Research article

Development and validation of the gift reciprocation anxiety scale (GRAS) for youths and adults in intimate relationships

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ABSTRACT

The development and validation of any scale measuring reciprocation anxiety induced from gift reciprocation contexts are yet to be addressed for intimate relationships. To this end, the present study aimed to develop and validate the gift reciprocation anxiety scale (GRAS) using modern psychometric methods for Bangladeshi youths and adults engaged in informal romantic and formal marital relationships. A total of 763 Bangladeshi youths of different public universities and adults in different professions with the ages ranged from 17 to 36 years were the study participants recruited through convenient sampling technique. Firstly, items were generated, and the content validity coefficients were determined through appropriate procedure to finalize the 7-item GRAS for administering on a large sample ($n = 763$). Next, the adequacy of the data for factor analysis was checked and exploratory factor analysis (EFA) was done, extracting a single factor structure which was confirmed through the same factor retention using parallel analysis (PA). Model fit indices of confirmatory factor analysis (CFA) validated the unifactorial solution of GRAS. In addition, the item response theory (IRT) analyses confirmed that the items of the GRAS had high discriminative power, satisfactory threshold parameters, and covered a wide range of the latent trait. Mean inter-item correlations, corrected item-total correlations, and internal consistency reliabilities of the newly developed GRAS fall within the suggested limits. Multigroup confirmatory factor analysis (MGCFA) revealed that the GRAS can invariably be applied across gender, age, and marital status. A moderately positive association of GRAS with reciprocity anxiety, depression, and anxiety indicated the convergent validity of the scale. Altogether, GRAS has been found to be a psychometrically sound tool to objectively measure gift reciprocation anxiety in close relationships, implicating gift reciprocation less as an obligation and more as signs of trust, commitment, security, and care for ensuring better intimate relationships.

1. Introduction

As social creatures, individuals would like to establish relationships with nearer ones including siblings, family members, close friends, colleagues, romantic partners, and significant others [1,2]. Some of these relationships such as family bonding and extended family relationships are stable and congenial, while others like friendships and romantic relationships may exist for short, moderate, or lengthy periods due to life altering experiences [3]. However, in most cases, relationships appear as simple and ingenuous, but the reverse is true in many relationships with their complex social, emotional, physical, personal, and familial needs [4]. Hence, the

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breadth and depth of complex interpersonal relationships develop and expand over time ranging from superficial, non-intimate areas to more intimate, deeper layers of the selves [5,6]. Consistently, engagement in intimate relationships and their smooth continuation require certain needs, desires, and wants to be routinely met [7]. Individuals in such relationships have a strong communal orientation where they think more about their partners' welfare and needs without expecting something in return. This is contrary to those of the partners focusing more on self-interested behaviors with weak communal orientation [8,9]. For intimate relationships with strong communal orientation, gifts serve as a medium of emotional attachment and a way of expressing care, commitment, security, and trust [10–13]. Exchanging gifts is one of the important ways to express feelings and desires, facilitating the expression of sentiments such as love, warmth, and happiness [14–17]. Apart from the joy and happiness induced from reciprocating gifts in close relationships, the gift giving and receiving experiences can also generate anxiety and distress due to poor emotional and relational regulation [18–22]. Research indicates that in many cases reciprocating gifts in close relationships is highly stressful and induce anxiety and ambivalence both for the giver and the receiver [23–25]. Thus, the meaning that gifts carry in relationship practices is situation-specific and varies in terms of objects, occasions, cultures, and motivations [26]. While turning our focus into romantic relationships, gift works as a mechanism to reinforce the highly valued unstable relationships in its initial phases when uncertainties and lack of commitment are common in partners [14,18,27]. In such a fledgling relationship context, gifting is guided by the principle of reciprocity, creating a sense of obligation for the giver and the receiver to reciprocate gifts as a symbol of generosity, dedication, and closeness [14,28,29]. The norm of reciprocity has been embedded in the exchange theory of social sciences in which human interactions are considered as giving something to someone expecting to receive something in the present or the future [30,31]. In its initial stages of romantic relationships, exchange theoretical discussion primarily focuses on two theories, the economic and social exchange theories [20]. Considering economic exchange theory, partners choose gifts based on their financial value intending to change the fledging relationship into established one and gain proximity to partners through intimacy and love [32]. In established relationships, if the giver approaches an intimate partner with a gift of high cost, it indicates heightened dedication, earning capacity, and willingness of the giver perceived by the receiver to invest in the relationship [32,33]. Apart from its positive symbolic implications, giving highly expensive gifts in a fledgling relationship may be undesirable to a new partner and can cause relationship imbalance due to an implied and unwanted obligation, causing adverse effects such as depression, anxiety, and relationship dissatisfaction [34,35]. Furthermore, in an unstable romantic relationship, partners with hidden agendas use gifts to manipulate, control, and self-gratify themselves against the innocent and dependent partners [36]. In this way, they hurt their partners and damage their self-image, resulting in a threatened interpersonal relationship [37]. Consequently, the suspicious partners search for costly apology gifts against their transgressions, expecting positive responses from innocent recipient partners [14,38,39]. But the victim recipients perceive the apology gifts as transgression reminders, leading to strong negative emotions and emphasis on the restriction of relationship boundaries [40,41]. However, in the context of social exchange theory of gift giving, the gift receiver perceives the gift as the giver's extended self and symbol of commitment [14]. Unlike the economic theory, the gift recipient, according to social exchange theory, does not have an obligation to return something of comparable financial value but feel pressure to reciprocate gifts with comparable symbolic value [14]. In the early stages of romantic relationship, the intimacy level and relationship dependence between the partners are low and, in such instances, giving gift matching with the giver's characteristics carries a difficulty in understanding the gift's symbolic value, inducing negative reaction in the recipient [42–44]. Therefore, the giver in the initial phases of relationship should select gifts prioritizing the recipient's interests over their own in order to advance the relationship [45,46]. These findings are consistent with both the self-consistent theory [47] and self-verification theory [48,49], suggesting that recipients appreciate gifts as a symbol of love and happiness if the gifts are congruent with their characteristics and images in some way [50,51]. As relationship progresses, recipients appreciate gifts that match with the giver's characteristics, a basic tenet of self-disclosure theory, revealing one's information and images to others that may sometimes overlap between the self and others, resulting in relationship satisfaction with high intimacy and dependence [46,52–56]. The economic and social exchange theories work on the earlier phases, and as people progress into deeper, more stable stages of relationships, another exchange theory type, "the agapic love paradigm" prevails [4,14]. Agapic love is altruistic, self-less, and sacrificial in which partner's desired love language is expressed without expectation of anything in return [7,14,57,58]. This is because the altruistic gifts carry strong emotional impact, promoting positive emotions in the gift-recipient through stronger trust, affective commitment, and perceptions of fairness [59].

