

# Longitudinal links between expressive flexibility and friendship quality in adolescence: The moderating effect of social anxiety

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## Abstract

**Introduction:** Expressive flexibility, or the ability to both up- and down-regulate emotional expressions in social interactions, is thought as an indicator and a consequence of healthy interpersonal relationships. The present longitudinal study examined bidirectional associations between expressive flexibility and friendship quality in early adolescence. Since prior research found inconsistent results regarding the adaptiveness of expressive flexibility, which indicated the necessity to consider individual variability in the process, we further tested the potential moderating effect of social anxiety in the links from expressive flexibility to friendship quality.

**Methods:** Participants from two junior high schools in eastern China ( $N = 274$ ; 50.4% female;  $M_{\text{age}} = 13.56$ ) were surveyed at three time points with 6-month intervals. Expressive flexibility, friendship quality, and social anxiety were all assessed via self-reported scales.

**Results:** According to the cross-lagged model results, friendship quality significantly predicted increased expressive flexibility over time. Conversely, the longitudinal association from expressive flexibility to friendship quality was not significant, but the interaction between expressive flexibility and social anxiety significantly predicted later friendship quality. Further analyses via the Johnson–Neyman technique revealed that expressive flexibility only positively predicted friendship quality for adolescents with lower levels of social anxiety.

**Conclusion:** Our results suggest that expressive flexibility is not always socially adaptive, so practical interventions that aim to improve youths' social adjustment via expressive flexibility training might need to consider the role of individual characteristics.

## KEYWORDS

adolescents, expressive flexibility, expressive regulation, friendship quality, social anxiety

## 1 | INTRODUCTION

Adolescence is typically characterized by more time spent with peers, in increasingly diverse social contexts. Emotional expressions likely play an important role in these novel interactions, by serving as a medium for information exchange (e.g., van Kleef, 2009). Accordingly, the ability to both up- and down-regulate expressions of emotion, or “expressive flexibility,” might be interrelated with adolescents' social adjustment. Prior longitudinal research (Y. Wang & Hawk, 2020b) found that higher levels of peer relationship quality predicted later increases in expressive flexibility, suggesting that healthy peer relationships created a supportive environment for the development of youths' regulatory skills; conversely, however, the links from expressive flexibility to peer relationships were rather weak. This finding seems to indicate that the social adaptiveness of expressive flexibility might vary between individuals, so it is necessary to examine potential individual difference factors that might weaken its functionality. Social anxiety, which includes the avoidance of social interaction, maladaptive beliefs about emotion regulation, and excessive efforts to monitor and control expressions of emotion, might be

such a factor (see Morrison & Heimberg, 2013 for a review). The present research thus aimed to advance knowledge of the social functions of expressive flexibility in early adolescence, by examining its bidirectional links with friendship quality and the potential moderating effect of social anxiety.

## 1.1 | Is expressive flexibility always beneficial?

Expressive flexibility refers to the ability to easily shift between enhancing (e.g., laughing along with unfunny jokes) and suppressing (e.g., controlling anger in an argument) emotional expressions along with changing social contexts (Bonanno et al., 2004). Earlier research in the area of emotion regulation tended to label regulatory strategies as either adaptive or maladaptive (e.g., see Aldao et al., 2010 for a review), but the context-dependent nature of emotion regulation would suggest that there is not likely to be an absolute level of “(mal)adaptiveness” for any specific strategy. Accordingly, researchers have begun to encourage a person-by-situation perspective emphasizing *emotion regulatory flexibility* (see reviews by Aldao et al., 2015; Bonanno & Burton, 2013), or “the ability to implement emotion regulation strategies that are synchronized with contextual demands” (Aldao et al., 2015; p. 264). Specific to the domain of overt expressive behavior, prior research has identified *enhancement* and *suppression* as two common methods of modulating emotions (e.g., Cameron & Overall, 2018), but it is difficult to assign a value judgment to either strategy. For example, although habitual suppression of emotional expression is typically related with social costs (Butler et al., 2003), the ability to suppress, in itself, might sometimes be useful (e.g., not gloating when outperforming others in a group; Schall et al., 2016). Therefore, expressive flexibility might be more important than either expressive enhancement or suppression.

Generally, expressive flexibility is regarded as a marker of psychological well-being and resilience. For example, higher levels of expressive flexibility predicted less long-term distress after the 9/11 terrorist attacks among college students (Bonanno et al., 2004), and protected against the adverse effects of stressful life events (Westphal et al., 2010). Deficits in expressive flexibility were also correlated with higher trait anxiety (Maccallum et al., 2021) and lower life satisfaction of undergraduate students (Chen et al., 2018), as well as more grief-related symptoms among bereaved individuals (Gupta & Bonanno, 2011). A recent study further showed that expressive flexibility was negatively correlated with depression, social anxiety, and school avoidance in children and adolescents (Haag et al., 2022). Overall, these studies have demonstrated the positive associations that expressive flexibility holds with various aspects of psychological adjustment.

Just as there is no consistently adaptive emotion regulation strategy, however, expressive flexibility may also not guarantee positive adjustment. Aldao et al. (2015) have proposed that flexibility in emotion regulation is a necessary, but not sufficient condition, for adaptive outcomes. In other words, expressive flexibility might be more useful for some individuals than for others. For example, Strickland and Skolnick (2020) recently tested the links between expressive flexibility and trait anxiety in adult samples from India and the United States, respectively. Results showed that self-reported expressive flexibility, as measured by the Flexible Regulation of Emotional Expression Scale (Burton & Bonanno, 2016), was negatively correlated with anxiety for the USA sample ( $r = -.21$ ), but this association was not significant for the Indian sample ( $r = -.08$ ). These findings not only suggested the importance of cultural values in the links between expressive flexibility and individual well-being, but more importantly, to some extent challenged the notion of expressive flexibility as an “adaptive” trait.

