




## Original Papers

*Polish Psychological Bulletin*

2022, vol. 53(3) 152–170

DOI: 10.24425/ppb.2022.141863

Dagna Joanna Kocur\*   
 Monika Prusik\*\*   
 Karolina Konopka\*\*\* 

# Public and Private Romantic Display of Affection Scale: Development and Validation

**Abstract:** The display of affection in romantic relationships and its concomitants still require more scientific attention. Despite some studies addressing the topic of affection display, the literature does not provide a psychometrically reliable self-descriptive tool to measure this construct. Therefore, we conducted three studies among Polish adults to develop and validate a psychological tool for comprehensively identifying and measuring the display of emotional affection. Study 1 ( $N = 894$ ) aimed to develop and validate the Public and Private Romantic Display of Affection Scale (PPRDAS). It proved to be a valid psychological scale, as the theoretically assumed structure was supported by the results of the empirical analysis. Study 2 ( $N = 343$ ) confirmed the convergence validity of the PPRDAS using items of emotional expression from the Dyadic Adjustment Scale (Spanier, 1989). In Study 3 ( $N = 204$  couples), we further verified the external validity of the PPRDAS using an assessment of affection displayed by one's partner in the relationship. Individuals' self-estimates of their private and public displays of affection were confirmed by their romantic partners. In all studies, display of feelings was positively correlated with sexual and relationship satisfaction. Negative correlations with age and the duration of the romantic relationship were also observed.

**Keywords:** *Public and private romantic display of affection, scale validation, gender, relationship satisfaction, sexual satisfaction*

## INTRODUCTION

The public display of affection (PDA) in romantic relationships and its concomitants have not been the subject of much scientific attention so far. The few studies on this topic have been concerned with intercultural differences in showing affection, as well as differences between homosexual vs. heterosexual and interracial vs. intra-racial couples (Dibiase & Gunoe, 2004; Regan et al., 1999; Vaquera & Kao, 2005; Miller, 2013). Several empirical demonstrations have revealed the importance of displaying affection for physical health—for example, it lowers blood pressure and cortisol stress hormone levels (Grewen et al., 2005; Light et al., 2005; Floyd & Riforgiate, 2008). Interestingly, the expressed affection is somewhat more important than received affection for health (Hesse et al., 2021). Furthermore, displaying affection also increases relationship satisfaction in romantic dyads (Dainton et al., 1994; Gullede et al., 2003; Lemieux, 1996). Although both public and private displays of

affection in a close relationship are important for the individual's functioning, there is in general a lack of psychometrically reliable self-descriptive tools to measure the display of affection.

The lack of a measurement instrument of displays of affection in romantic relationships might be a consequence of the variety of ways in which this construct is defined and operationalised. For instance, Floyd and Morman (1998, p. 145) define affectionate communication as 'an individual's intentional and overt enactment or expression of feelings of closeness, care, and fondness for another'. Miller (2013) defined it as an act of physical closeness that other people can see, whereas Gullede et al. (2003) described physical affection as any touch intended to evoke feelings of love for the partner. Gullede et al. (2003) distinguished seven types of physical affection, these being backrubs/massages, caressing/stroking, cuddling/holding, holding hands, hugging, kissing on the lips and kissing elsewhere on the face, while those such as Regan et al. (1999) analysed only two examples of them: holding hands

\* University of Silesia, Katowice, Poland.

\*\* The University of Warsaw, Warsaw, Poland

\*\*\* The Maria Grzegorzewska University, Warsaw, Poland.

Corresponding author: Dagna Joanna Kocur - dagna.kocur@us.edu.pl

and embracing one arm. In contrast, Vaquera and Kao (2005) distinguished three dimensions of displaying emotional affection: public displays (e.g., holding hands, telling others they are a couple, going out together alone, going out together in a group, meeting the partner's parents), private displays (e.g., giving the partner a present, receiving a present from the partner, telling the partner that he/she loves her/him, the partner saying that he/she loves him/her, thinking of themselves as a couple) and intimate displays (e.g., touching under clothing or with no clothes on, touching each other's genitals, having sexual intercourse).

Emotional expression is also influenced by the emotional context in which it takes place (Brody, 2000; Wiggert et al., 2015), as well as display rules (Ekman et al., 2013). Obviously, physical affection occurs more frequently in love affairs than friendships (Bello et al., 2010). Therefore, display rules should dictate which manifestations of physical affection might be exhibited by men and women in intimate relationships, and in different cultural contexts. Since the display of feelings might be controlled and modified (Brody, 2000), one of the display rules associated with physical affection can specify the appropriateness of showing emotions in public and private settings. Of the many potential factors underlying the expression of feelings (in private but especially in public settings), gender differences, quality of the relationship, cultural differences, as well as the sexual orientation of the partners seem to play potentially the most prominent roles.

### Gender Differences in Displaying Feelings

Emotionality, understood as an inclination toward the experience and expression of emotions, is stereotypically attributed more to women than men (Plant et al., 2000). Indeed, women report experiencing emotions of greater intensity than men do (Fujita et al., 1991), especially when reliving love and warmth (about past emotional events) toward others (Chentsova-Dutton & Tsai, 2007; Grossman & Wood, 1993). Women are also expected more than men to display communal feelings, whereas men are expected more than women to express self-oriented feelings (Johnson & Shulman, 1988). These gender differences, reported and actual, in emotionality stem from socialisation processes and observing men and women in different social roles. Women are socialised to be more responsive to other's emotions than men, to exhibit warmth in social relationships and to perform care-taking roles (Bem, 1981; Eagly & Steffen, 1984; Helgeson, 1994).

Men and women also differ in how often they display affection. Some studies have revealed that women show affection to their partner more often than men (Doss & Christensen, 2006). This result is in accordance with the conclusions described above, that is, women are more emotional and display communal feelings more often than men (Chentsova-Dutton & Tsai, 2007; Johnson & Shulman, 1988). However, when specific types of affection display are taken into account, the pattern of gender differences appears to be more complex. For example, Gullede et al. (2003) revealed differences between the

genders in the most preferred and the most common ways of displaying romantic physical affection. For men, the most preferred one was kissing on the lips, and for women hugging; however, these differences were not large. The most common way of displaying physical affection for men was hugging, and for women holding hands. A study by Gullede et al. (2003) also showed that expressing love was associated with kissing on the lips and backrubs/massages more often in men than in women. Tie signs (e.g., handshake, hand-holding, shoulder embrace, arm link, body support or kissing) also show that males and females are different. Males more often than females initiate waist embrace. While females were more likely to initiate pats/rubs; however, the differences were not large (Afifi & Johnson, 1999).

Probably the most pronounced gender difference in displaying affection relates to touching. Men are more likely to touch women in public than women are to touch men (Henley, 1973; Hall & Veccia, 1990; Major et al., 1990). This asymmetry might be the result of the gender difference in expressing power and status (Pratto & Espinoza, 2001); touching someone might be a signal of power and dominance. Supporting this notion, previous research showed that those who possess power are more likely to touch their subordinates (Henley & Henley, 1977). Further, individuals who initiate touch are seen as more dominant (Summerhayes & Suchner, 1978).

### Displaying Affection in Different Cultures and Types of Relationships

Emotional expression and displaying affection are also largely regulated by cultural display rules (Regan et al., 1999; Dibiase & Gunoe, 2004; Matsumoto et al., 2005). This is not only the case for ethnic and cultural differences in the actual expression and modification of emotions (Aune & Aune, 1996; Hwang & Matsumoto, 2012). In one study, heterosexual couples from two different ethnic groups were observed in their natural environments, that is, while walking on the campus of a large Western university in the United States. The results showed that couples from high-contact cultures, for example, Latin America, were more likely to show affection through physical contact than couples from non-contact cultures, such as those from Asia. In particular, Latin American couples were more likely to embrace while walking in public than Asian couples (Regan et al., 1999). Similarly, Dibiase and Gunoe (2004) revealed that individuals from high-contact cultures (e.g., Italy) use more touching than those in low-contact ones (e.g., the United States). This study also showed that men in more traditional cultures (e.g., Czech Republic) touched women more frequently than women touched men.