Furthermore, the study of gift reciprocation among partners in intimate relationships has been investigated using the attachment theory [4]. Attachment theory [60,61] highly focuses on the role of relational experiences through the development of bonding and proximal efforts that individuals form of the self and others with regards to varying relationships [4]. When considering gift reciprocation as love language with deeper commitment, attachment styles come into play to perceive and receive affection in romantic relationships [4,46,62]. Individuals' gift-giving perceptions (e.g., obligation or pleasure) and recipients' emotional responses and interactions with the givers are determined by the attachment styles (secure/anxious/avoidance) in intimate relationships [4,63,64]. Among different attachment styles, securely attached people seem confident, exhibit trust, possess positive conflict resolution strategies, and show high intimacy with informal romantic and formal marital partners [65–68]. These people prefer to reciprocate gifts to express love, commitment, and trust rather than feeling obligated. Consistent with this attachment style, for young adults dominated by the agapic love paradigm of exchange theory, romantic relationship entails mutual feelings of trust and connectedness where the reciprocity sense of obligation does not work [69]. But for many of the university young adult students, romantic relationships are based on economic and social exchange theories [18]. Here, to have a desirable potential mate, both males and females use gender-specific gift reciprocation strategies for exaggerating their personal characteristics to attract a potential mate [70]. Young adult students with such traits expect instant rewards by investing unthoughtful and undesired efforts perceiving love as a game and the pursuit of a relationship for serving self-interests [71,72]. These individuals are dominated by the anxious or avoidant attachment styles compared to the secured one and connect to the partner by supressing their true thoughts for fear of making the partner angry or

upset [73]. In respect of attachment styles, anxious individuals perceive gift giving in intimate relationships as an obligatory response rather than seeking pleasure from it. Constant fears of being abandoned by the attachment figures make them feel insecure thinking that their partners are neglecting and inattentive to their emotional needs, creating a strong desire to get closer to partners [65,66,74]. Accordingly, they become compulsive to find ways to invest more heavily into the relationship as a means to secure and strengthen the bond between them [67,75]. Avoidant individuals, on the other hand, do not expect their partners' support, value their own independence, and show a low-level of intimacy to their partners showing resistance to their relational direction [60,61,66,76]. This reluctance to be intimate with partners leads to misinterpretation in the gifting process in terms of commitment and love [77]. Same as anxious style, avoidant individuals also perceive gifting more as an obligation rather than enjoying it. This obligatory feeling decreases self-esteem, sense of competence, sense of autonomy, and increases feelings of insecurity, poor attachment, and inadequate boundaries in intimate relationships [4,19,21,59]. Additionally, if any of the romantic partners engages in an agapic love with secured attachment style but the other one approaches with the anxious/avoidant attachment styles, this generates an aversive feeling and behavioral restrictions in the process of reciprocating gifts as indicative of commitment and love [61,76]. Therefore, it may be argued that individuals differ in the degree to which they feel anxious in a situation, requiring them to reciprocate gifts through an urge of obligation or repay. When one intimate partner receives a gift that is difficult to reciprocate, he/she experiences reciprocity anxiety due to the feeling of indebtedness and fear of negative evaluations from the other partner [78,79]. When these types of negative emotions are aroused, the giver is less motivated to give gifts as a symbol of commitment and love [80].

These complex human emotions aroused in gift reciprocation contexts among intimate partners generate gift reciprocation anxiety. More specifically, based on the exchange and attachment theoretical contexts discussed above, when gift-reciprocity expectations in close relationships are yet to be fulfilled, it may induce discomfort and anxiety [22]. Despite being a meaningful aspect of social relations, any psychometrically sound tool has yet to be developed to measure anxiety in gift reciprocation contexts for intimate relationships. Till to date, the most frequently used instrument for assessing individual differences in experiencing discomfort in reciprocity circumstances is the Reciprocity Anxiety Scale (RAS) comprising 11 items and measured on a five-point Likert-type response format [81]. Although this tool is essential to the exploration of reciprocity anxiety, it is not intended to measure reciprocity anxiety in the gift-giving and receiving contexts for intimate or close relationships. This gap led us to explore the potential factors and theories influencing reciprocity anxiety in gift-giving and receiving contexts and accordingly, in the present study, we developed and validated a new scale 'Gift Reciprocation Anxiety Scale (GRAS)'. Towards this end, the specific goals of the study were: (1) to determine the content validity and internal consistency reliabilities of GRAS; 2) to examine the factor structure of the measure through exploratory factor analysis and to ensure the factor retention using parallel analysis; 3) to validate the factor structure of the GRAS using confirmatory factor analysis; 4) to identify the discriminative power, threshold parameters, and most informative spectrum of the measure using IRT analyses; 5) to determine the convergent validity of the newly developed measure, and 5) to investigate whether the GRAS can be applied in the same way across gender, age, and marital status.

2. Method

2.1. Item generation and content validation

In generating items for the GRAS, the study followed a systematic guideline suggested for the development of psychological tools [82–85]. Firstly, the authors operationally defined the construct 'Gift Reciprocation Anxiety' using reciprocity anxiety as a framework in the context of gift reciprocation for close relationships [4,18,35,42,43,47]. Based on an integrative approach of the two theories, exchange theory [20,30,31] and attachment theory [4,60,61] in respect of the gift reciprocation in intimate relationships with varying attachment styles, we identified the potential factors influencing the construct "gift reciprocation anxiety" of youths and adults in intimate relationships. Then, we proceed to the extensive review of literature [4,14,22,36,81,86] intended to generate a diverse potential pool of initial items. Along with this, cognitive interviewing of some bilingual university undergraduate students representing the target population were carried out while generating the initial item pools. A number of key aspects raised from the interviews, and accordingly, the researchers primarily generated 11 GRAS items in Bangla (native) language. Then, efforts were made to tailor these items to the intended construct, "gift reciprocation anxiety". Next to this stage, researchers defined a focus group consisting of 18 bilingual university undergraduate students (males = 10 and females = 8). Among them, eleven students translated the original Bangla version into English and the remaining seven students back translated the English version into Bangla. No significant discrepancies were found between the translated and the original Bangla versions of the GRAS. Finally, the linguistic equivalence of the Bangla and English versions of the GRAS was determined through the consensus of participants of the focus group [87]. The focus group agreed upon the comprehensibility of the original Bangla items with its English form and thus, the Bangla version of the GRAS was finalized to determine its further psychometric properties on a large Bangladeshi sample of youths and adults.