## 1.2 | Expressive flexibility in adolescence: links with peer relationships

According to social functionalist theories (e.g., Keltner et al., 2022; van Kleef, 2009), the ability to regulate emotional expressions plays an important role in establishing and maintaining social relationships. This might especially be the case for adolescents, as their expressive regulation abilities rapidly improve in this stage, and strategies become more differentiated to cope with increasingly diverse social contexts (see Zeman et al., 2006 for a review). From this perspective, adolescence is likely a sensitive period for the development of expressive flexibility. A previous two-wave longitudinal study investigated the bidirectional links between peer relationships and observed expressive flexibility during a picture-viewing task among 9- to 15-year-old participants (Y. Wang & Hawk, 2020b). Results showed that higher self-reported friendship quality, as well as higher peer-nominated social status, significantly predicted higher observed expressive flexibility 6 months later. However, expressive flexibility did not significantly predict relative changes in peer relationships. In contrast, two experiments found supportive evidence for bidirectional effects between expressive regulation and peer interactions (Y. Wang et al., 2020). Specifically, adolescents showed significantly greater liking of novel interaction partners who demonstrated the ability to flexibly adjust the strength of their facial expressions, in comparison to interaction partners who were either under-expressive or over-expressive (Experiment 1). Peer exclusion experiences also significantly reduced adolescents' expressive enhancement performance in reaction to emotion-inducing images, thus impairing overall flexibility (Experiment 2).

In summary, previous longitudinal and experimental studies have found positive links from social adjustment to expressive flexibility. Conversely, the links from expressive flexibility to social adjustment appear to be less consistent. The different results of experimental and longitudinal research might indicate that expressive flexibility holds utility for initial impression formation, but perhaps is less integral to more established and stable peer relationships (Y. Wang et al., 2020). Consistent with the notion that regulatory flexibility is conditionally adaptive (Aldao et al., 2015), findings of the prior longitudinal research suggest that benefits of expressive flexibility might be limited in some circumstances or for some adolescents. As the broader research on emotion regulation has shown, the effects of certain regulatory strategies vary between individuals, and dispositional factors such as anxiety and avoidance might lead to ineffective emotion regulation (e.g., Cho et al., 2019; Vaughan-Johnston et al., 2020). Similarly, we may better understand the social functions of expressive flexibility by examining for whom it holds utility, and for whom it does not.

### 1.3 | Potential moderation by social anxiety

Social anxiety, characterized by persistent discomfort in social settings and heightened fear of being rejected by others (DSM-5, APA, 2013), might be a factor that could mute the effectiveness of expressive flexibility in promoting social relationships. Prior research has shown that social anxiety is often associated with frequent use of expressive suppression, and ambivalence about expressing emotions in social interactions (e.g., Grant et al., 2007; Spokas et al., 2009). This might reflect individuals' fear of undesirable social outcomes as a result of showing their true feelings (Kashdan & Breen, 2008). Although socially anxious adolescents do not necessarily possess strong regulatory abilities, they might still frequently focus on regulating expressions in social situations, to decrease the possibility of scrutiny and rejection.

The narrowed focus on emotional expressions might further hinder socially anxious adolescents from reaping the full benefits of expressive flexibility. Specifically, their attempts to regulate expressions require a series of efforts such as context evaluation, strategy selection, and response calibration (Bonanno & Burton, 2013), which could over-tax cognitive resources (Bonanno et al., 2004). Thus, socially anxious adolescents might have a greater likelihood of losing attentional control towards other useful stimuli or cues (e.g., eye contact; Wieser et al., 2009), or showing poorer skills in other aspects of social interaction (e.g., the content of speech; Miers et al., 2010), potentially weakening the social functionality of expressive flexibility. Prior studies have demonstrated that social anxiety interacts with habitual expressive suppression in predicting emotional states and events. For instance, socially anxious undergraduates reported the fewest positive events on days when they both experienced social anxiety and were more suppressive of their emotions (Kashdan & Steger, 2006). Similarly, the use of positive emotion suppression predicted less positive emotion the following day for people higher in social anxiety, but not for those lower in social anxiety (Farmer & Kashdan, 2012). Thus, habitual suppression seems to result in particularly detrimental emotional outcomes for individuals high in social anxiety. Although expressive flexibility is conceptualized as reflecting ability, as opposed to habitual tendencies, a similar rationale could be applied to speculate on its interactions with social anxiety. Even if socially anxious adolescents report they are able to flexibly regulate expressions, their excessive regulatory efforts might trap them in an enduring, defensive state and hinder their participation in novel or exploratory social activities (Kashdan & Steger, 2006), thus limiting the adaptive value of expressive flexibility for social adjustment.

### 1.4 | The present study

The present research focused on the longitudinal associations between expressive flexibility and adolescents' relationship quality with their best friends. We examined bidirectional associations between these constructs, as well as the potential moderating effects of social anxiety, in a three-wave longitudinal design. We hypothesized that adolescents' higher friendship quality would predict greater expressive flexibility later on (Hypothesis 1). Furthermore, we expected that the longitudinal associations from greater expressive flexibility to higher friendship quality would be moderated by social anxiety, such that expressive flexibility would predict friendship quality more strongly for participants with lower social anxiety (Hypothesis 2).

The sample of the present research partially overlapped with that of a previously published study (Y. Wang & Hawk, 2020b), but the two studies differed in the number of measurement waves, the sample size, and participant age range, as well as the operationalizations of key constructs. The present research was based on three-wave longitudinal data, and focused specifically on adolescents, whereas the previous research only used two waves of data (because data collection was still ongoing at that time), with a larger sample comprised of both children and adolescents. Additionally, we measured expressive flexibility with a novel self-report scale (Y. Wang & Hawk, 2020a) instead of the observed laboratory task adopted in the previous research. The observed and self-reported expressive flexibility scores held relatively modest correlations ( $r$   $s = .11-.17$ ; also see Y. Wang & Hawk, 2020a), which might reflect different aspects of expressive flexibility. Compared with the laboratory task, the self-report scale was designed on the basis of actual interpersonal contexts and thus has relatively higher ecological validity. The use of the self-report scale was thus an important extension of, and supplement to, previous

research that relied on laboratory observations, and might offer novel information regarding the social functionality of expressive flexibility.

