), but Hong Kong MSM logged onto Twitter more frequently than their Taiwanese counterparts ( $t[797] = -2.47$ ,  $p < 0.05$ ). Given that Hong

Kong MSM preferred Twitter and that, on Twitter, they can encounter new sexual contacts through tracing retweets, replies, or other people's followers, those with a stronger sensation-seeking trait could sext to more *different* partners. However, given that Taiwanese MSM preferred gay apps, which primarily display a limited number of the *same* people nearby, those with a stronger sensation-seeking trait would not necessarily sext to *different* partners, but were likely to sext more frequently to the *same* partners. However, the changing app features such as Grindr's Explore allow users to locate others on another side of the globe, complicating the above-mentioned speculation. Future studies could conduct in-depth interviews with MSM in Hong Kong and Taiwan and evaluate whether regional differences in social media use interact with psychological factors.

In Hong Kong, where homosexuality is not widely accepted, exploring one's sexual identity is not easy for MSM. Often, MSM hide their sexual orientation from others because they may face discrimination and family pressure if they are found out to be gay (Kong, 2012). This may explain why gay identity confusion was negatively related to the number of sexting partners in Hong Kong. When people were more confused about their sexual orientation and would like to engage in sexting as a way to explore their sexual orientation, they would limit sending sexts to fewer partners. In this way, they could minimize the chances of being outed accidentally. In Taiwan, gay identity confusion was related neither to the number of sexting partners nor the frequency of sending sexts. This suggests that there may be other ways for MSM to explore their sexual orientation. Perhaps, with easy access to online pornography in Taiwan, men who are confused about their sexual orientation may turn to pornography to explore their sexual orientation (Giano, 2021) instead of interacting with others via sexting.

Finally, muscularity ideal was found to predict the number of sexting partners, not the frequency of sending sexts, in both regions. As Kong (2012) and Chen (2018) observed, muscularity is evident among MSM in Hong Kong and Taiwan. The results support the argument that MSM who believe that being muscular is the norm in their community will send sexts to more people to receive recognition or compliments about their own muscular bodies (Howard et al., 2021). This is a similar phenomenon to when people internalize media ideals as their model and send sexts more frequently for positive body image reinforcement (Bianchi et al., 2017).

### Predicting Sexting Under Pressure

This study also assessed sexting under pressure. Involuntary sexting is associated with negative psychological outcomes (Kernsmith et al., 2018; Klettke et al., 2019); therefore, the study results will be valuable to lesbian, gay, bisexual, transgender, and queer (LGBTQ) organizations, educators,

social workers, and the wider LGBTQ community. First, sensation-seeking as a personal trait is relatively stable (Lynne-Landsman et al., 2011). The results revealed that sensation-seeking was positively related to sexting under pressure in the Hong Kong sample. Because sexting under pressure often induces negative emotions and experiences, MSM with a stronger sensation-seeking trait may be more susceptible to these negative outcomes through their increased participation in sexting. Therefore, educators should remind them to be more careful in choosing a sexting partner and what kind of sexts (i.e., whether their face is recognizable) they share with strangers, avoiding any potential negative consequences or emotional disturbances.

The Taiwanese sample showed that MSM who were more confused about their sexual orientation had a higher frequency of sexting under pressure. This is worrying because MSM who are confused about their sexual orientation need guidance and advice, not another layer of pressure or threat. During the COVID-19 pandemic lockdowns, people may turn to the online world to fight against their boredom (Collier, 2020). As a result, some people have felt victim to sexual abuse, as online predators blackmailed their victims by using their sexual images or videos to demand payment (Carvalho, 2021). With the lessons learned from the pandemic, LGBTQ organizations, educators, and social workers should strengthen their support for LGBTQ community members by providing timely counseling services to those who have questions about their sexual orientation.

Muscularity ideal also was associated with sexting under pressure in both regions. The overemphasis on muscularity in the gay community is problematic because it creates pressure for its members to behave and look in a certain way and further marginalizes those who do not comply with the ideal. The data show that in the context of sexting, some MSM were too eager to gain validation from their peers about their muscular bodies and some ended up in involuntary sexting (either being pressured or being threatened). Of course, men's pursuit of muscular bodies cannot be dismissed completely because some men used their muscular bodies as a tactic to balance their feeling of precarity in an unstable economy (Hakim, 2018). These results demonstrated the negative outcomes from an overemphasis on muscular bodies. The wider LGBTQ community should become aware of this issue and address their muscularity ideal.

Finally, the results show that receiving sexts predicted sexting under pressure in both regions. That is, people who received more sexts were more likely to send sexts involuntarily. This observation is in line with reciprocal patterns (Regan, 1971). Since earlier studies argued that highly anxious people are more inclined to feel the pressure to reciprocate (Drouin & Tobin, 2014; Klettke et al., 2019), LGBTQ organizations, educators, and social workers should pay more attention to anxious individuals, guiding them to carefully

weigh the potential rewards and costs of sexting and manage the social pressure to reciprocate.

## Limitations and Considerations for Future Research

The major limitations of this study were our reliance on a nonrandom sample and self-reported data. However, given the hard-to-reach nature of MSM in these regions, internet sampling is an effective way to recruit participants (Gama et al., 2017). In addition, we focused on 18–34-year-old MSM. While many studies have focused on adolescents and college students (see Kosenko et al., 2017), more research is needed on the adult population, which also suffers from the negative consequences of sexting under pressure. Our reliance on samples from two regions shows that psychological factors do not operate in the same way in different cultures. Therefore, scholars should be aware of their studies' geographical context and avoid making universal claims based on studies conducted in a single region. More cross-cultural research (e.g., Morelli et al., 2021) and the inclusion of culture-specific predictors with psychological predictors are encouraged. This study did not assess negative psychological outcomes, such as depression and anxiety. Future research studies can offer a more comprehensive study of how individual factors (both cultural and psychological) and sexting behaviors may contribute to various psychological outcomes. A longitudinal design could be implemented to evaluate the causal links between these variables. Finally, while this study controlled for social media use, it did not differentiate the platform through which sexting occurred. Perhaps, our participants' sexting behaviors were different on different platforms, given that the affordances of these platforms vary. Further research can consider the relationships between the affordances of various platforms and sexting behaviors.

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**Availability of Data and Material** The dataset and SPSS syntax file supporting this article are available from the corresponding author. The questionnaire used in this study is included as an online supplement.

## Declarations

**Conflict of interest** The authors have no known conflicts of interest to report.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the Survey and Behavioral Research Ethics Committee, The Chinese University of Hong Kong (Reference No. SBRE-20-779) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from all individual participants in the study.

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