To determine the content validity of the GRAS, items were reviewed by a panel of experts (two Professors, two Associate Professors, two Assistant Professors, two Psychologists, one Assistant Clinical Psychologist, and one Clinical Psychologist) having fluencies in both Bangla and English languages as well as experiences in the construction and adaptation of psychological tools. Among the experts, six were males and four were females with ages ranging from 27 to 55 years ($M = 36.10, SD = 11.29$). They judged the representativeness, relevance, and clarity of the items on a 5-point response format from 'least' to 'most' ('*1 = least*' and '*5 = most*'). Based on the expert recommendations and agreement scores for each and total items of the GRAS, four items were deleted, and the others were edited and/or revised. To check the content expert validation, the judgment-quantification by Content Validity Coefficient (CVCj) [88] was determined for each item (CVCi). For Content Validity Coefficient of total items (CVCt), CVC values ≥ 0.80 were used as the criterion [89]. Accordingly, seven items for the newly developed GRAS were retained for the final version. There was an agreement among the

experts in respect of the directionality of the GRAS items.

To examine the items' comprehensibility, a pilot study was conducted on thirty individuals including sixteen males and fourteen females with ages ranging between 18 and 36 years ($M = 20.33$, $SD = 1.58$). The participants were asked to assess each item's comprehensibility using a 5-point rating scale ('*1 = least comprehensive*' and '*5 = most comprehensive*'). In order to assess whether any changes were required, researchers considered the responses of the participants and accordingly changed, edited, or revised the items to make them highly comprehensible. This step in the validation of an instrument is crucial as it aims to ensure the comprehensibility of the items rated by the intended participants. Most of the participants agreed that the important aspects of the construct have been addressed thoroughly, and almost all items reflected the thoughts, feelings, and actions related to gift reciprocation anxiety in intimate relationships.

2.2. Test of psychometric properties of the GRAS

2.2.1. Participants

763 participants conveniently selected from different colleges, public universities, and workplaces in Bangladesh participated in the current research. Their ages ranged between 17 and 36 years ($M = 23.44 \pm 2.61$) with 67.76 % males ($n_1 = 517$). The inclusion criteria of the participants to provide their responses were that they should be at least the college going youths having a minimum age of 17-year and engaged in informal romantic and/or formal marital relationships with the partners, ensured through 'yes' responses when asked whether they were engaged in such relationships. Informed consent was taken from the participants about their voluntary involvement in the study prior to recording their responses through the measures used in the study. Among the participants, 89.78 % ($n_1 = 685$) were unmarried young adults studying at different colleges and universities in Bangladesh whereas, the remaining (10.22 %, $n_2 = 78$) were married and engaged in different professions. In terms of educational qualification, 55 % participants ($n_1 = 420$) were undergraduate students, 17.2 % finished graduation ($n_2 = 131$), and others were studying in senior high school levels (27.8 %, $n_3 = 212$). While considering their occupational status, 85.3 % ($n_1 = 651$) participants were students and the remaining (14.7 %, $n_2 = 112$) were government and non-government service holders. Notably, more than half (59.4 %, $n = 453$) of the participants reported to frequently attend to different social occasions or parties as part of their regular activities. The study was conducted following the ethical principles of research with human subjects [114] and the ethical approval was taken from the Ethical Review Committee-Research and Publication (ERCRP), Department of Psychology, University of Rajshahi, Rajshahi-6205, Bangladesh [approval code: ERCRP-PSYRU-2(8)22; Date: October 17, 2022]. Table 1 demonstrates the socio-demographic characteristics of the participants.

2.2.2. Procedure

The newly developed GRAS and other relevant measures used to collect data from the participants were converted into electronic format via Google Forms. To invite respondents to participate in the study, a survey link generated from google forms and containing all relevant information, was shared in social media platforms, including Facebook, WhatsApp, Email, and so on. The first page of the form contained information about the research objectives, confidentiality, and informed consent of the participants. Each participant completed a demographic information form including age, gender, marital status, educational qualification, occupational status, and

Table 1
Baseline demographic characteristics of the participants (N = 763).

Variables	N = 763 Mean ± SD, n (%)
Gender	
Males	517 (67.76 %)
Females	246 (32.24 %)
Age (years)	23.44 ± 2.61
Marital status	
Unmarried	685 (89.78 %)
Married	78 (10.22 %)
Educational Qualification	
Undergraduate	420 (55 %)
Graduate	131 (17.2 %)
Senior high school	212 (27.8 %)
Occupational status	
Students	651 (85.3 %)
Service holders	67 (8.8 %)
Business	7 (0.9 %)
Others	38 (5 %)
Presence in any social events/parties	
Irregular presence	121 (15.9 %)
Almost irregular presence	103 (13.5 %)
Sometimes present	86 (11.3 %)
Regular presence	261 (34.2 %)
Almost regular presence	192 (25.2 %)

so on followed by the 7-item GRAS, 11-item Reciprocity Anxiety Scale (RAS) [81], Bangla Depression Anxiety Stress Scale-21 (DASS-21) [90], and a single-item rating scale measuring depth of attachment with the partner. The whole data collection procedure took approximately 35 min to finish. After completion, each participant was thanked for their active participation and cooperation in the study.

2.2.3. Measures

2.2.3.1. Gift Reciprocation Anxiety Scale (GRAS). The newly developed Gift Reciprocation Anxiety Scale (GRAS) indicates the discomfort or anxiety induced from gift giving and receiving in a wide range of intimate relationships including anxiety generated through the reciprocation of gifts in informal romantic and formal marital relationships. The scale is based on the theoretical contexts of exchange [20,30,31] and attachment [4,60,61] where anxiety induced from gift reciprocation in close relationships vary in respect of the financial value, symbolic value and agapic love paradigms along with secured, anxious, and avoidant attachment styles among the partners. The GRAS consists of 7 items where the responses are recorded on a five-point Likert format to obtain scores regarding the gift reciprocation anxiety of youths and adults engaged in an intimate relationship. There are no items to be reverse coded in the scale and thus, the responses of the participants ranged from 1 to 5 for all seven items *('1 = almost never', '2 = never', '3 = sometimes', '4 = always', '5 = almost always')*. Higher score on the scale indicates a high level of anxiety whereas, lower score indicates lower gift reciprocation anxiety of the participants.