## 2 | METHOD

### 2.1 | Participants

Participants were recruited as part of the Facing Rejection Project, a larger longitudinal study on the emotions and interpersonal relationships of Chinese children and adolescents. The present study used data of participants recruited from two junior high schools in the Shandong Province of eastern China.<sup>1</sup> Participants were surveyed at three time points. At the first measurement, there were in total 287 participants. The second and third measurements occurred 6 and 12 months later, respectively. During the process, 12 participants were lost due to changing school or quitting participation. One more participant was excluded because of obviously random responses at Wave 3. The final sample consisted of 274 valid participants (138 female), from Grade 7 and Grade 8. Participants were aged between 12 and 15 years at Wave 1, with a mean age of 13.56 years ( $SD = 0.63$ ).

### 2.2 | Measures

#### 2.2.1 | Expressive flexibility

Expressive flexibility was measured by the Child and Adolescent Flexible Expressiveness (CAFE) Scale (Y. Wang & Hawk, 2020a). All items of this scale are based on scenarios generated by Chinese youths. The enhancement dimension contains seven items (e.g., “If someone spends a lot of effort to cook a meal but it doesn't taste very good, I am able to pretend to enjoy it.”), while the suppression dimension contains six items (e.g., “If someone makes me angry in a public place, I am able to control my impulse to cause a scene.”). Participants were asked to indicate their agreement with each item on a 5-point scale, from 1 = *not at all true of me* to 5 = *extremely true of me*. Enhancement and suppression scores were obtained by averaging item scores within each subscale. A balanced expressive flexibility score was calculated by subtracting the absolute value of the difference between the two subscale scores from their sum, namely  $\text{Expressive Flexibility} = (\text{Enhancement} + \text{Suppression}) - |\text{Enhancement} - \text{Suppression}|$  (Westphal et al., 2010). This formula helps to ensure that extremely high scores on only one form of regulation, but not the other, would still yield lower overall scores. The internal consistencies of the enhancement and suppression subscales, respectively, across three waves were  $\alpha$  (Wave 1/Wave 2/Wave 3) = .77/.79/.78, and .68/.70/.72. The relatively modest reliabilities of the suppression subscale might be due to the small number of items and the scenario settings that decreased the homogeneity between items. According to the criteria of Ponterotto and Ruckdeschel (2007), however, alpha values above .65 are adequate for a six-item subscale with 100–300 participants. Thus, the internal consistencies of the CAFE Scale were generally acceptable.

#### 2.2.2 | Friendship quality

The Friendship Quality Questionnaire (Parker & Asher, 1993) asks participants to rate each item according to their relationship with their best friend (e.g., “He/She cares about my feelings.”; “We always play together at recess.”). A total of 25 items of five dimensions were rated from 1 = *not at all true* to 5 = *really true*. The reverse-coded dimension, conflict and betrayal, showed low internal consistencies at all three waves ( $\alpha = .63/.61/.59$ ). According to an initial confirmatory factor analysis (CFA), its factor loadings across three waves were also below the conventional threshold of 0.40 (at 0.31–0.32). The evidence for poor reliability and validity led us to exclude this dimension from further analyses (Raubenheimer, 2004). The remaining four dimensions (21 items) were: Trust and support ( $\alpha = .76/.78/.78$ ), companionship and recreation ( $\alpha = .77/.75/.75$ ), validation ( $\alpha = .80/.81/.82$ ), and intimate exchange ( $\alpha = .79/.82/.83$ ). An overall friendship quality score was computed by averaging all items scores ( $\alpha = .93/.93/.94$ ). For the Structural Equation Model, a latent friendship quality variable was constructed using dimension scores at each wave.

<sup>1</sup>The project recruited participants from both primary schools and junior high schools, but only the latter completed the self-reported scale on expressive flexibility at all three waves. Thus, participants of the present study were all from junior high schools.

### 2.2.3 | Social anxiety

Participants completed the Social Anxiety subscale of the revised Self-Consciousness Scale (Scheier & Carver, 1985). The subscale assesses self-perceived discomfort and shyness in interpersonal interactions, which has been validated in Chinese samples (Shek, 1994) and was recommended as a measure of social anxiety by the Handbook of the Rating Scales for Mental Health in China (X. Wang et al., 1999). This subscale has also shown satisfactory reliabilities in measuring social anxiety for Chinese children and adolescents in prior research (e.g., G. Liu et al., 2017; Xu et al., 2017). In the present study, six items (e.g., “It takes me time to overcome my shyness in new situations.”) were rated on a 5-point Likert scale from 1 = *not at all true* to 5 = *really true*. Higher mean scores represent stronger social anxiety. The internal consistencies across three waves were 0.73, 0.78, and 0.79.

All questionnaires were administered in Chinese. The CAFE Scale was originally developed and validated in China; the Chinese versions of the Friendship Quality Questionnaire (Zou, 1998) and the Social Anxiety subscale (X. Wang et al., 1999) were also available. Two bilingual researchers, whose first languages were respectively Chinese and English, further double-checked the Chinese translations to ensure accuracy.

### 2.3 | Procedure

Research design and data collection procedures were approved by the Survey and Behavioral Research Ethics Committee of The Chinese University of Hong Kong. School approval was also obtained ahead of participant recruitment. Consent letters were distributed to all participants and their parents in advance, including detailed descriptions about research aims, procedures, risks/benefits, the voluntary nature of participation, and right to withdraw. Adolescents who provided written informed consent participated over 1 year. Questionnaires were administered in classrooms under the supervision of research personnel. After each survey, participants were given small gifts (e.g., notebooks and stationery sets).