Since display rules specify conditions in which emotional display can occur (Brody, 2000), in some countries public display of affection between romantic partners is considered inappropriate and may even be punished. For example, in South Africa, PDA is prohibited to persons under 16 years of age, whereas in India, PDA constitutes a crime within the meaning of Art. 294 of the

Indian Penal Code and can be punished with up to three months imprisonment or a fine. In the Philippines, PDA is considered rude (Miller, 2013). In the United States, the phrase 'get a room' is commonly directed at couples who excessively show their affection in public (Cambridge Dictionary).

Being more or less restrained in terms of PDA also depends on the social acceptance of the intimate relationship in which PDA occurs. People in relationships that are socially less accepted, such as homosexual couples or individuals in interracial relationships, may experience resistance to their public affection (Abramowicz, 2007; De Oliveira et al., 2013; Lim, 2002; Vaquera & Kao, 2005). Bisexual and homosexual persons declare more often than heterosexual ones that showing affection to a partner is difficult for them (Abramowicz, 2007). Although displaying physical affection publicly (e.g., kissing) might also be negatively perceived when it is exhibited by heterosexual couples, in the case of same-sex intimate dyads, even holding hands elicits negative observers' response; it might even evoke aggression (Abramowicz, 2007). In turn, research on differences in the display of feelings among interracial and intra-racial teenage couples in the United States showed that interracial couples were less likely than intra-racial couples to publicly and privately display feelings (Vaquera & Kao, 2005); simultaneously, these two types of couples did not differ in terms of the display of intimate affection.

### **Displaying Affection and the Quality of Relationships**

The display of emotional affection reveals a mutual and positive association with intimate relationship outcomes (Dainton et al., 1994; Gullede et al., 2003; Lemieux, 1996; Rostosky et al., 2000). This is in accordance with the Affection Exchange Theory (AET; Floyd, 2001) stating that affectionate communication (not only in romantic relationships but also between parents and their children or between friends) is an adaptive behaviour that contributes to humans' long-term viability and procreative success. Highly affectionate people are less afraid of intimacy, feel more comfortable in a situation of emotional closeness, more often have a secure attachment style, are more often in romantic relationships and are also more satisfied with their romantic relationships (Floyd et al., 2005). Not only receiving affection, but also its manifestation, is an important factor contributing to relationship satisfaction (Floyd et al., 2005).

Specifically, studies revealed the positive role of physical display of affection in relationship outcomes. The physical display of feelings was associated with higher support and relationship intimacy (Rostosky et al., 2000), as well as relationship satisfaction (Gullede et al., 2003; Lemieux, 1996). Showing warm feelings toward the partner, holding hands or kissing are even more important for relationship intimacy than sexual intercourse (Kawaguchi et al., 1997). This is probably due to the fact that physical affection, that is, hugging, embracing and kissing on the lips, has its positive outcomes in conflict resolution (Gullede et al., 2003). Further, longitudinal and experi-

mental studies confirmed the importance of physical display of feelings for psychological intimacy and quality of intimate relationship between partners (Floyd et al., 2009; Mackey et al., 2000). Particularly, a romantic kiss is highly valued as a way to show feelings and emotional closeness (Berscheid et al., 1989; Floyd, 2006), intimacy (Waring, 1984) or affectionate communication (Floyd & Morman, 1998). An experimental study conducted by Floyd and colleagues (2009) confirmed the importance of showing feelings such as romantic kisses for physical and mental health as well as relationship satisfaction. In the study, including married couples and cohabiting couples, the experimental group was instructed to increase the frequency of romantic kisses in their relationships. After six weeks, the experimental group was compared with the control group, which was not given such instruction. The experimental group experienced a reduction in perceived stress and an increase in relationship satisfaction.

### **THE PURPOSE OF THE PRESENT STUDIES**

The purpose of these studies was to develop and validate a psychological tool that would comprehensively identify and measure the display of emotional affection. Some previous studies have been conducted with the use of observation in natural settings, without using self-descriptive tools (e.g., Regan et al., 1999). Other research has considered only the physical display of feelings (Rostosky et al., 2000; Gullede et al., 2003), or made a distinction between verbal and non-verbal expressions of affection, without differentiation between the public and private display of feelings (Floyd & Morman, 1998). Moreover, such measurements were not only limited to romantic relationships (Floyd & Morman, 1998).

First, since none of the previous studies did so, we aimed to distinguish the tendency to display feelings in romantic relationships in a public and private setting. We expected that individuals would differ in the public and private display of affection, and it is of crucial importance to include such a distinction. Public versus private displays of feelings, as previously argued, can be influenced by gender (Hall & Vecchia, 1990; Major et al., 1990), male and female gender roles (Bem, 1981; Helgeson, 1994) or cultural display rules (Dibiase & Gunoe, 2004). Secondly, we also intended to measure the opinions about the public display of feelings and behaviours toward people who show their romantic feelings in a public place. These may result from one's beliefs, internalised norms and individual experiences. This would also allow us to determine the extent to which the attitude towards people displaying affection in public is associated with their own tendency to show feelings.

Three studies were conducted to develop and validate a measurement of the display of feelings publicly and privately in romantic relationships and to verify the external validity and learn about the links to important socio-demographics such as age, gender, place of residence, as well as the type of romantic relationship, its length and satisfaction with it. The purpose of Study 1 was

to develop and validate a measurement of the display of feelings publicly and privately in romantic relationships, as well as to analyse opinions about people who publicly display feelings in their romantic relationship and behaviours towards them. The purpose of Study 2 was to examine the convergence validity of the newly developed scale by using items concerning emotional expression from the Dyadic Adjustment Scale (Spanier, 1989). In Study 3 we verified the external validity of the new measurement in a different way, by using the assessment of the display of affection by the one's partner in the relationship. Questions about the partner's behaviour (Is the partner really showing affection?) and about one's need to receive displays of affection from his or her partner in public and private places (I need my partner to show feelings.) were used. Study 3 was conducted on couples. The planned procedure was approved by the Ethics Committee of the University of Silesia in Katowice (approval no. KEUS.39/05.2020).

## STUDY 1

The purpose of Study 1 was to develop and validate the Public and Private Romantic Display of Affection Scale (PPRDAS). It consisted of two phases: (1) items of the PPRDAS were generated; (2) after some alterations and consultations the final number of generated items was subjected to confirmatory factor analysis (CFA). Having in mind previous studies that showed gender differences (Doss & Christensen, 2006; Chentsova-Dutton & Tsai, 2007) in displaying emotional affection, we assumed that women would display emotions more often than men. Moreover, we expected that, due to the decrease in passion as the relationship continues (Sumter et al., 2013), that the display of affection would also diminish. We also hypothesised that sexual satisfaction and overall relationship satisfaction would be positively related to intensity of affection display (cf. Lemieux, 1996; Gullledge et al., 2003). We also hypothesised that demographic variables (education and place of residence) would differentiate private and public displays of affection. Finally, we hypothesised that opinions and behaviours towards individuals showing feelings in a public place would be more negative among older participants, those who hold more conservative views and people experiencing certain deficits in needs fulfilment (e.g., those who are single or have low satisfaction with their current romantic relationship): 'When I lack tenderness on the part of my partner, I may be more annoyed by couples whom I see displaying tenderness.'

## Method

### Measures

1. **Public and Private Romantic Display of Affection Scale.** The process of scale creation consisted of two phases. In phase 1 items of the PPRDAS were generated. Based on the Affection Exchange Theory (Floyd, 2001; Floyd et al., 2005), previous research on

display of affection (Regan et al., 1999; Vaquera & Kao, 2005; Miller, 2013; Gullledge et al., 2003; Rostosky et al., 2000) and interviews with researchers from the University of Silesia in Katowice, an initial pool of items was created, as well as descriptions of four subscales (8 items each): (1) public and (2) private display of feelings, (3) opinions about people who display feelings publicly and (4) behaviours or behavioural intentions towards people displaying their feelings in public. Previous research and interviews were only an inspiration to generate an item pool. The main emphasis was placed on the content of the subscales in order to be able to distinguish between private and public expressions of affection clearly and to measure the attitude and behaviour or behavioural intentions towards people expressing affection in a public place. Items of the subscales were created to describe comparable situations (holding hands, hugging, kissing, and telling partner that he/she loves her/him). The next stage involved the cooperation with 74 competent judges, who were given the descriptions of the subscales and who assessed how each item was relevant for measurement of the particular construct. Afterwards, we selected items which had the highest judges' scores (19 items in total). The final version of the Scale is presented in Appendix I. In phase 2, the final number of generated items were subjected to confirmatory factor analysis (CFA).