2.2.3.2. Reciprocity Anxiety Scale (RAS). The Reciprocity Anxiety Scale (RAS) is an 11-item scale developed by Xiong et al. [81] to measure individual differences in experiencing discomfort in reciprocity situations such as consumer-related behaviors. The instrument has two dimensions, namely, reciprocity distress (feeling of discomfort or anxiety in reciprocity situations) and reciprocity avoidance (deliberate avoidance of reciprocity situations). Construction of the Reciprocity Anxiety Scale (RAS) is the combination of these two dimensions [81]. The factor structure of the RAS has been explored through EFA, and validated through CFA in its original validation study. The scale showed excellent internal consistency reliabilities as well. Bangla translation of the RAS was used in the present study as a criterion measure of GRAS. Responses in the RAS are recorded on a five-point Likert scale ('1 = strongly disagree' and '5 = strongly agree') for items 7, 8, 9, 10, 11. Remaining items in the RAS are reverse coded. In the present study, good internal consistency reliabilities ($\omega = 0.85$, $\alpha = 0.85$) were evident for the Bangla RAS.

2.2.3.3. Depression Anxiety Stress Scale-21 (DASS-21). The Bangla version of DASS-21 [90] originally developed by Lovibond & Lovibond [91] comprises 21 items measuring depression, anxiety, and stress symptoms of the participants. As a self-report inventory, each of the depression, anxiety, and stress dimensions in the DASS-21 consists of seven (7) items leading to a total of 21 items. While administering this measure on the present sample, participants were asked to rate their past week experience on a four-point response format ranged between *0 (did not apply to me at all) and 3 (applied to me very much or most of the time)*. In each subscale of the DASS-21, total score is obtained by adding up the scores of seven items and then multiplied by two. Thus, the range of the total score for each subscale ranges from 0 to 42. The psychometric properties of the Bangla version of DASS-21 [92] utilizing both classical test theory (CTT) and item response theory (IRT) approaches supported the three-factor correlated model along with strict invariance across gender and suggested that items had satisfactory discrimination indices. Moreover, the scale demonstrated good internal consistency reliabilities in both approaches. In the present study, Bangla version of the DASS-21 [90] was administered on the youth and adult participants in intimate relationships and good internal consistency reliabilities were evident for each subscale ($\alpha = 0.80$, $\omega = 0.81$ for the depression subscale; $\alpha = 0.76$, $\omega = 0.77$ for the anxiety subscale; $\alpha = 0.73$, $\omega = 0.73$ for the stress subscale).

2.2.3.4. Depth of attachment. The depth of attachment with the romantic partner based on the level of intimacy and relationship dependence [8,47,93,94] was measured in the present study through a single statement titled "How do you evaluate the depth of attachment with your romantic partner based on the level of intimacy and relationship dependence?" Participants were asked to rate their depth of attachment on a 10-point rating scale ranging from 1 to 10 where 1 indicates the lowest attachment and 10 indicates the highest attachment.

2.2.4. Statistical analyses

For the development and validation of the GRAS, Classical Test Theory (CTT) and Item Response Theory (IRT) approaches were followed. First, Content Validity Coefficients (CVC) were determined, and the 7-item GRAS was finalized. Then, the GRAS was applied on a large sample of 763 youths and adults to explore its further psychometric properties. For a large sample size (N > 300), the normality of the data was checked with a skewness value of <2 and kurtosis value of <7 [95]. Under the CTT, mean inter-item correlations (ranged between 0.15 and 0.50, [96]), corrected item-total correlations (accepted value ≥ 0.30; [97]), internal consistency reliabilities (Cronbach's Alpha and McDonald's Omega; accepted reliability ≥0.70; [98]), exploratory factor analyses (EFA), parallel analyses, confirmatory factor analyses (CFA), and multi-group confirmatory factor analyses (MGCFA) were run. Factor loadings explored in CFA were used to calculate the composite reliability (accepted coefficient ≥0.70; [99]) and average variance extraction (AVE; accepted value ≥ 0.50; [99]). Prior to conducting EFA, determinant value (>0.0001; [100]), Kaiser-Meyer-Olkin [KMO] value (>0.60; [101]), and Bartlett's test of sphericity value (p < 0.001; [101]) were checked to support the suitability of the data for EFA [97]. The recommended eigenvalue for the retention of factors in EFA was considered ≥1 (the Kaiser-Guttman criterion; [102]). To confirm the factor retention in EFA, a parallel analysis was run. In CFA, model fits were evaluated through the

fit indices of χ2/*df* (<5; [103]), comparative fit index [CFI], Tucker- Lewis index [TLI] (≥0.90; [104]), and root mean square error of approximation (RMSEA ≤0.08; [105]). To assess whether the GRAS can invariably be applied across gender, age, and marital status, multi-group CFA was performed. The values of ΔCFI ≤0.010 and ΔRMSEA ≤0.015 were considered as the indicators of invariance [106].

Once we confirmed the most suitable factor structure using CFA, the IRT analyses using the Graded Response Model (GRM) [107] were employed to evaluate the GRAS at item level. Under IRT, we estimated the discrimination parameter and threshold parameters for each item. The discrimination parameter is measured at the steepest point, and it reflects the slope of the item characteristic curve (ICC). The discrimination parameter also shows how strongly the item is associated with the latent variable. An item with a higher discrimination value provides more information compared to an item with lower discrimination value. As an explanation of item discrimination, Baker & Kim [108] suggested that the values between 0.1 and 0.34 indicate very low, 0.35 and 0.64 low, 0.65 and 1.34 moderate, 1.35 and 1.69 high, and greater than 1.70 indicate very high discrimination. We followed these cut offs in the present study. The item threshold parameter indicates where on the latent continuum the discrimination occurs [109]. We calculated the item information curves (IICs) for all GRAS items as well as the test information function (TIF). Convergent validity of the newly developed GRAS was explored through its association with the Bangla translation of the Reciprocity Anxiety Scale [81] and the depression, anxiety, and stress subscales of DASS-21 [90]. All analyses were performed using the IBM SPSSv26, R version 4.3.3 [110] and Microsoft Excel 365. Exploratory factor analysis was conducted using the *psych* package [111], confirmatory factor analysis and invariance analyses with the *lavaan* package [112] and IRT analyses with the R package *ltm* version 1.2.0 [113].