### 2.4 | Data analyses

Descriptive statistics and correlations between variables were computed with SPSS 22.0. The structural equation model examining over-time links between expressive flexibility, social anxiety, and friendship quality was estimated in Mplus 7.4 (Muthén & Muthén, 1998), via the R-package MplusAutomation (Hallquist & Wiley, 2018). We first tested the measurement invariance of the latent friendship quality factor across three waves, via the chi-square difference test. Expressive flexibility and social anxiety at three waves were also standardized before analyses. We then constructed a cross-lagged panel model (Figure 1), covering all over-time effects between expressive flexibility, social anxiety, and friendship quality. Concurrent correlations within each wave and the stability paths of each variable were also included. To examine the moderating effect of social anxiety, we computed the product between social anxiety and expressive flexibility at Wave 1 and Wave 2. The interaction terms were added to the model as additional predictors of friendship quality at the subsequent wave. We also controlled all variables for participant age and sex (dummy-coded as 0 = female, 1 = male) at each wave. The model fit was

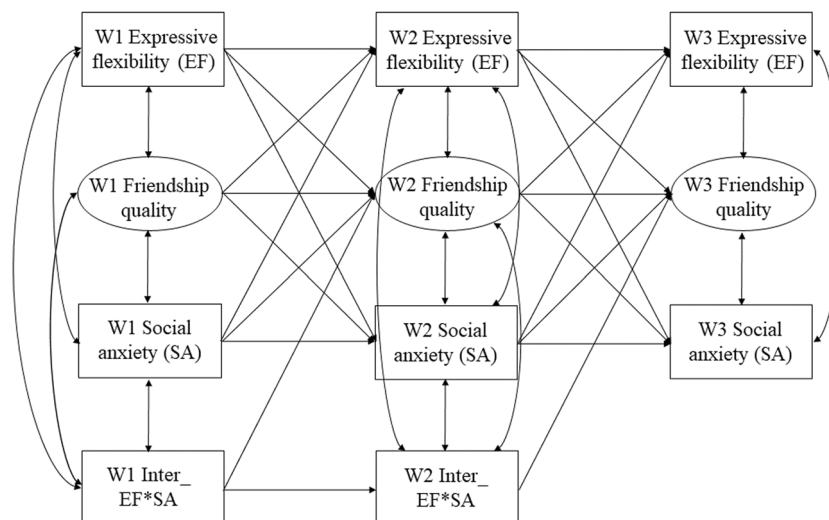


FIGURE 1 The cross-lagged model between expressive flexibility and friendship quality, moderated by social anxiety. Inter = Interaction.

considered acceptable when the Comparative Fit Index (CFI) and Tucker Lewis Index (TLI)  $\geq 0.90$ , while Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR)  $\leq 0.08$  (Hu & Bentler, 1999). Significant interaction effects were interpreted via the Johnson–Neyman (J–N) technique (Preacher et al., 2006), which shows the changes in associations between independent (expressive flexibility) and dependent (friendship quality) variables at each level of the moderator (social anxiety).

### 3 | RESULTS

#### 3.1 | Descriptive statistics and bivariate correlations

Descriptive statistics are presented in Table 1. Expressive flexibility, enhancement, and suppression all showed significant and positive bivariate correlations with friendship quality, within and across waves ( $r$  s = .20–.50,  $p$  s  $\leq .001$ ). Wave 1 social anxiety was significantly and negatively correlated with Wave 1 friendship quality ( $r = -.13$ ,  $p = .031$ ). Neither expressive flexibility nor its two subcomponents showed significant concurrent or cross-time relations with social anxiety ( $p$  s  $\geq .135$ ).

#### 3.2 | Measurement model of friendship quality

Because we utilized a multidimensional, latent variable to conceptualize friendship quality in our longitudinal model, we first ran a confirmatory factor analysis to assess the measurement invariance for latent friendship quality across the three measurement waves. The three latent factors were allowed to correlate with each other; measurement errors of the same index were also allowed to correlate across waves. We examined the metric invariance (i.e., the equivalence of factor loadings) across time via the chi-square difference test. Results showed no significant change of the chi-square value after adding constraints,  $\Delta\chi^2(6) = 7.57$ ,  $p = .272$ , so corresponding factor loadings of friendship quality were set to be equal across three waves. The constrained measurement model (see Figure 2) fit the data well:  $\chi^2(45) = 45.99$ ,  $p = .431$ , CFI = 1.00, TLI = 1.00, RMSEA = 0.01 (90% CI [0.00, 0.04]), SRMR = 0.05. All standardized factor loadings were greater than 0.80.

TABLE 1 Means, standard deviations, and bivariate correlations across three waves

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 W1_EF	6.62	1.32	1													
2 W1_Enhancement	3.74	0.71	.73***	1												
3 W1_Suppression	3.45	0.70	.91***	.53***	1											
4 W1_Social anxiety	2.85	0.79	-.03	.02	-.05	1										
5 W1_Friendship	3.74	0.74	.37***	.47***	.34***	-.13*	1									
6 W2_EF	6.56	1.37	.52***	.44***	.52***	.03	.34***	1								
7 W2_Enhancement	3.63	0.71	.41***	.53***	.35***	-.03	.40***	.78***	1							
8 W2_Suppression	3.41	0.68	.51***	.37***	.56***	.04	.29***	.93***	.61***	1						
9 W2_Social anxiety	2.85	0.84	-.02	.04	-.01	.59***	-.05	.09	-.01	.08	1					
10 W2_Friendship	3.75	0.71	.23***	.35***	.20**	-.11	.68***	.38***	.47***	.35***	-.06	1				
11 W3_EF	6.60	1.25	.52***	.40***	.54***	.04	.33***	.59***	.47***	.61***	.07	.31***	1			
12 W3_Enhancement	3.69	0.63	.38***	.51***	.33***	.05	.35***	.47***	.55***	.41***	.09	.42***	.75***	1		
13 W3_Suppression	3.41	0.65	.49***	.33***	.56***	-.01	.30***	.57***	.40***	.64***	.04	.27***	.94***	.61***	1	
14 W3_Social anxiety	2.96	0.82	-.09	-.05	-.08	.53***	-.05	.07	.02	.05	.70***	-.02	-.00	.01	-.02	1
15 W3_Friendship	3.75	0.68	.28***	.35***	.22***	-.08	.58***	.35***	.41***	.29***	-.04	.64***	.37***	.50***	.29***	-.04

Abbreviation: EF, expressive flexibility.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