2. **Demographic data.** There were questions regarding age, sex, education and place of residence.
3. **Close relationship survey.** The survey included questions about sexual orientation, the type of close relationship (1) I am single; 2) I have been in an informal romantic relationship for less than a year; 3) I have been in an informal romantic relationship for more than a year; 4) I am married; 5) other), duration of the close relationship, sexual satisfaction (0 - Not applicable; 1- Very unsatisfying; 2 - Unsatisfying; 3 - I have no opinion; 4 - Satisfying; 5 - Very satisfying) and relationship satisfaction (0 - Not applicable; 1 - Very unsatisfying; 2 - Unsatisfying; 3 - I have no opinion; 4 - Satisfying; 5 - Very satisfying).

### Sample

Participants in the study were of a convenient sample of  $N = 894$  which included  $n = 483$  of women (54.0%) and  $n = 411$  of men (46.0%). Gender was distributed with slight overrepresentation of women,  $\chi^2(1) = 5.80, p = .016$ . The average age was  $M = 26.88$  ( $SD = 10.08$ ), with minimum of 18 years of age and the maximum of 74. Basic education qualifications were found in 1.6% participants in the study, vocational education wins 7.3% of participants, secondary education in 60.3%, and university education in 30.8%. Education was not distributed equally with an overrepresentation of higher educational levels (secondary and university level),  $\chi^2(3) = 766.88, p < .001$ . 18.5% of the respondents were single, 12.4% were in an informal romantic relationship for a period shorter than one year, another 45.3% were also in an informal romantic relation-

ship but for a period longer than one year, 22.8% were married, and 1.0% specified that their situation was different (separation, widowhood). People who were married or were in an informal romantic relationship for a period above one year were overrepresented in the sample in comparison with people who were in an informal romantic relationship for a shorter period (less than a year) and who were single,  $\chi^2(4) = 477.75, p < .001$ . Heterosexual orientation was declared by 91.7% of participants, bisexual orientation in 5.3%, and homosexual in 2.2%; there was no listed orientation in .4%. Thus, we had a large overrepresentation of heterosexual orientation in the study,  $\chi^2(3) = 2139.42, p < .001$ .

### Procedure

Study 1 was conducted on a Polish sample, collected among students at the University of Silesia in Katowice and their friends who were reached using the snowball method. Participants were informed about the purpose of the study and full anonymity, they participated voluntarily. Part of the study was carried out with the paper-and-pencil technique (55%), the remaining part was collected in electronic form (45%). Sensitive data was not collected. Participants were not remunerated. The data that support the findings of this study are available from the corresponding author, upon request.

### Results

#### Confirmatory Factor Analysis

Since the main purpose of the study was to validate a newly developed scale, we started with confirmatory factor analysis (CFA) using IBM AMOS software ver.

25.0.0. (EN) in order to confirm or disconfirm the postulated structure of the PPRDAS. All the data were prechecked for normality, linearity and outlying cases (univariate and multivariate), and missing data were analysed. No significant departures from assumptions required for CFA were identified including a sufficient sample size (understood as at least 400 cases). Unfortunately, the missing data was not distributed completely at random, based on the results of Little MCAR test,  $\chi^2(78) = 127.96, p < .001$ , but the marginal amount of missing data for the analysed scale, comprising .01% of all data points, still allowed for data replacement using the expectation-maximisation algorithm (EM). In this way, we were able to calculate modification indices while conducting CFA analysis. The results of CFA are placed in Table 1 (fit indices for examined versions of the models) and in Figure 1 (postulated structure of public and private display of feelings in the finally accepted model – Model 4). Several possible models were tested (Model 1 to Model 6). We started with first order models (basic and with respecifications based on error covariances, i.e. Model 1 and Model 2), then we also tested models examining the possibility of second order factors (in a basic version and with the addition of respecifications; with one or two second order factors; Models 3 to 6). This was especially important since the basic models (Model 1 and Model 2) showed that the first two factors ‘Private display of feelings’ and ‘Public display of feelings’ were highly correlated,  $r = .83 - .88, p < .001$  (respectively for Model 1 and Model 2). As it turned out, second order Model 4 with one second order factor (for private and public display of feelings treated together) showed the best fit to the data. Its fit was significantly better in comparison to

**Table 1** Model Adequacy and Goodness of Fit Indices of the Models Tested Using First and Second Order Confirmatory Factor Analysis

Models	X <sup>2</sup>	df	p	X <sup>2</sup> /df	RMSEA	PClose	SRMR	CFI	AIC	β absolute range
Model 1 – ‘First order’	1525.69	146	< .001	10.45	.10	.000	.08	.83	1651.69	[.41, .86]
Model 2 – ‘First order with respecifications’	850.71	136	< .001	6.23	.08	.000	.07	.91	996.71	[.45, .91]
Model 3 - ‘Second order with one second order factor and respecifications but only for first order’	876.67	138	< .001	6.35	.08	.000	.07	.91	1018.67	[.45, 1.15]
Model 4 - ‘Second order with one second order factor and respecifications for both first and second order’	623.08	135	< .001	4.62	.06	.000	.06	.94	771.08	[.45, 1.13]
Model 5 - ‘Second order with two second order factors’ and respecifications but only for first order’	932.64	139	< .001	6.71	.08	.000	.08	.90	1072.64	[.43,,1.12]
Model 6 - ‘Second order with two second order factors and respecifications for both first and second order’	672.20	136	< .001	4.94	.07	.000	.08	.94	818.20	[.43, 1.10]

Note. CFA = RMSEA = root mean square error of approximation; PClose = *p* of close fit; SRMR = standardised root mean square residual; CFI = comparative fit index; AIC = Akaike information criterion. The respecifications of models were achieved based on error covariance modification indices.

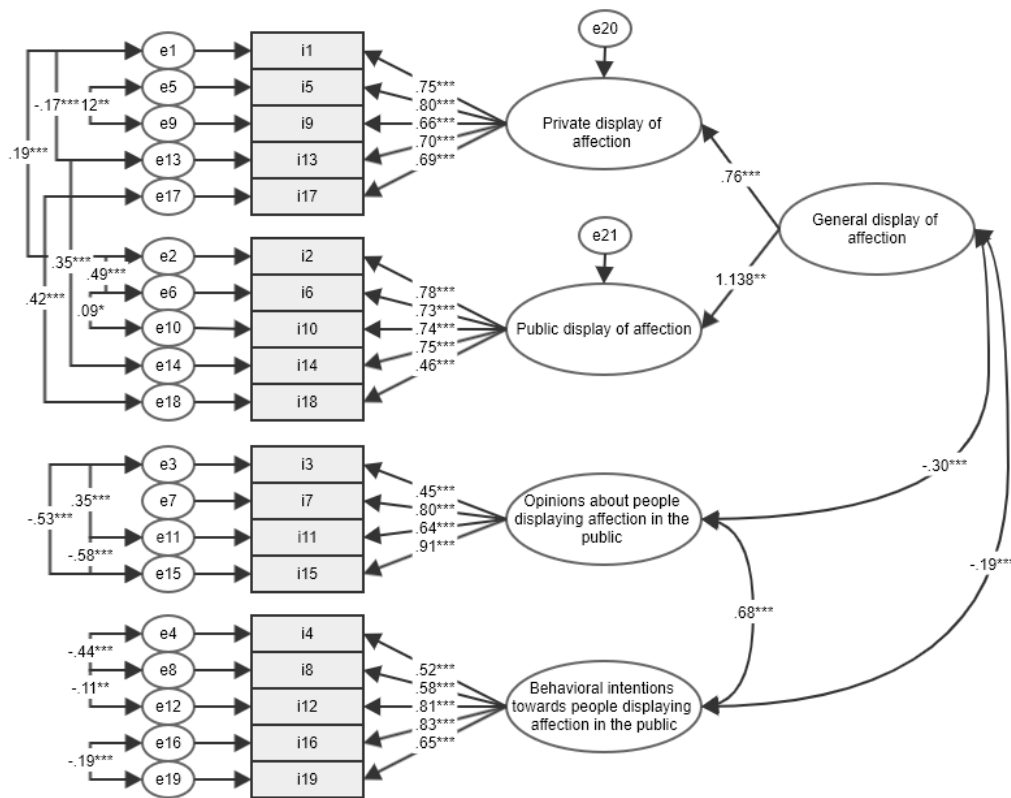
Model 1 -  $\Delta\chi^2(11) = 902.61, p < .0001$ , Model 2 -  $\Delta\chi^2(1) = 227.59, p < .0001$ , Model 3 -  $\Delta\chi^2(3) = 253.59, p < .0001$ , Model 5 -  $\Delta\chi^2(4) = 309.56, p < .0001$ ,  $\Delta\chi^2(1) = 49.12, p < .0001$ . Model 4 showed good fit to the data, but the fit indices of almost all analysed models were close to acceptable values. As acceptable values, we considered values between 1.00 and 5.00 for CMIN ( $\chi^2/df$ ), values around and above .95 for CFI, values below .06 to .08 for RMSEA, values for SMR less than .06 to .08, and PClose above .05 (Hu & Bentler, 1999). We did not accept, however, a non-significant coefficient for the  $\chi^2$  test, which normally indicates a good fit of the data to the model, but in reality is very difficult to achieve especially for larger (e.g., above 200) sample sizes (Brown, 2015; Alavi, Visentin, Thapa, Hunt, Watson, & Cleary, 2020; Babyak, & Green, 2010).