3. Results

Descriptive statistics and item-level psychometric properties of GRAS have been demonstrated in Table 2. The skewness (ranging between −0.20 and 0.32) and kurtosis (ranging between −0.92 and −0.52) values fall within the recommended ranges, suggesting the normality of the data [95]. Item analysis expressed through corrected-item total correlations (CITC) fall within acceptable ranges (0.47–0.67; Table 2).

The internal consistency reliabilities of GRAS reached an excellent level as revealed through Cronbach's alpha ($\alpha = 0.82$) and McDonald's omega ($\omega = 0.82$) (Table 3). The mean item-total correlation was found to be 0.39. The composite reliability (0.87) and the AVE value (0.50) were in line with the recommended ranges (Table 3).

To explore the factor structure of GRAS, exploratory factor analysis (EFA) was conducted. Prior to this, determinant value (0.14), Kaiser-Meyer-Olkin [KMO] value (0.87), and Bartlett's test of sphericity value (1474.91, $p < 0.001$) suggested the adequacy of the data for EFA. Exploratory factor analysis (minimum residual method with oblique rotation geominQ) yielded a single-factor structure for the GRAS with eigenvalues over 1 which cumulatively explained 39.7 % of the variance. To confirm the factor retention, parallel analysis (PA) was run as a recommended procedure [115,116]. In the present study, the real data component mean eigenvalues were greater than the simulated random data mean eigenvalues and thus, we retained the single-factor structure in the EFA model.

To validate the factor structure, confirmatory factor analysis using the diagonally weighted least square (DWLS) estimation method was launched on the 7-item GRAS. The CFA results (Table 4) demonstrated that the one-factor solution of the GRAS had good model fit indices ($\chi^2/df = 4.51$, *CFI* = 0.99, *TLI* = 0.99, *RMSEA* = 0.07) showing its applicability for youths and adults in intimate relationships. Factor loadings of items for EFA ranged between 0.53 (item 7- repeatedly receiving gifts from the beloved one makes me compulsive to repay something against my will) and 0.76 (item 5- I worry to think about the suitability of a given gift as signs of expressing gratitude to the beloved one) and those for CFA ranged between 0.57 (item 7) and 0.79 (item 5) (Table 5).

The IRT analyses were conducted using the GRM model where it was evident that item discrimination parameters ranged from 1.28 to 2.54, with an average discrimination (α) of 1.70. Specifically, item 5 exhibited perfect discrimination, items 2 and 6 demonstrated very high discrimination, items 1, 3, and 4 showed high discrimination, and item 7 displayed moderate discriminating power. Table 6 provides the IRT based model parameters for the GRAS items.

Fig. 1A–G presents the item response category characteristic curves (IRCCCs) which illustrate the probability of selecting each response category in relation to the underlying latent trait. For example, in item 7 (Fig. 1G), respondents with a latent trait value (θ) approximately below −1.5 were more likely to select the second category. Those with θ values approximately between −1.5 and 0 were likely to select the third category. Respondents with θ values from 0 to 1.5 tended to choose the fourth category and those with θ values of 1.5 or higher were more likely to select the last response category.

Fig. 2A demonstrates the Item Information Curves (IICs) for items 1 to 7 and Fig. 2B reflects the Test Information Function (TIF) of the GRAS. Item 5 in Fig. 2A provided the most information (above 1.5) across a broad range of latent gift reciprocation anxiety levels.

Table 2
Descriptive statistics and item-level psychometric properties of the GRAS.

Items	Mean	*SD*	Skewness	Kurtosis	CITC
Item 1	3.28	0.92	0.19	−0.54	0.51
Item 2	3.21	0.98	0.14	−0.68	0.59
Item 3	3.41	1.04	−0.05	−0.92	0.55
Item 4	3.04	1.03	0.32	−0.78	0.56
Item 5	3.09	0.93	0.30	−0.52	0.67
Item 6	3.28	0.95	0.12	−0.71	0.57
Item 7	3.58	1.00	−0.20	−0.83	0.47

Table 3
Scale-level information of the GRAS.

Psychometric properties	Scores	Suggested cut offs
Mean inter-item correlation	0.39	Between 0.15 and 0.50
McDonald's omega	0.82	≥0.70
Cronbach's alpha	0.82	≥0.70
Composite reliability	0.87	≥0.70
Average variance extraction (AVE)	0.50	≥0.50

Table 4
Model fit indices of GRAS using confirmatory factor analysis.

Fit indices	Values	Suggested cut offs
χ^2/df	4.51	<5
Comparative fit index *(CFI)*	0.99	>0.90
Tucker Lewis Index *(TLI)*	0.99	>0.90
Root mean square error of approximation *(RMSEA)*	0.07	<0.08
Standardized root mean square residual *(SRMR)*	0.04	<0.08

Table 5
Factor loadings of the items of GRAS.

Items	Factor Loadings	
	EFA	CFA
1. I feel indecisive whether the gift bought with my preference will be liked by my beloved one.	0.57	0.62
2. On special days, I worry about giving gifts consistent with the expectation of my beloved one and my ability.	0.66	0.70
3. I become aroused to search for the opportunities to repay the gift to my beloved one once I receive a gift	0.61	0.64
4. After receiving a gift from the beloved one, I feel discomfort to repay the gift soon as a way of impunity.	0.63	0.67
5. I worry to think about the suitability of a given gift as signs of expressing gratitude to the beloved one.	0.76	0.79
6. I worry about the usefulness of gifts given to my beloved one.	0.64	0.68
7. Repeatedly receiving gifts from the beloved one makes me compulsive to repay something against my will.	0.53	0.57

Table 6
Discrimination (α) and Difficulty (b) parameters of GRAS items using IRT model.

	α	b_1	b_2	b_3	b_4
Item 1	1.42	−4.11	−1.31	0.48	1.97
	1.76	−3.04	−0.92	0.43	1.73
Item 2					
	1.52	−3.49	−1.15	0.10	1.43
Item 3					
	1.58	−2.97	−0.52	0.65	1.89
Item 4					
	2.54	−2.75	−0.69	0.57	1.71
Item 5					
	1.76	−3.50	−1.05	0.34	1.73
Item 6					
	1.28	−4.43	−1.61	−0.17	1.39
Item 7					

Other items also provided reliable information about the latent trait at different levels. The figure further indicates that items 2 and 6 with similar discrimination parameters provided comparable levels of information. Additionally, the TIF in Fig. 2B was close to symmetric around 5 and provided maximum amount of information about the latent trait between −4 and 2.