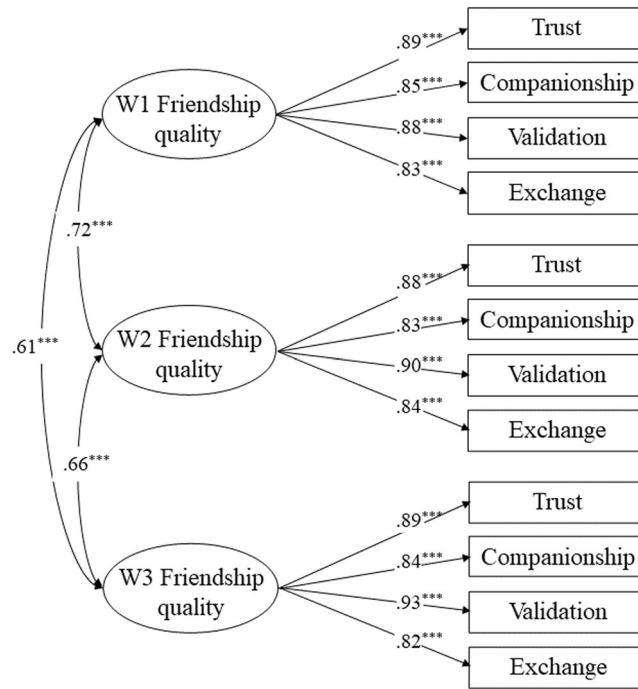


FIGURE 2 The measurement model of friendship quality with constraints for metric invariance. Standard coefficients are reported. Measurement errors of the same index at different waves were allowed to relate with each other, but not depicted in the figure. \*\*\* $p < .001$ .

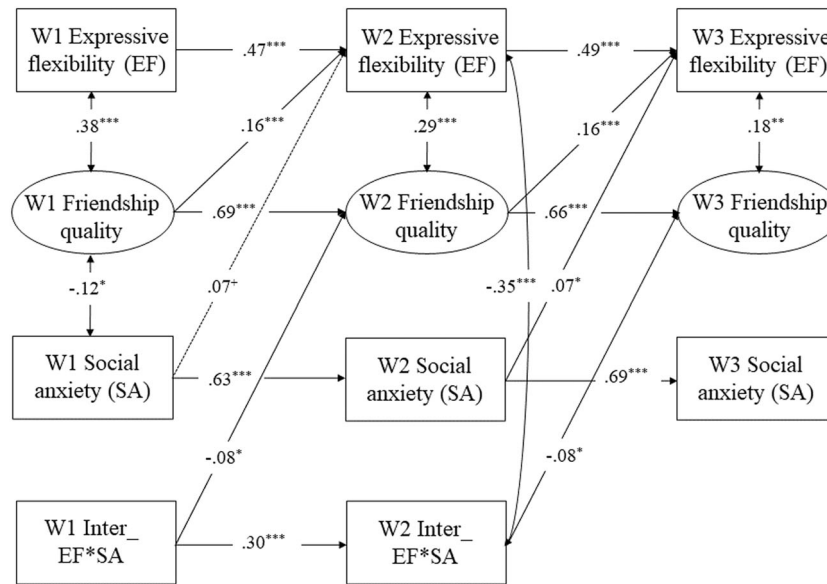
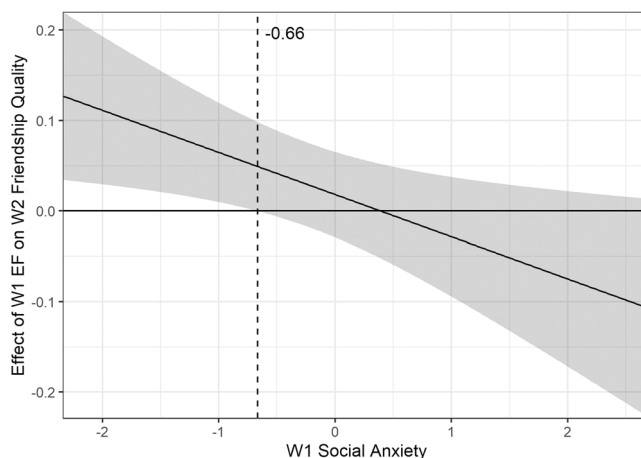


FIGURE 3 Standardized parameter estimates of the longitudinal relations between expressive flexibility, friendship quality, and social anxiety. Inter = Interaction. Nonsignificant paths were omitted for brevity. Participant sex and age were also included as covariates, but not depicted in the figure. \* $p = .051$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### 3.3 | Path model between expressive flexibility, social anxiety, and friendship quality

The longitudinal links between expressive flexibility, social anxiety, and friendship quality were examined in a cross-lagged model (Figure 1). Constraining the cross-time effects (e.g., Wave 1 expressive flexibility to Wave 2 friendship quality = Wave 2 expressive flexibility to Wave 3 friendship quality) and stability paths (e.g., Wave 1 expressive flexibility to Wave 2



**FIGURE 4** Relationships between Wave 1 expressive flexibility and Wave 2 friendship quality across levels of social anxiety. The dashed line marks the value of social anxiety for which links from expressive flexibility to later friendship quality became/ceased to be significant. EF, expressive flexibility.

expressive flexibility = Wave 2 expressive flexibility to Wave 3 expressive flexibility) did not yield significant chi-square change,  $\Delta\chi^2(10) = 13.82, p = .181$ . Thus, for the sake of parsimony, we constrained these paths to be equal across waves. The standardized path coefficients are depicted in Figure 3. Results showed that the model fit the data well:  $\chi^2(208) = 261.99, p = .007, CFI = 0.99, TLI = 0.98, RMSEA = 0.03$  (90% CI [0.02, 0.04]), SRMR = 0.05.

Expressive flexibility was positively correlated with friendship quality within each wave ( $r$  s = .18–.38,  $p$  s  $\leq .004$ ). In line with Hypothesis 1, friendship quality significantly predicted higher expressive flexibility at the later wave ( $\beta$  s = .16, 95% CIs [0.08, 0.24], SEs = 0.04,  $p$  s < .001); conversely, expressive flexibility did not predict later friendship quality ( $p$  s = .449/.451). Importantly, however, the interaction between expressive flexibility and social anxiety significantly predicted later friendship quality ( $\beta$  s = -.08, 95% CIs [-0.14/-0.15, -0.01/-0.02], SEs = 0.03,  $p$  s = .017).