The values of reliability coefficients in form of Cronbach's alpha and McDonald's omega for the retained factors based on Model 4 were very good:  $\alpha = .82$  and  $\omega = .82$  for 'Private display of feelings',  $\alpha = .83$  and  $\omega = .83$  for 'Public display of feelings',  $\alpha = .85$  and  $\omega = .86$  for the second order factor combining 'Private display of feelings' and 'Public display of feelings',  $\alpha = .75$  and  $\omega = .76$  for 'Opinions about people displaying their feelings in the public space',  $\alpha = .81$  and  $\omega = .81$  for 'Behaviours towards people displaying their feelings in the public space'. The reliability coefficient for the entire scale after reversing the scores for 'Opinions about people displaying their feelings in the public space' and

'Behaviours towards people displaying their feeling in the public space' was  $\alpha = .87$  and  $\omega = .81$ . The only problematic thing was a potential 'Heywood case' regarding a standardised coefficient exceeding 1.00 for the relationship between 'Public display of feelings' and second order factor (General display of feelings – Figure 1). We tried to apply several solutions (moving the constrain between indicators, constraining the factor itself, constraining the factor itself and constraining indicators by common string value) but none of them reduced the problem. Overall, the proposed structure of the model was confirmed. In the further analytical work we use five indices based on average (one for each subscale: Private display of feelings, Public display of feelings, Opinions about showing their feelings in public, Behaviours towards people showing their feelings in public, and one index for a second order factor combining Private display of feelings and Public display of feelings, which was named General display of feelings).

**Descriptive Statistics**

After examining the structure of the newly developed scale, the dependencies for Private and Public Display of feelings and sociodemographics were analysed, and the characteristics of the relationship were calculated in the form of correlation coefficients (Table 2, Pearson's *r*). Moreover, the type of relationship and sexual orientation in relation to the display of feelings was assessed using one-way ANOVA with a between-subjects design (Table 3).



**Figure 1.** Results of Second Order Confirmatory Factor Analysis for final model - Model 4; \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; "i" stands for item; "e" = error. Standardized coefficients are presented.

**Table 2** Zero-order Correlation Coefficients for Private and Public Display of Affection and Sociodemographics, N = 894

	<i>M</i>	<i>SD</i>	Gender ( <i>M</i> – 1)	Age	Age <sup>a</sup> LG10	Edu- cation	Size of locality	Relationship length	Sexual life satisfaction	Relationship satisfaction
1. Private display of affection	4.15	.78	-.16***	-.32***	-.32***	.09**	.11**	-.28***	.28***	.28***
2. Public display of affection	3.76	.85	-.07*	-.28***	-.27***	.10**	.05	-.24***	.25***	.25***
3. General display of affection – second order	3.95	.76	-.12***	-.32***	-.31***	.10**	.09**	-.28***	.28***	.29***
4. Opinions (negative) about people displaying affection in public	1.96	.83	-.13***	-.16***	-.17***	-.01	.05	-.14***	-.16***	-.14***
5. Behaviours (negative) towards people displaying affection in public	1.68	.73	-.09**	-.18***	-.19***	.00	.04	-.14***	-.05	-.07*

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . <sup>a</sup> – age was log transformed since it was positively skewed.

**Table 3** Series of One-Way Between Subject ANOVA for Groups Distinguished Based on Relationship Status, N = 894

	Relationship type								<i>F</i>	<i>df</i>	<i>p</i>	$\eta_p^2$
	Single		Informal relationship < one year		Informal relationship > one year		Married					
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
1. Private display of affection	3.88	.80	4.43	.64	4.37	.63	3.74	.85	43.55	3, 331.28	< .001	.14
2. Public display of affection	3.48	.81	3.90	.84	3.97	.72	3.46	.97	24.85	3, 327.31	< .001	.08
3. General Display of affection – second order	3.68	.74	4.17	.68	4.17	.62	3.60	.85	37.65	3, 328.39	< .001	.12
4. Opinions (negative) about people displaying affection in public	2.23	.86	2.07	.77	1.95	.82	1.74	.80	11.91	3, 881	< .001	.04
5. Behaviours (negative) towards people displaying affection in public	1.80	.80	1.76	.71	1.74	.74	1.44	.62	12.56	3, 342.32	< .001	.03

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . <sup>a</sup> – age was log transformed since it was positively skewed.

The results of the correlational analysis showed that men presented lower levels of private and public display of feelings, but they had less negative opinions about people displaying their feelings in public and they undertook fewer behaviours towards people showing affection publicly, in comparison to women. Age was related in general to a lower tendency to show feelings, both privately and in public, but was also related to lower tendency to undertake actions against people showing their affection in the public, and to having less negative opinions about people displaying affection in public areas. The size of the locality was only marginally related to the examined constructs – living in a place with a higher number of residents was related to a higher tendency to display feelings in general, but especially in private. Relationship length coincided with a lower tendency to show affection in any form (public and private) but also to less negative opinions and behaviours towards people displaying affection in public. Higher sexual and relation-

ship satisfaction were both related to a higher tendency to show feelings in general (privately and publicly), and also to less negative opinions about people displaying feelings in public. Higher satisfaction in the relationship was also related to the presentation of fewer negative behaviours towards people showing their feelings in public.

The results pointed to significant differences between groups based on relationship status for all examined study constructs. Based on Games-Howell post-hoc tests, participants in an informal romantic relationship for less than a year and in an informal romantic relationship for more than a year both showed higher levels of private and public (treated as separate constructs or treated as a general factor of feelings display) display of feelings in comparison to single and married participants ( $p < .001$  for all comparisons). In terms of opinions and behaviours towards people displaying their feelings in public, married participants presented significantly lower levels of negative opinions and behaviours in comparison to single

people ( $p < .001$  for both comparisons), and people in informal romantic relationships for less than a year ( $p = .002$  for opinions and  $p = .001$  for behaviours) and people in the relationship for more than a year ( $p = .015$  for opinions and  $p < .001$  for behaviours). Additionally, single participants presented a higher degree of negative opinions in comparison to people in a relationship for more than a year ( $p = .002$ ). We also checked whether the display of feelings and its subscales was differentiated by sexual orientation. The results of the one-way between-subjects ANOVA showed no significant differences for any of the examined groups (heterosexual, homosexual, bisexual) for any of the subscales,  $F(2, 884) = .59, p = .555$  for private display of feelings;  $F(2, 884) = 2.51, p = .082$  for public display of feelings;  $F(2, 884) = 1.23, p = .293$  for opinions, and  $F(2, 884) = .18, p = .832$  for behaviours), even though a graphical inspection showed a trend toward homosexual people scoring lower on private and public display of feelings, and scoring higher on negative opinions and behaviours in comparison to the heterosexual and bisexual groups.