To determine whether the single-factor model of GRAS can invariably be applied across gender, age, and marital status, multi-group confirmatory analysis was performed. The values of ΔCFI and ΔRMSEA fall within the suggested ranges, indicating measurement invariances (configural, metric, scaler) of the newly developed GRAS across various groups (Table 7).

In order to explore whether the attachment styles of intimate partners are related to their anxiety in gift reciprocation context, we determined the relationship between depth of attachment scores and GRAS scores and found a negative correlation ($r = -0.43, p < 0.001$, 95 % CI (−0.37, −0.49) indicating that higher depth of attachment among the intimate partners exhibits lower gift reciprocation anxiety and vice versa.

Finally, the convergent validity of the newly developed GRAS was determined through the association of GRAS scores with the scores of RAS and subscale scores of DASS-21. Significant positive associations of the total score of GRAS with the total score of RAS (r
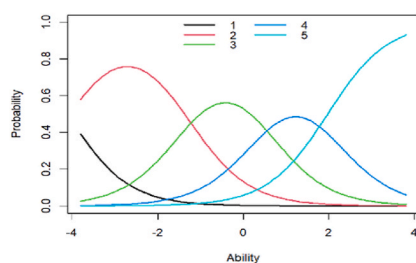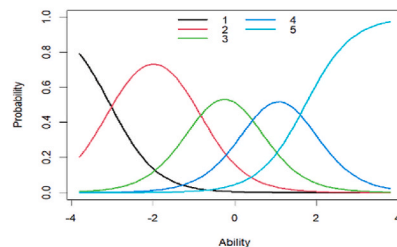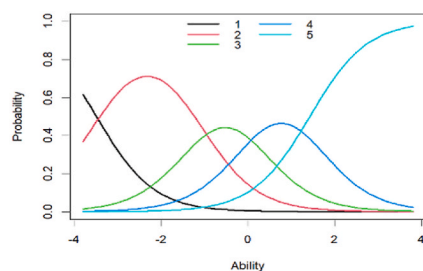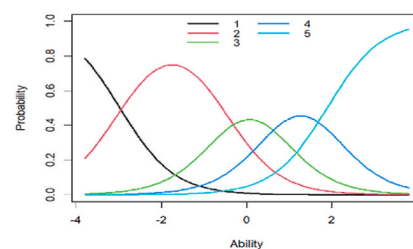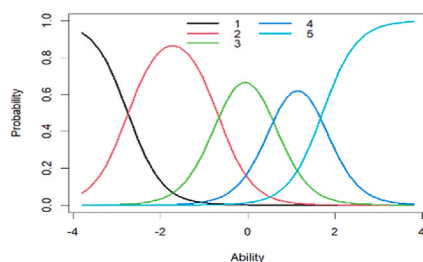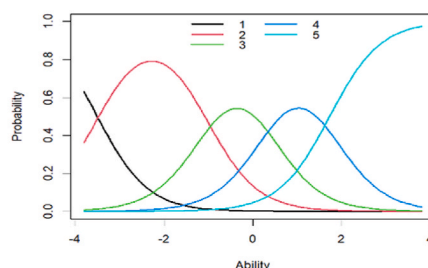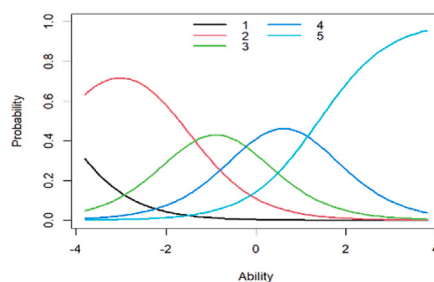
(A) Item Response Category Characteristic Curves for item 1   **(B)** Item Response Category Characteristic Curves for item 2

(C) Item Response Category Characteristic Curves for item 3   **(D)** Item Response Category Characteristic Curves for item 4

(E) Item Response Category Characteristic Curves for item 5   **(F)** Item Response Category Characteristic Curves for item 6

(G) Item Response Category Characteristic Curves for item 7

Fig. 1. Item Response Category Characteristic Curves (IRCCCs) illustrated in A–G for the items 1–7 of the GRAS. (A) IRCCCs for item 1; (B) IRCCCs for item 2; (C) IRCCCs for item 3; (D) IRCCCs for item 4; (E) IRCCCs for item 5; (F) IRCCCs for item 6; (G) IRCCCs for item 7.

$= 0.11, p < 0.01$ as well as depression ($r = 0.10, p < 0.01$) and anxiety ($r = 0.09, p < 0.05$) subscales of Bangla DASS-21 revealed that the higher gift reciprocation anxiety is more likely to observe among those who experience the high reciprocity anxiety in different circumstances and have higher prevalence of depression and anxiety in life situations (Table 8). The coefficients suggested the convergent validity of the newly developed GRAS.
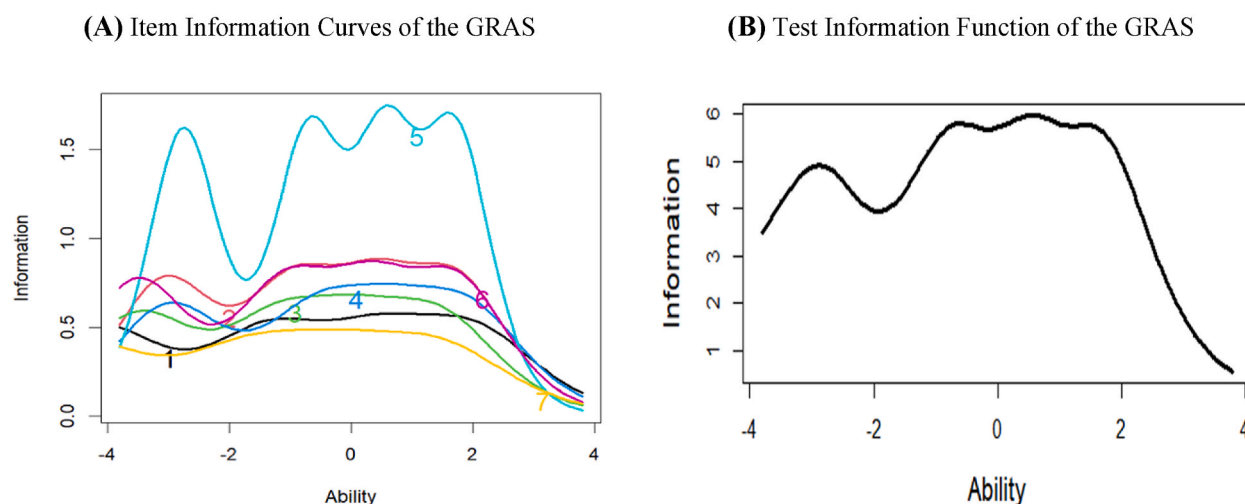
(A) Item Information Curves of the GRAS

(B) Test Information Function of the GRAS

Fig. 2. Item Information Curves (IICs) and the Test Information Function (TIF) of the GRAS. (A) IICs for items 1 to 7 of the GRAS; (B) TIF of the GRAS.