The significant interaction between expressive flexibility and social anxiety was explored using regions of significance (i.e., the J–N technique), which shows changes in the effect of expressive flexibility on friendship quality at different levels of social anxiety (Preacher et al., 2006). Figure 4 shows how the predictive effect from Wave 1 expressive flexibility to Wave 2 friendship quality changed as a function of the value of Wave 1 social anxiety.<sup>2</sup> The dashed line denotes the range of social anxiety within which the simple slope of friendship quality on expressive flexibility was significant. In general, the slope relating expressive flexibility to friendship quality became less strongly positive, and gradually became negative, as social anxiety increased. Expressive flexibility only had a significant positive effect on friendship quality for participants scoring lower than 0.66 SD below the mean of social anxiety; for the rest of the participants, the effect of expressive flexibility did not reach significance, supporting Hypothesis 2.

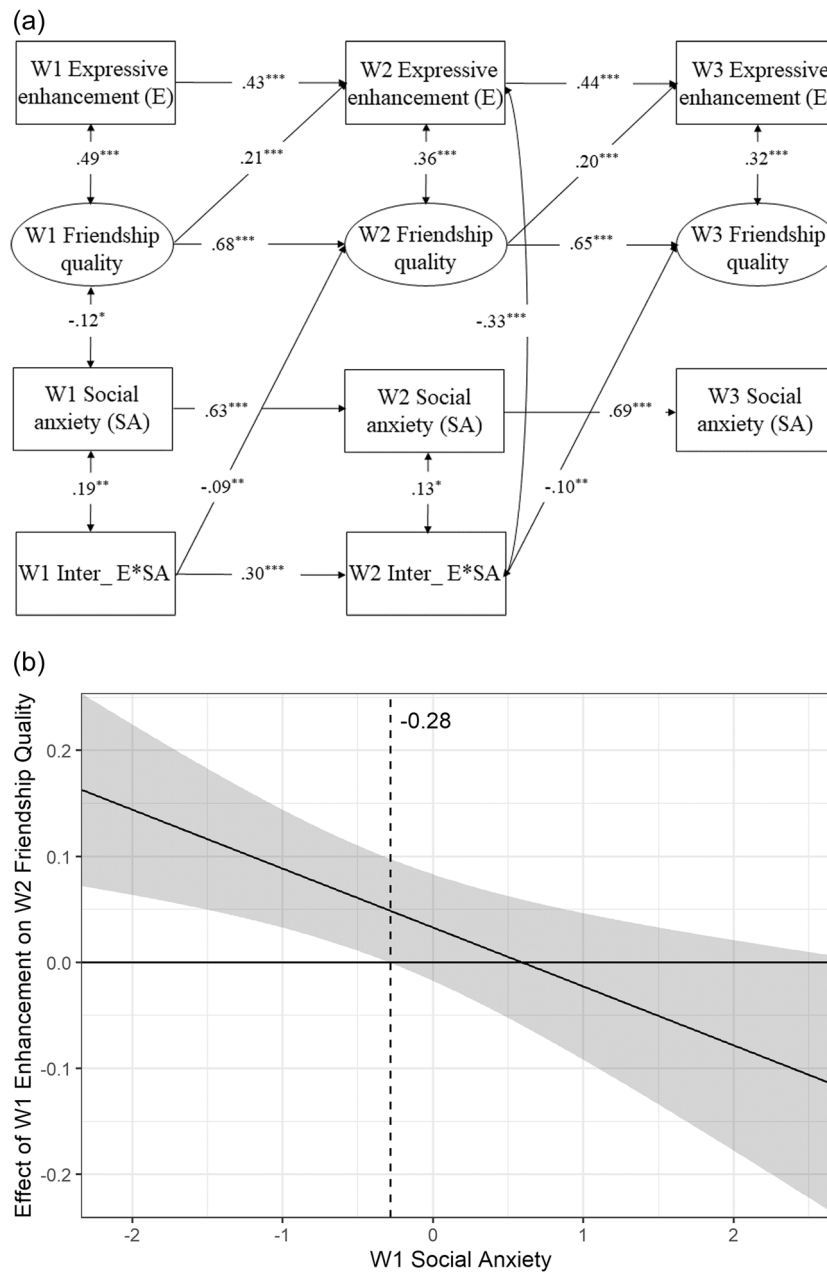
Regarding other associations in the longitudinal model, social anxiety was negatively correlated with friendship quality at Wave 1 ( $r = -.12, p = .045$ ), but not at the latter two waves ( $p$  s  $\geq .179$ ); Expressive flexibility and social anxiety did not show significant concurrent correlations across three waves ( $p$  s  $\geq .108$ ). Neither friendship quality nor expressive flexibility significantly predicted later social anxiety ( $p$  s  $\geq .689$ ). Likewise, earlier social anxiety also did not predict later friendship quality ( $p$  s = .967). Social anxiety showed a weak positive association with later expressive flexibility ( $\beta$  s = .07,  $p$  s = .051/.049). Expressive flexibility, friendship quality, and social anxiety all showed moderate-to-high stability from Wave 1 to Wave 2, and from Wave 2 to Wave 3 ( $\beta$  s = .47–.69,  $p$  s < .001). With regard to gender and age differences, girls scored significantly higher than boys on friendship quality at Wave 1 and Wave 2 ( $\beta$  s = -.17/-0.10,  $p$  s = .005/.032), and they reported more social anxiety than boys at Wave 3 ( $\beta = -.13, p = .004$ ). Social anxiety showed a significant positive correlation with age only at Wave 2 ( $\beta = .14, p = .002$ ). There were no significant age or gender differences for expressive flexibility across the three waves ( $p$  s > .079).<sup>3</sup>

As sensitivity analyses, we used the same methods to additionally examine the links between the two separate components of expressive flexibility (i.e., expressive enhancement and suppression), social anxiety, and friendship quality. The main results were largely the same as in the overall expressive flexibility model. As shown in Figures 5 and 6, friendship quality significantly predicted higher enhancement and suppression abilities in the subsequent wave (Enhancement:  $\beta$  s = .21/.20,  $p$  s < .001; Suppression:  $\beta$  s = .10,

<sup>2</sup>Since cross-lagged paths had been constrained across time, results from Wave 1 to Wave 2 and from Wave 2 to Wave 3 were basically the same. Thus, the latter plot was omitted for brevity.