## Discussion

The proposed novelty tool for the measurement of display of feelings in private and in the public sphere proved to be a valid psychological scale in terms of the theoretically assumed structure being supported by the results of the empirical analysis (overall good psychometric properties based on the indices of model fit, high reliability coefficients and significant contributions of each item to the particular subscale).

According to the hypothesis, men presented lower levels of private and public display of feelings. This is in line with previous studies showing that women are socialised more than men to be responsive to other's emotions and exhibit warmth in social relationships (Bem, 1981; Eagly & Steffen, 1984; Helgeson, 1994). According to the cultural stereotypes of masculinity, 'a real man' should not exhibit such behaviours (Snell, 1986). This may be also the result of men's fear of emotions (Jakupcak et al., 2003). However, an interesting result is that men accepted public affection by other couples more than women did.

Age was related in general to a lower tendency of showing feelings, both privately and in public. We hypothesised that younger individuals will more often display feelings in public, but also will be more accepting of public display of feelings by other couples. However, the results showed the opposite. This could be the result of more conservative or traditional norms among older people (Cornelis et al., 2009), but age was also related to lower negative opinions (and behaviours) about people displaying affection in public areas. Younger people were more critical about the public display of affection. This result needs future research.

Consequently, this is probably also due to the negative correlation of showing affection with the length of the relationship. Showing affection is inherently associated with passion between the partners in an intimate relationship, whereas passion and erotic love diminish during the

later stages of the lifespan and intimate relationship (Montgomery & Sorell, 1997; Grote & Frieze, 1998; Sternberg, 1986; Sumter et al., 2013). This study also showed that participants in informal romantic relationships showed higher levels of private and public displays of feelings in comparison to married participants. Such results may illustrate the same effect of a decrease in affection as the relationship continues. Dating couples hold hands, kiss, hug and give massages to each other more often than couples in marriages do (Punyanunt-Carter, 2004). Displaying affection (privately and publicly) was also positively associated with sexual and relationship satisfaction. This result is in accordance with research showing that affection deprivation is negatively associated with relationship satisfaction (Hesse & Mikkelson, 2017) and marital quality (Hesse & Tian, 2020). Due to the correlational design of the study, it was not possible to state the directions for all examined dependencies; however, previous research confirmed that showing affection increases relationship satisfaction (Floyd et al., 2009).

Single people had a lower tendency to show affection in any form (public and private). This is logical since they are not in a relationship in which they may undertake such behaviours. Interestingly, single people expressed more negative opinions and behaviours towards people displaying affection publicly. A possible explanation is that seeing other couples that show affection leads singles to feel lonely and frustrated. Previous studies have revealed that singles see other singles as more miserable and lonelier (Hertel et al., 2007). Moreover, singles rated themselves as lonelier than dating participants, felt less satisfied with their relationship status and reported a greater desire to change their relationship status (Greitemeyer, 2009).

People living in large cities on average have better access to education and opportunities to shift their socioeconomic status by a variety of means (DESA, 2020). Also, cities are more densely populated than rural areas, which results in greater exposure to a larger variety of different social reactions and behaviours. As previously shown, introverts prefer to live in less inhabited areas in comparison to extroverts (Oishi et al., 2015). Also, cities are special niches offering different mating strategies to be undertaken, including those more explicit (Jonason, 2018). All these factors might contribute to more openness in general, including acceptance for the display of feelings in public. For these reasons, we assumed that big-city dwellers would show their feelings in public situations more often, that they would be less inhibited by such a situation and more consenting to the public display of affection. However, the results did not confirm this. People living in larger cities showed a greater inclination to display affection only in private, and not in public situations.

## STUDY 2

The purpose of Study 2 was to replicate and extend findings from Study 1 and to test the convergent validity of the PPRDAS. To test convergent validity, we used the Dyadic Adjustment Scale (DAS; Spanier, 1989), measur-



ing the quality of adjustment in intimate dyads. Based on the results of Study 1, we assumed significant dependencies between the display of feelings and relationship satisfaction, in particular related to the Affection subscale of the DAS. Especially Affectional Expression subscale which respondent agrees with the partner regarding emotional affection. However, in Study 2, we used a more detailed tool to measure satisfaction with the relationship and its components. We also predicted that individuals characterised by the lower relationship satisfaction would be more critical towards public displays of affection as exhibited by other couples.

## Method

### Measures

1. **Dyadic Adjustment Scale** (DAS; Spanier, 1989; Polish version: Cieślak, 1989). The scale includes 32 items measuring four aspects of the quality of the dyads: Dyadic Consensus (e.g. Handling family finances; six-point Likert scale from 0 – Always disagree to 5 – Always agree;  $\omega = .91$ ,  $\alpha = .91$ ), Dyadic Satisfaction (e.g. How often do you discuss or have you considered divorce, separation, or terminating your relationship?; six-point Likert scale from 0 – All the time to 5 – Never;  $\omega = .88$ ,  $\alpha = .87$ ), Dyadic Cohesion (e.g. Do you and your mate engage in outside interests together?; five-point Likert scale from 0 – None of them to 4 – All of them;  $\omega = .85$ ,  $\alpha = .85$ ) and Affectional Expression (e.g. Demonstrations of affection; six-point Likert scale from 0 – Always disagree to 5 – Always agree;  $\omega = .91$ ,  $\alpha = .91$ ;  $\omega = .76$ ,  $\alpha = .72$ ). The respondent gives answers on different scales depending on the question.
2. **Public and Private Romantic Display of Affection Scale**. The four subscales of the scale had satisfactory reliability: private ( $\omega = .86$ ,  $\alpha = .86$ ), public ( $\omega = .86$ ,  $\alpha = .86$ ), overall index or private and public expression of affection ( $\omega = .91$ ,  $\alpha = .91$ ), negative opinions ( $\omega = .82$ ,  $\alpha = .78$ ), and behaviours ( $\omega = .85$ ,  $\alpha = .85$ ).
3. **Demographic data and close relationship survey**. Typical questions were used to gather information on participant's gender, age, education, size of locality. A close relationship survey contained questions about types of close relationships, relationship length, sexual life satisfaction and relationship satisfaction.

### Sample

Participants in the study ( $N = 343$ ) were people aged between 18-75 with an average age of  $M = 34.41$  ( $SD = 11.05$ ); 47.02% ( $n = 162$ ) of the sample were women, so gender was distributed evenly,  $\chi^2(2) = 10.05$ ,  $p = .305$ . 47.5% of the sample had a secondary education, 40.2% had a university education, 10.8% had a vocational education and 1.5% had a basic education. Better educated participants were overrepresented in the sample,  $\chi^2(3) = 205.19$ ,  $p < .001$ . In the sample, 0.9% of the respondents were single, 12.8% were in an informal romantic relationship for a period shorter than one year, another 40.8% was in an informal romantic relationship for a period longer than one year, 44.9% were married, and 0.6% indicated that their situation was different (separation, widowhood). Married subjects or those who were in an informal romantic relationship for a period above one year were overrepresented in the sample in comparison to people who were in an informal romantic relationship for less than one year and those who were single,  $\chi^2(4) = 316.84$ ,  $p < .001$ . 94.2% declared a heterosexual orientation, 3.2% were bisexual, 1.7% were homosexual and orientation was not listed by 0.9%. There was a large overrepresentation of people declaring a heterosexual orientation in this study,  $\chi^2(3) = 875.60$ ,  $p < .001$ .

### Procedure

Study 2 was conducted on a Polish sample, collected among students at the University of Silesia in Katowice and their friends who were reached using the snowball method. Participants were informed about the purpose of the study and full anonymity, and they participated voluntarily. The study was carried out with the paper-and-pencil technique. Sensitive data was not collected. There was no financial compensation for participants in the study. The data that support the findings of this study are available from the corresponding author, upon request.