Table 7
Measurement invariances of the single-factor model of GRAS across gender, age and marital status.

	χ2	df	p	CFI	TLI	RMSEA	ΔRMSEA	ΔCFI
Gender (males/females)								
Configural	73.97	28	<0.001	0.992	0.988	0.066		
Metric	87.30	34	<0.001	0.990	0.988	0.064	0.002	0.002
Scalar	119.70	54	<0.001	0.988	0.991	0.057	0.007	0.002
Age (17–23 years/24 to 36 years)								
Configural	74.20	28	<0.001	0.992	0.988	0.066		
Metric	79.22	34	<0.001	0.992	0.990	0.059	0.007	0.00
Scalar	100.05	54	<0.001	0.992	0.994	0.047	0.012	0.00
Marital Status (married/unmarried)								
Configural	83.35	28	<0.001	0.991	0.987	0.072		
Metric	135.22	34	<0.001	0.984	0.980	0.073	−0.016	0.007
Scalar	116.96	54	<0.001	0.990	0.992	0.055	0.018	−0.006

Table 8
Correlations of GRAS with total score of RAS and subscale scores of DASS-21.

GRAS	Correlation coefficient (r)	95 % CI
RAS	0.11**	[0.04, 0.18]
DASS-21: Depression	0.10**	[0.02, 0.17]
DASS-21: Anxiety	0.09*	[0.02, 0.16]
DASS-21: Stress	0.06	[-0.02, 0.13]

*$p < 0.05$.
**$p < 0.01$.

4. Discussion

The present research has focused on developing a scale of reciprocation anxiety in gift giving and receiving contexts for youths and adults in intimate relationships. With an expectation of return but without any direct compensation, a gift involves the selection and transfer of something to closer ones to change a relationship with the recipient intended to receive social and psychological benefits from him/her. This clearly implies that obligation and reciprocity are typical characteristics of the gifting process consistent with previous research [14,117]. While the gift giver shares anything with threatened self-perception, creating an obligation to the receiver to reciprocate, negative characteristics of gifting prevail with the symptoms of stress and anxiety in both giver and the receiver [22,62, 79]. This can be true either for the financial or for the symbolic value of reciprocating gifts among romantic partners, consistent with the economic and social exchange theories of gift giving [20] induced from exchange theoretical discussion [30,31]. In such instances, attachment theory of gift giving [4] emphasizes that relationships reflecting the attachment styles and emotions of the givers along with the perceived emotional responses in receivers influence the gift-giving behaviours [44,64]. Therefore, the role of relationship is

crucial in much of gifting research [12]. In intimate relationships with secured attachment, may it be the romantic relationships, friendships, marital relationships and so on, the practice of gift reciprocation carries the symbol of affection, care, love, and commitment [118]. In romantic relationships, investments such as giving gifts by each individual partner reflect the motivation for commitment towards each other [118]. Though gift exchange practices in romantic relationships are considered as unique expressions of love and commitment, but in many cases, gifting works more as an obligation than pleasure [4]. Romantic partners with low self-esteem are considered as anxiously attached givers, and they possess an undermined sense of security in romantic relationships. This creates a negative self-view thinking that they are unworthy of love and therefore, their partners perceive them as unreliable and not trustworthy. These individuals regulate their sense of anxiety and scepticism by excessive accentuation of gifting obligation [4,80, 119,120]. In contrast, individuals with high levels of self-esteem in romantic relationships have positive views about self and partner, are more likely to embrace a secured attachment style, report more positive emotions and satisfaction with the relationship and they expect nothing in return after receiving a gift from the intimate partner. This secured attachment style is possible only when the agapic love paradigm of the exchange theory prevails in a close relationship [14]. In a secured attachment style with agapic love, partners do not view gift reciprocation as obligation [76].

Considered on this aspect, we developed a 7-item gift reciprocation anxiety scale (GRAS) targeting Bangladeshi youths and adults engaged in intimate relationships, specifying informal romantic and formal marital relationships. The ages of the participants ranged from 17 to 36 years covering the young/emerging adulthood (17–23 years) and adulthood (24–36 years) periods consistent with the lifespan classification as evidenced in previous studies [121,122]. Most of the young adults at the early stages of romantic relationships feel obliged about buying gifts for their partners with hidden agendas such as to manipulate them or to employ power to maintain control over them [22,77]. Therefore, not all gifts are intended to improve or fully maintain relationships with the perceived joyous nature of gifting. In the early part of romanticism, relationship commitment in young adults is linked to sexuality and infatuation instead of formal relationship commitment usually indexed by marriage [123–125]. Partners in a new relationship buy gifts to invest in the relationship as a sense of obligation and fears of being neglected by attachment figures [126]. As relationships mature with the shifting of individuals from young adulthood to adulthood, affectionate love usually becomes more important expecting that the romantic partner will be the long-term life partner. Hence, investment through gifting is necessary with ambitions to marry, have children, and pursue other grand plans [4]. The findings of these studies are consistent with the present one, reflecting that the higher depth of attachment in intimate partners was associated with lower gift reciprocation anxiety.

In determining the psychometric properties of the newly developed GRAS administered on 763 youths and adults in close relationships, acceptable mean inter-item correlations, corrected item-total correlations, and internal consistencies along with satisfactory composite reliability were evident. Consistent with this, an 11-item reciprocity anxiety scale (RAS) [81] demonstrated the highly acceptable corrected item total correlation along with other properties same as GRAS although the reciprocity anxiety construct in RAS was applicable to predict consumer-relevant behaviours determining social influence in economic relationships. To determine the factor structure of GRAS, EFA was conducted, and we extracted an unifactorial structure of the newly developed GRAS. This single-factor structure was retained through parallel analysis [115,116]. To validate the internal structure of the unifactorial GRAS, CFA was run and had an adequate model fit to the data. The findings were inconsistent with the factorial structure of RAS in which the researchers [81] found a correlated two-factor solution namely, 'reciprocity avoidance' and 'reciprocity distress' through exploratory and confirmatory factor analyses leading to form a total score of reciprocity anxiety combining these two subscales [81]. The IRT analyses revealed that all items have "very high" to "high" discrimination ability, with the exception of item 7 with "moderate" discriminating power. Given that the items are varied in difficulty, the scale effectively differentiated individuals across both low and high levels of the latent trait, suggesting that these items provide significant information across the spectrum without any particular focus on specific levels. Based on the information provided by the IRCCCs for each item, the GRAS was found to be a sound tool for assessing anxiety in gift reciprocation context for intimate relationships. This was further reflected in the test information function (TIF) which was consistently high across the theta range.