<sup>3</sup>We also compared the results of girls and boys for the longitudinal model between expressive flexibility, friendship quality, and social anxiety, via a multigroup comparison test. There was no significant difference in the chi-square value after adding constraints across gender,  $\Delta\chi^2(10) = 17.01, p = .074$ , suggesting equivalent results for boys and girls.



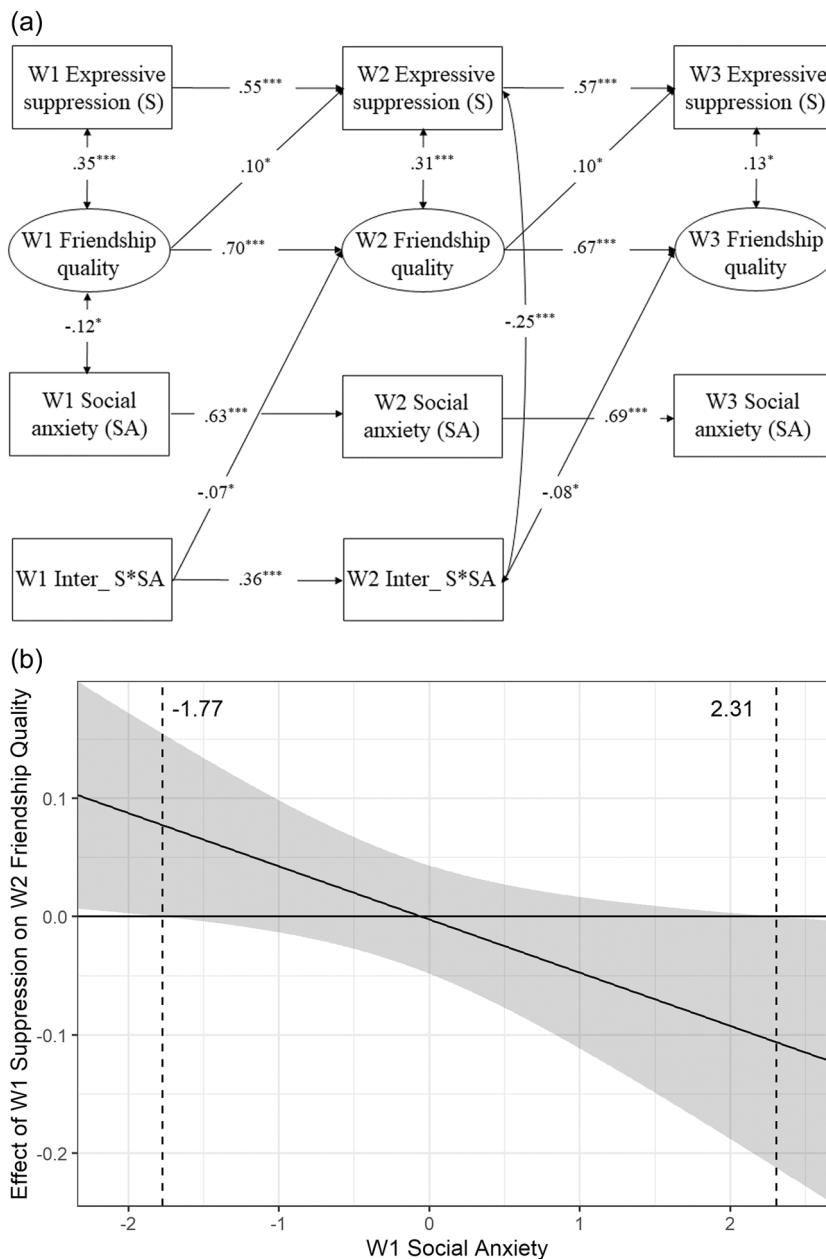


**FIGURE 5** (a, b) The longitudinal relations between expressive enhancement, friendship quality, and social anxiety, as well as the results of J–N test. Model fits:  $\chi^2(208) = 209.34, p = .461, CFI = 1.00, TLI = 1.00, RMSEA = 0.01$  (90% CI [0.00, 0.03]), SRMR = 0.05. Other notes keep the same with Figures 3 and 4.

$p = .010/.011$ ). Both enhancement and suppression positively predicted friendship quality only at relatively lower levels of social anxiety (0.28 and 1.77 SD below the mean, respectively). For participants at the extreme high end of social anxiety (2.31 SD above the mean), suppression even negatively predicted later friendship quality.

## 4 | DISCUSSION

Expressive flexibility has been typically considered as a marker of individual well-being and resilience (Bonanno et al., 2004). According to a recent longitudinal study (Y. Wang & Hawk, 2020b), however, youths' higher expressive flexibility did not predict better peer relationships, suggesting that this ability might only be conditionally adaptive for promoting positive social interactions. We therefore aimed to advance knowledge about the social functions of expressive flexibility in adolescence, by examining whether its longitudinal associations with friendship quality were moderated by youths' social



**FIGURE 6** (a, b) The longitudinal relations between expressive suppression, friendship quality, and social anxiety, as well as the results of J–N test. Model fits:  $\chi^2(208) = 283.99, p < .001, CFI = 0.98, TLI = 0.97, RMSEA = 0.04$  (90% CI [0.03, 0.05]), SRMR = 0.05. Other notes keep the same with Figures 3 and 4.

anxiety. Consistent with our hypothesis, adolescents' friendship quality positively predicted self-reported expressive flexibility later on. Also in line with predictions, social anxiety moderated the longitudinal associations from expressive flexibility to friendship quality, with expressive flexibility only positively predicting friendship quality for participants with lower social anxiety.

Regarding the bidirectional links between expressive flexibility and friendship quality, our results were consistent with prior research where expressive flexibility was assessed via an observational laboratory task across two waves (Y. Wang & Hawk, 2020b). Across these studies, the significant positive links from friendship quality to both observed and self-reported expressive flexibility, as well as its two subcomponents (i.e., expressive enhancement and suppression), suggest the importance of healthy social relationships for adolescents' expressive regulation. High-quality friendships in adolescence might build a supportive platform for communication and exchange, in which adolescents can gain experience and training in various regulatory behaviors, including expressive flexibility. In contrast, the lack of intimate friendships or the presence of insecure peer attachments might threaten adolescents' self-esteem (Buckley et al., 2004), and further impair their sense of

regulatory self-efficacy (H. Liu et al., 2021). In such a state, adolescents might abandon attempts at expressive regulation in interpersonal interactions.