## Results

### Convergent Validity

In order to test convergent validity of the newly developed scale, we used DAS (Spanier, 1989) and calculated the correlation coefficients (Table 4).

Overall, the convergence validity was confirmed. Almost all (except one instance, however not for the hypothesised relationship) correlation coefficients for the

**Table 4** Zero-order Correlation Coefficients for Private and Public Display of Affection and DAS,  $N = 343$

	Consensus	Satisfaction	Cohesion	Affection
1. Private display of affection	.29***	.34***	.36***	.34***
2. Public display of affection	.31***	.33***	.29***	.31***
3. General display of affection – second order	.32**	.36***	.34***	.35***
4. Opinions (negative) about people displaying affection in public	-.18***	-.15**	-.09	-.11*
5. Behaviours (negative) towards people displaying affection in public	-.22***	-.21***	-.18***	-.16**

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

subscales of the newly developed scale and DAS were significantly related in the predicted direction. Most importantly, private and public display of feelings coincided in a statistically important way with the 'affection' subscale of DAS. Public and private display of feelings was also related to higher consensus, satisfaction, and cohesion. More negative opinions and behaviours towards people displaying feelings in public were related to lower levels of consensus, satisfaction, cohesion and affection, except for the relationship between negative opinions and cohesion (lack of significant relationship). This all confirms the sufficient convergence validity of the newly developed tool.

### Descriptive Statistics

In order to examine the pattern of the relationship between sociodemographics, indices of quality of the relationship and study constructs, Pearson's *r* coefficients were calculated (Table 5).

Similarly to the results of Study 1, private and public display of feelings was negatively related to age and relationship length, but were positively related to education, partly to size of locality, higher satisfaction from sexual life and relationship. Constructs measured within DAS did not show relationship with sociodemographics, but they were positively related to higher satisfaction from relationship and sexual life. Unlike what was found in Study 1, the examined constructs did not show significant dependencies with gender. It has to be noted that the correlation coefficients for gender and study constructs in Study 1 were marginal.

### Discussion

Study 2 confirmed the convergent validity of the PPRDAS using DAS (Spanier, 1989). The more private and public display of feelings participants expressed, the higher the level of satisfaction and affection they declared

in their intimate relationships. Moreover, results show that displaying affection is positively associated with dyadic consensus and cohesion. Dyadic consensus applies to the agreement between partners regarding issues important to the relationship such as religion, recreation, friends, household tasks, and time spent together. Such a similarity between the partners in an intimate relationship influences positively on relationship satisfaction and stability (Lutz-Zois et al., 2006; Robins et al., 2010) This is possibly due to the result of greater mutual understanding (Anderson et al., 2003) and less frequent conflicts between partners (Acitelli et al., 2001). As a consequence, higher consensus in the intimate dyad may be conducive to showing feelings. Also, dyadic cohesion, understood as common interests and activities shared by the couple, was connected to the display of feelings.

Study 2 also showed significant dependencies between the display of feelings (private and public, as well overall) and relationship length (negative association) and relationship satisfaction, as well sexual satisfaction (both in a positive direction). The results were similar to those obtained in Study 1, and this could be treated as successful confirmation and a replication of the results of Study 1. Interestingly, the relationship between Affection measured with DAS and age was not supported by the results. Also, the correlational coefficient between Affection (DAS) and relationship length was lower than the one for relationship length and all PPRDAS subscales. Perhaps this could be related to the fact that PPRDAS measures the frequency of displaying feelings, while the Affection subscale (DAS) is instead dedicated to the measurement of mutual partner matching and the occurrence of potential conflicts as a consequence of partners' needs and expectations regarding emotional display (Spanier, 1989). Thus, it could be possible that, with relationship length, the frequency of feelings display diminishes, but this does not have to imply lower relationship satisfaction.

**Table 5** Zero-order Correlation Coefficients for Private and Public Display of Feelings and DAS Subscales and Sociodemographics, N = 343

	<i>M</i>	<i>SD</i>	Gender ( <i>M</i> - 1)	Age	Age <sup>a</sup> sqrt	Edu- cation	Size of locality	Relation- ship length	Relation- ship length* lg10	Sexual life satisfac- tion	Sexual life satisfac- tion* lg10	Relation- ship satis- faction	Relation- ship Satis- faction* lg10
1. <sup>a</sup>	4.00	.88	-.09	-.35***	-.35***	.21***	.11*	-.26**	-.29***	.17**	.17**	.22***	.23***
2.	3.62	.94	-.08	-.28***	-.28***	.21***	.09	-.25**	-.24***	.21***	.22***	.20***	.23***
3.	3.81	.85	-.09	-.33***	-.34***	.22***	.11*	-.27**	-.28***	.20***	.21***	.22***	.24***
4.	1.84	.84	-.02	-.10	-.11*	-.08	.05	-.07	-.07	-.04	.03	-.06	.07
5.	1.61	.77	-.04	-.13*	-.15**	-.08	.01	-.06	-.08	-.03	.04	-.09	.11*
6.	3.63	.76	.07	-.03	-.03	-.01	-.04	.02	-.06	.35***	.40***	.53***	.57***
7.	3.52	.80	.04	-.04	-.04	.04	-.04	-.02	-.08	.40***	.43***	.62***	.66***
8.	3.27	.90	.07	-.10	-.10	-.02	.05	-.05	-.14*	.30***	.35***	.49***	.53***

Note. \**p* < .05, \*\**p* < .01, \*\*\**p* < .001. <sup>a</sup> - age, relationship length, sexual life satisfaction, and relationship satisfaction were square root (SQRT) or logarithmic (LG10) transformed since they were slightly positively or negatively skewed. <sup>1</sup>1. Private display of affection; 2. Public display of affection; 3. General display of affection -second order; 4. Opinions (negative) about people displaying affection in public; 5. Behaviours (negative) towards people displaying affection in public; 6. Consensus; 7. Satisfaction; 8. Affection

### STUDY 3

In Study 3, we aimed to verify whether the individual propensity to show affections (both private and public) in the opinion of the examined person will be consistent with the assessment of that person's partner. Therefore, this study was designed to be carried out in couples. The purpose of this study was also to measure compatibility within a pair in terms of showing affection. Finally, we wanted to investigate how one's need for a partner to show his/her feelings is associated with the real showing of feelings by partner.

#### Method

##### Measures

1. **Public and private displays of affection in actual close relationship.** We used four questions to measure public and private display of affection by one's partner: 1. Does your partner display affection for you in public (holding hands, hugs, kisses, etc.)? 2. Does your partner display affection for you when you are alone at home (holding your hand, hugging, kissing, etc.)? 3. Is your partner annoyed by people who show affection in a public place? 4. Does your partner comment negatively on the behaviour of people who show affection in a public place? The respondent provided answers on a five-point scale ranging from 1 (never) to 5 (very often). There were another two questions about ones needs related to showing affection: 5. Do you need your partner to show affection for you in a public place? 6. Do you need your partner to show affection for you when you are alone at home? The respondent provided answers on a five-point scale ranging from 1 (I do not need it at all), to 5 (I need it very much).
2. **Public and Private Romantic Display of Affection Scale**

The four subscales of the scale had satisfactory reliability: private ( $\omega = .86$ ,  $\alpha = .85$ ), public ( $\omega = .84$ ,  $\alpha = .84$ ), overall index or private and public expression of feelings ( $\omega = .91$ ,  $\alpha = .91$ ), negative opinions ( $\omega = .82$ ,  $\alpha = .81$ ), and negative behaviours ( $\omega = .84$ ,  $\alpha = .84$ ).

##### Demographic data and close relationship survey.

Typical questions were used to gather information on participant's: gender, age, education, size of locality. A close relationship survey contained questions about types of close relationships, relationship length, sexual life satisfaction and relationship satisfaction.