Taken together, the present study measuring gift reciprocation anxiety of youths and adults in close relationships represents holistic approach of reciprocity anxiety in gift giving and receiving contexts, appearing to be a psychometrically sound tool. The way that the scale is structured reflects gift reciprocation as negative emotions characterized by discomfort or anxiety when an individual is in an intimate relationship associated with reciprocating positive behaviours through gifting among partners [46,65]. The present study investigated the applicability of gift-reciprocation anxiety scale (GRAS) for intimate relationships irrespective of the marital status. The changing norm of male-female equality and relationship higher expectation recently has replaced marital relationships with agapic love to more fragile ones where heated arguments between the partners create a heightened sense of obligation to exchange gifts intended to forgive each other and repair the damage [14,127–129]. Therefore, further studies examining the pre- and post-marital attachment-related gifting perceptions among partners in close relationships are necessary. Pre-marital attachment related gifting perceptions are prominent in emerging adults with romantic love, reflecting a complex intermingling of different emotions such as passion, fear, anger, sexual desire, joy, and jealousy [125]. As young adults enter adulthood, love, pride and gratitude stimulate gift giving to show mature emotional states with a view to perceive marriage as a very important life pursuit [14,130,131]. Accordingly, adults with secured attachment, agapic love, and high self-esteem first build a better career and financial foundation to increase the likelihood that their marriage will be successful later with healthy relationships [14,132]. Apart from the influences of marital status and age levels in gift reciprocation for intimate relationships, the gender differences in gifting behaviour indicate that women are more likely to remember gift-receiving experiences than gift-giving experiences as women generally tend to give gifts rather than receiving [62,133]. Consistent with these findings, we conducted a multigroup confirmatory factor analysis on the newly developed GRAS to see whether the 7-item gift reciprocation anxiety scale can invariably be applied across gender, age and marital status. Finding revealed through MGCFA provides evidence to assess GRAS psychometrically equivalent across gender, age, and

marital status.

Finally, it was demonstrated that the reciprocity anxiety of the participants as measured through reciprocity anxiety scale (RAS) in respect of consumer-related behaviours [81] was positively associated with the newly developed gift reciprocation anxiety scale (GRAS). Moreover, we measured the association of GRAS with the depression, anxiety, and stress subscale scores of the Bangla version of DASS-21 [90] and found that higher gift reciprocation anxiety was associated with higher depression and anxiety of the participants. The values of correlation (below 0.40) between GRAS and the criterion measures used in the study reflected the convergent validity of the GRAS, indicating the GRAS does not measure the same thing as other measures do [81].

4.1. Limitations and recommendations

The present study was conducted on youth and adult samples of 17–36 years old recruited via convenient sampling. Predominantly young adults with romantic relationships rather than adults with formal marital relationships make the findings of the study less generalizable to adults in mature intimate relationships. Convenience sampling with a participant group of 67.76 % males resulted in skewed gender distribution. However, the scale demonstrated measurement invariance across gender, indicating that the scale can measure the construct in the same way for both males and females. Future studies might consider alternative sampling methods to achieve a more balanced gender representation and to explore any potential differences using more representative sample. Furthermore, the study used self-report measures that could be prone to social desirability bias in the cultural context of Bangladesh, influencing participants' accuracy of responses. Future research should consider alternative approaches to reduce this potential bias. Another limitation of the study is that all participants were Bangladeshi that restricts the generalizability of results to other racial or ethnic groups.

Previous research related to measuring reciprocity anxiety mainly focused on consumer related behaviours determining social influence in economic relationships [12,134]. Towards this end, reciprocity anxiety scale (RAS) was developed by Xiong et al. [81] to explore the anxiety to reciprocate in purchasing context for consumer-related behaviours. Nevertheless, discomfort or anxiety stemming from the obligation to reciprocate gifts in intimate relationships may damage one's self-esteem, sense of competence, and independence [78,80], an important area of interest yet to address. The unifactorial structure of GRAS extracted from the findings of the study should be further checked and validated on diverse populations and cultures to reach on a decision about the factor-structure and validation of the newly developed scale.

5. Conclusion

The implications of the study might be that the proper assessment of reciprocation anxiety in gift giving and receiving contexts will help to modify one's relationship with another through the practices of positive self-views, secured attachment, and higher commitment, reporting more positive emotions and satisfaction with the relationship [4,75,76]. Consistently, the GRAS seems to be a sound tool to frequently use by the psychologists, researchers, and therapists in order to achieve the desired outcomes by ensuring gift reciprocation less as an obligation and more as signs of commitment, trust, care, and agapic love in intimate relationships. The Gift Reciprocation Anxiety Scale (GRAS) can also serve as a diagnostic tool in clinical settings, helping clients identify and manage their reciprocity anxiety in different stages of relationships. Integrating the scale into therapeutic practices will help clinicians to focus on developing healthier emotional responses among partners. Previous studies suggest that individuals with anxious attachment styles often express their anxiety through gift-giving behaviors as a means of seeking reassurance from their partners [135]. By using the GRAS, therapists can help couples or partners explore their expectations and emotional connectedness while reciprocating gifts, thereby fostering better emotional intimacy and mutual understanding. Future research should continue to explore the utility of the GRAS across diverse populations to further validate its effectiveness and broaden its applications in both clinical and research settings.

CRediT authorship contribution statement

Mohd. Ashik Shahrier: Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Shakira Khatun:** Writing – original draft, Validation, Methodology, Investigation, Formal analysis, Data curation.

Ethical approval

The ethical approval was taken from the Ethical Review Committee-Research and Publication (ERCRP), Department of Psychology, University of Rajshahi, Rajshahi-6205, Bangladesh [approval code: ERCRP-PSYRU-2(8)22; Date: October 17, 2022]

Data availability statement

Data can be obtained from the corresponding author upon an email request.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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