Longitudinal effects from expressive flexibility to later friendship quality appeared to be conditional on social anxiety. Greater flexibility predicted higher friendship quality only for adolescents with lower social anxiety. To our knowledge, this is the first study to demonstrate individual differences in the social adaptiveness of expressive flexibility. One potential explanation for the weakened social benefits of expressive flexibility among socially anxious adolescents might be their overuse of expressive regulation. Driven by the fear of peer rejection, socially anxious adolescents might become especially eager to show “appropriate” emotional expressions in interpersonal interactions, and thus regulate their expressive behaviors more frequently (Farmer & Kashdan, 2012). We speculated that this frequent use or practice of expressive regulation might also lead to the slight increases in later expressive flexibility, which could explain the weak positive associations from social anxiety to expressive flexibility. As Aldao et al. (2015) suggested, however, expressive flexibility is likely a necessary, but not sufficient, condition for successful social interactions. Socially anxious adolescents' excessive regulation efforts might tax their cognitive resources, blocking the opportunities for other social activities and thus muting the social benefits of expressive flexibility.

It is noteworthy that participants of the current study were exclusively recruited from China, and our results about the social adaptiveness of expressive flexibility might be at least partly influenced by cultural factors. For example, whereas social anxiety in Western societies is usually self-focused with an excessive concern for embarrassing oneself in public, the main concern for those with social anxiety in East Asia tends to be more other-focused; that is, offending others with inappropriate behaviors (Norasakkunkit et al., 2012). In this case, socially anxious adolescents in China might pay exceptionally close attention to their emotional expressions to make good impressions on others, which potentially amplifies the moderating effect of social anxiety in the links between expressive flexibility and friendship quality. Nevertheless, some results might not completely coincide with the common ideas about emotional display rules in the traditional Chinese culture. For example, emotional constraint is generally encouraged in collectivistic contexts for the sake of group harmony (Matsumoto et al., 2008), but suppression abilities did not significantly predict later friendship quality, and even had a negative effect on friendship quality for participants with extremely high social anxiety (see Figure 6). The lack of positive links between suppression and friendship quality might be related to the nature of friendships. As illustrated by recent expansions upon the social functionalist theory (Keltner et al., 2022), emotions guide individual's thoughts and actions to meet different needs in various social relationships. At the core of friendships is the need for trust, so genuine expressions or self-disclosures of emotion are likely important for such intimate relationships. Stronger suppression abilities thus might not directly translate to higher-quality friendships for Chinese youth, and could even adversely affect friendships for those with intense social anxiety. Further investigations are therefore necessary to directly compare the social adaptiveness of expressive flexibility and its two subcomponents across contexts with different social goals and across different cultural backgrounds.

Taken together, the moderating effect of social anxiety implies that the social functionality of expressive flexibility might vary between individuals. The construct of expressive flexibility was originally proposed to argue against the notion that specific regulation strategies have uniform beneficial or detrimental effects (Bonanno & Burton, 2013). Our findings further suggested that expressive flexibility, itself, is also not uniformly beneficial. Practically, therefore, interventions that aim to improve peer relationships by training expressive flexibility might not always be effective. For adolescents burdened with social anxiety, relevant trainings could perhaps pay more attention to their moderate use of expressive regulation. The present study also replicated the positive links from friendship quality to expressive flexibility, with a new self-reported measurement of expressive flexibility. Thus, adolescents who need to improve expressive regulation skills might start by making and keeping friends.

#### 4.1 | Limitations and future directions

This study has certain limitations that need to be considered. First, our study relied on youth self-reports, introducing the possibility of common method and social desirability biases. Although we emphasized the principle of confidentiality during data collection, some participants might have over-reported their expressive flexibility and friendship quality and/or under-reported their social anxiety. In particular, social anxiety might have affected the way adolescents answered the expressive flexibility questions, in that they reported relatively higher expressive flexibility than they are capable of actually executing. Nevertheless, since prior studies on expressive flexibility have been predominantly measured via intensive observational coding of expressive behaviors (e.g., Bonanno et al., 2004; Westphal et al., 2010), the use of a self-report questionnaire offers both a methodological extension and additional evidence regarding the links between expressive flexibility and peer relationships. Second, the measurement of perceived friendship quality might not offer a complete picture of adolescents' peer relationships. In addition to mutual and lasting friendships, aspects of peer relationships such as peer status and peer victimization are also important. We also excluded the conflict and betrayal dimension of this scale due to its low reliability and validity. While this step was necessary from a statistical perspective, it might have weakened the comprehensiveness of the measurement to some extent. Accordingly, further research might focus more specifically on negative

aspects of peer relationships. Third, our explanations of the potential mechanisms underlying why expressive flexibility did not result in positive social outcomes among socially anxious adolescents remain largely conjecture. Although we speculate that the excessive expressive regulation of socially anxious adolescents might be a possible reason, we did not directly test their frequencies in using different regulatory strategies. Future explorations into the specific mechanisms would be valuable for deeper understanding of the conditions under which expressive flexibility might make a difference for social adjustment. Such research could also offer practical suggestions regarding how to help socially anxious adolescents build healthy social relationships.

## 5 | CONCLUSION

Using a three-wave longitudinal design, the present research examined associations between adolescents' expressive flexibility, friendship quality, and social anxiety. The positive links from earlier friendship quality to later expressive flexibility again highlighted the contributions of healthy social interactions to flexible expressive regulation. Importantly, expressive flexibility only positively predicted friendship quality for adolescents with lower levels of social anxiety. These results suggest individual variations in the potential for flexible expressive regulation to promote positive social relationships, thus providing empirical evidence regarding the conditional adaptiveness of expressive flexibility. Accordingly, relevant practical interventions might need to consider adolescents' individual characteristics before training or encouraging expressive flexibility in social interactions.

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### CONFLICT OF INTEREST

The authors declare no conflict of interest.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### ETHICS STATEMENT

Ethical approval for this study was obtained from the Survey and Behavioral Research Ethics Committee of The Chinese University of Hong Kong.

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