##### Sample

The age of participants in the study ( $N = 408$ ,  $N = 204$  couples; Polish sample) ranged from 18 to 79 ( $M = 29.00$ ,  $SD = 11.84$ ). Women constituted 49.8% ( $n = 203$ ) of the convenience sample for people in relationships. Basic education characterised 3.7% participants in the study, a vocational education was present at 6.9% of the participants, a secondary education in 56.1%, and a university education in 32.8%. There was an overrepresentation of higher educational levels (secondary

and university level),  $\chi^2(3) = 297.51$ ,  $p < .001$ . 2.9% of participants were in an informal romantic relationship for a period shorter than one year, another 67.2% were also in an informal romantic relationship but for a period longer than one year, and 29.9% were married. People in a relationship for a period longer than one year were overrepresented in the study,  $\chi^2(3) = 254.53$ ,  $p < .001$ . Single people did not participate in the study. Heterosexual orientation was declared by 94.6% of participants, bisexual orientation in 4.4% and homosexual orientation in 0.5%; orientation was not listed by 0.2%. There was a significant overrepresentation of heterosexual orientation in the study,  $\chi^2(3) = 1060.57$ ,  $p < .001$ .

##### Procedure

Study 3 was conducted on a Polish sample, collected among students at the University of Silesia in Katowice and their friends who were reached using the snowball method. Participants were informed about the purpose of the study and full anonymity, they participated voluntarily. The study was carried out with the paper-and-pencil technique. Sensitive data was not collected. No remuneration was given. The data that support the findings of this study are available from the corresponding author, upon request.

##### Results

The convergent validity for the newly developed scale was tested once again, this time using set of six questions related to the attitudes towards the expression of feelings, but assessed by the other partner in the romantic relationship. The correlation coefficients across couples in the study are presented in Table 6.

Highlighting the most important results, in all instances the assessment of expression of feelings privately and in public was confirmed by the other partner in romantic relationship. The pattern was very similar for both genders, regardless of if it was a woman self-assessing her expression of feelings and her partner judging her display of feelings, or the opposite. Also, there was a high concordance in couples in a sense that greater display of feelings (private, public, and altogether) in one partner coincided with higher expression of feelings in the other partner. The same applied to the expression of opinions and attitudes towards the display of feelings in public. Both negative opinions and behaviours in one partner coincided with more negative opinions and behaviours in the other partner, as self-assessed. A higher self-assessment of tendency to express feelings (in all contexts) allied with a need expressed by the other partner to be shown feelings in public and at home. Also, self-assessment related to negative opinions and behaviours towards people showing their feelings showed a high concordance with romantic partners' assessments following the opinion that one's partner is annoyed by people showing their feelings in public and also expresses comments in that regard. The convergence of opinions in couples was also present for the remaining constructs. Specifically, these applied to display of feelings in public

**Table 6** Zero-order Correlation Coefficients for Private and Public Display of Feelings and Additional Measures Across Couples, N = 408

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Private display of affection	.56***	.43***	.52***	-.01	.04	.52***	.63***	.07	.06	.17*	.39***
2. Public display of affection	.47***	.52***	.53***	-.1	-.03	.55***	.51***	.00	.05	.21**	.31***
3. General display of affection – second order	.55***	.51***	.56***	-.06	.01	.57***	.61***	.04	.06	.20**	.38***
4. Opinions (negative) about people displaying affection in public	.06	.02	.04	.26***	.25***	-.10	-.04	.32***	.36***	.02	.07
5. Behaviours (negative) towards people displaying affection in public	.11	.07	.09	.14*	.29***	-.07	-.03	.24***	.36***	.14*	.05
6. Does your partner display affection for you in public?	.56**	.63***	.64***	-.20**	-.08	.44***	.42***	-.02	-.02	.33***	.34***
7. Does your partner display affection for you when you are alone at home?	.61**	.56***	.62***	-.11	-.03	.43***	.56***	.08	-.01	.25***	.45***
8. Is your partner annoyed by people who show affection in a public place?	.05	-.1	-.03	.39***	.38***	.01	.03	.27***	.34***	-.01	.01
9. Does your partner comment on the behaviour of people who show affection in a public place?	.06	-.08	-.01	.28***	.37***	.06	.1	.22***	.42***	.07	.07
10. Do you need your partner to show affection for you in a public place?	.25**	.35***	.32***	-.14*	-.02	.44***	.35***	-.12	.09	.24***	.13
11. Do you need your partner to show affection for you when you are alone at home?	.43**	.34***	.41***	-.03	.01	.43***	.52***	.01	.03	.12	.30***

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . The coefficients for female partners in the study are placed horizontally, while for male partners vertically.

and at home in the partner's eyes, annoyance and expression of comments towards people showing their feelings in public, as well the need for feelings to be shown at home and in public. The only significant asymmetry in results related to gender was that, as self-assessed, more negative opinions about people showing feelings in public among men in the study were related to opinions expressed by their female partners that their male partners show less feelings in public for them, but it also coincided with a lower need among these female partners to be shown feelings in public. Negative opinions about people showing their feelings in public did not have such an effect among women in the study. Additionally, more negative behaviours towards people expressing feelings in public among women were related to higher need for their male partners to be shown feelings in public; however, this tendency was of a very weak magnitude, and such an effect did not exist for male participants in the study (Table 7). Overall, again the results confirm the convergent validity of a newly developed tool.

In Study 3, again (as in Study 2) there were no significant gender differences for study constructs, apart from a significant but of a low magnitude correlational coefficient for one's need for a partner to show his/her affections at home. Apparently, women expressed a greater need for their partners to show their affections at home. Older age coexisted with lower levels of study constructs, except for one: 'Opinions about expression of affections

by other people in public', which did not show any relationship. This could be interpreted as participants in the study were assessing their own tendencies to display affections privately and publicly as lower with age, and they were also undertaking fewer behaviours towards other people displaying their affections in public. They also were assessing their partners' display of affections as lower in general (privately and in public), as well they were assessing their partners as being less annoyed and having less negative opinions about people expressing their affection in public. With age, there was also a lower need for romantic relationship partners to express their affection both in public and privately. Education and size of the locality were only marginally related to some study constructs, otherwise they did not play any significant role. Relationship length was negatively related to nearly all study constructs (except for opinions). People in an active sexual relationship were showing higher tendency to display their affection privately and in public, they were also more strongly assessing the display of their partner's affections in public and privately, and own need for the partner to show affections in both areas. Both relationship and sexual life satisfaction were positively related to the tendency to display feelings in public and privately, from both perspectives: as assessments of one's own tendencies and judgment related to the partner's tendencies regarding the display of affections. Both sexual life satisfaction and relationship satisfaction were positively related to a greater

**Table 7** Zero-order Correlation Coefficients for Private and Public Display of affection for All Participants in the Study and Across Couples, N = 408

	1.Display of affection by the partner in public	2.Display of affection by the partner at home	3.Partner's anger towards people displaying affection in public	4.Expression of opinions by the partner at people displaying affection in public	5.Need for a partner to show his/her affection in public	6.Need for a partner to show his/her affection at home
<b>All participants in the study</b>						
1. Private display of affection	.47***	.61***	.04	.04	.40***	.64***
2. Public display of affection	.53***	.49***	-.05	-.02	.56***	.54***
3. General display of affection – second order	.53***	.59***	-.01	.01	.52***	.63***
4. Opinions (negative) about people displaying affection in public	-.12*	.00	.41***	.33***	-.25***	-.09
5. Behaviours (negative) towards people displaying affection in public	.00	.05	.39***	.44***	-.06	.02
<b>Display of affection by women and in opinion of their male partners</b>						
1. Private display of affection	.52***	.63***	.07	.06	.17*	.39***
2. Public display of affection	.55***	.51***	.00	.05	.21**	.31***
3. General display of affection – second order	.57***	.61***	.04	.06	.20**	.38***
4. Opinions (negative) about people displaying affection in public	-.10	-.04	.32***	.36***	.02	.07
5. Behaviours (negative) towards people displaying affection in public	-.07	-.03	.24**	.36***	.14*	.05
<b>Display of affection by men and in opinion of their female partners</b>						
1. Private display of affection	.56***	.61***	.05	.06	.25***	.43***
2. Public display of affection	.63***	.56***	-.10	-.08	.35***	.34***
3. General display of affection – second order	.64***	.62***	-.03	-.01	.32***	.41***
4. Opinions (negative) about people displaying affection in public	-.20**	-.11	.39***	.28***	-.14*	-.03
5. Behaviours (negative) towards people displaying affection in public	-.08	-.03	.38***	.37***	-.02	.01

need for a partner to show affections at home, with sexual life satisfaction also being related to the need for a partner to show her/his affections publicly (Table 8).

**Discussion**

According to these results, in all cases, the assessment of private and public display of affection was confirmed by the partner in the romantic relationship. The concordance of the results once again indicates the high convergence validity of the developed tool and demonstrates the accuracy of the scale as a valid measure of the display of affections.

The results also show high concordance in couples in the sense that a greater display of affections by one partner coincided with a greater expression of feelings by the other partner. It may be the result of matching individuals who possess similar characteristics; but also people become similar to each other over the duration of a relationship (see also: Gonzaga et al., 2007). Additionally, showing feelings by one partner may encourage the other partner to reciprocate them. The study revealed a higher tendency to express feelings allied with a greater need for the other partner to receive affection in public and at home. Such a result may also indicate that individuals become more similar during a close relationship, especially considering that romantic partners imitate each other more often than their close friends (Maister & Tsakiris, 2016). This may be related to automatic motor imitation in romantic relationships or a specific chameleon effect.

Both relationship and sexual satisfaction were positively associated with the tendency to show affections

towards the partner and the participant's need show feelings by the partner. Such results can be related to a higher level of intimacy, which has an impact on satisfaction, as well as on the partner's behaviours. This is in accordance with the results of Rubin and Campbell (2012) showing that increases in daily intimacy between partners positively affect relationship passion, positive affect and sexual satisfaction.

The study revealed a negative association between age of the participants, duration of the relationship and willingness to show affections both in private and in public. A similar relationship occurred with the need to show feelings by the partner. These results might be interpreted in terms of lower interest in sex in a longer relationship (James, 1981) and major life events such as childbirth or infant care (Call et al., 1995) that affect the display of affections.

In men's opinion, their female partners displayed affection in public situations to a smaller extent, and they also felt less need for their female partners to do so. Such results are in line with studies showing that men are more likely to touch women in public than women to touch men (Henley, 1973; Hall & Veccia, 1990; Major et al., 1990). It could be the result of gender difference in possessing power and status (Pratto & Espinoza, 2001). Moreover, such results show that although women are more emotional than men (Fujita et al., 1991; Plant et al., 2000; Doss & Christensen, 2006), they show less affection to men in public, probably as a result of assimilation to social and cultural norms.

**Table 8** Zero-order Correlation Coefficients for Private and Public Display of Affection and Quality of Relationship Measures and Sociodemographics, N = 408

	<i>M</i>	<i>SD</i>	Gender (M - 1)	Age	Age <sup>a</sup> SQRT	Educa- tion	Size of locality	Relationship length	Relationship Length Lg10	Active sexual life (Yes - 1)	Sexual life satisfaction	Relationship satisfaction
1. <sup>a</sup>	4.19	.83	-.06	-.52***	-.51***	.04	.11*	-.51***	-.47***	.04	.29***	.30***
2.	3.82	.88	-.01	-.41***	-.41***	.04	.15**	-.38***	-.34***	.13**	.26***	.23***
3.	4.00	.80	-.04	-.50***	-.49***	.05	.14**	-.47***	-.43***	.09	.29***	.29***
4.	1.80	.77	-.06	-.08	-.09	-.04	.01	-.08	-.09	-.07	-.07	-.06
5.	1.64	.74	.00	-.18***	-.18***	-.03	.05	-.15**	-.16**	-.07	-.01	.01
6.	3.74	1.12	.00	-.35***	-.34***	.10*	.08	-.35***	-.33***	.15**	.30***	.24***
7.	4.25	.96	-.07	-.44***	-.43***	.12*	.09	-.45***	-.43***	.05	.36***	.39***
8.	2.14	1.03	-.03	-.21***	-.22***	-.14**	.04	-.20***	-.20***	-.06	-.02	.04
9.	2.04	1.02	.01	-.19***	-.20***	-.11*	.02	-.19***	-.17**	-.09	.04	.06
10.	2.98	1.01	-.04	-.21***	-.21***	.00	-.01	-.21***	-.20***	.11*	.20***	.10
11.	4.30	.88	-.17**	-.38***	-.37***	.06	.06	-.33***	-.31***	.04	.19***	.21***

Note. \**p* < .05, \*\**p* < .01, \*\*\**p* < .001. <sup>a</sup> - age and relationship length were square root (SQRT) or logarithmic (LG10) transformed since they were slightly positively or negatively skewed.

<sup>a</sup>1. Private display of affection; 2. Public display of affection; 3. General display of affection - second order; 4. Opinions (negative) about people; displaying affection in public; 5. Behaviours (negative) towards people displaying affection in public; 6. Does your partner display affection for you in public?; 7. Does your partner display affection for you when you are alone at home?; 8. Is your partner annoyed by people who show affection in a public place?; 9. Does your partner comment on the behaviour of people who show affection in a public place?; 10. Do you need your partner to show affection for you in a public place?; 11. Do you need your partner to show affection for you when you are alone at home?

In comparison with men, women had a greater need for their partners to show affection at home. Showing affection by a partner at home could be a clear signal that the man is planning a long-term relationship with the woman. Reproductive costs incurred by women are generally higher than those incurred by men (Buss, 2015). One may assume that women will expect displays of affections by their male partners because it would be the way of confirming that they will receive the resources to live and raise their offspring in the long term (Hendrick & Hendrick, 1992). Another significant aspect from an evolutionary point of view is that the exchange of feelings has served as an indicator to the other person that they would be a good, affectionate parent (Floyd, 2001).

### GENERAL DISCUSSION

Based on the results of the conducted Studies 1-3, it could be stated that the Public and Private Romantic Display of Affections Scale is a psychometrically sound tool with convergent validity confirmed in multiple ways (with the usage of a different scale, as well with self-assessment measures validated by another partner in a relationship). This could be of particular importance since previous studies were conducted using only natural observations (e.g., Regan et al., 1999), or only physical expressions of affection were analysed (Rostosky et al., 2000; Gullede et al., 2003). This new tool would allow not only deeper knowledge about the mechanisms governing romantic relationships but might also be used in practice, e.g., for clinical psychologists.

It is also worth noting that the investigated dependencies showed a steady pattern of relationships across demographics as the measures of the quality of relationships. In all three studies, positive correlations between display of affections and relationship satisfaction and sexual satisfaction were observed. However, these studies also showed a decline in showing affection with age or with the duration of a romantic relationship. Probably, over time, some couples stabilise their display of feelings at a certain level that is satisfactory for both partners. However, for couples with declining levels of passion and intimacy, in crisis or who simply want to improve the quality of their romantic relationship, an increase in the display of affection can be a good way to improve the relationship.

### LIMITATIONS AND DIRECTIONS FOR FURTHER RESEARCH

Using the PPRDAS in further longitudinal research would allow us to analyse the dynamics of public and private display of affection in a romantic relationship. The presented studies had a cross-sectional form and do not allow us to draw causal conclusions. This obviously could be overcome by experimental studies. Also, experimental design could be helpful to resolve uncertainties upon the direction of relationship between studied constructs. Is the

public display of affections a cause of higher relationship satisfaction, or does higher relationship satisfaction make couples willing to display their affections to a greater extent? We do not intend to tackle these important questions at the moment, as the most important thing in this very first step was to be able to create a valid measurement. Obviously, while interpreting the results, certain possible biases related to the samples' socio-demographic distributions should be taken into consideration. Without a doubt, it would be better instead of having a convenience sample to collect a representative sample that would reflect sociodemographics more accurately. However, this would require additional economic resources.

Display of affections is also a heavily culturally biased subject, and on this matter, future studies should contain various cultural contexts in order to identify universal mechanisms ruling private and public displays of affection, attitudes towards people displaying affection in public and associations with relationship outcomes. This would be of particular importance as most psychological studies are conducted in WEIRD (Western Educated Industrial Rich and Democratic) countries, to use Haidt's term (2012).

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available at: [https://osf.io/bf5hv/?view\\_only=964a000d8d2e4dec9b05aeca8ed75aa0](https://osf.io/bf5hv/?view_only=964a000d8d2e4dec9b05aeca8ed75aa0)

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