Relationship Between Emotional Contagion and Leisure Benefits in Sports and Leisure: The Mediating Role of Leisure Involvement and Flow

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Abstract

The purposes of the study were to test the mediating role of leisure involvement and flow on the relationship between emotional contagion and leisure benefits in sports and leisure. The participants were college student in Taiwan selected by the purposive sampling method. Sports and Leisure Emotional Contagion Scale, Sports and Leisure Involvement Scale, Sports and leisure Flow Scale, and Sports and Leisure Benefits Scale, are used as instuments after compiled by authors, and retested using PLS-CFA. The CFA results showed that four scales have a good reliability and validity. The data were analyzed using PLS-SEM. Results of the study indicate that leisure involvement and flow had full mediating effects between emotional contagion and leisure benefits. The results could be applied in both sports and leisure area of mathematics instruction, and emotional contagion could elevate leisure benefits by leisure involvement and flow.

Keywords: motional contagion, leisure involvement, flow, leisure benefit

1. Introduction

Hatfield et al. (1992) defined *emotional contagion* as the tendency to automatically imitate or synchronize with the movements, expressions, postures, and voices of another person. Emotional contagion may occur in different social relationships between individuals or between individuals and groups, such as doctor-patient (Monin et al., 2017), teacher-student (Frisby, 2019), manager-employee (Petitta & Naughton, 2015), and staff-customer (Koku & Savas, 2016). These emotional contagion relationships may even arise in sports and leisure situations (Kucukergin & Dedeoglu, 2019; Thonhauser & Wetzels, 2019), but they are of a different nature. Doctor-patient, teacher-student, manager-employee, and staff-customer relationships are work-related relationships, whereas sports and leisure involve individuals freely choosing to engage in physical or recreational exercise during their free time, encouraging fun, happiness, and health (Li & Chen, 2009). Sports and leisure are unique types of activity that allow people to relax physically and mentally, forget their worries, and escape monotonous lifestyles. They also provide entertainment, satisfaction, a sense of accomplishment, social functions, and health improvements (Cheng, 1994). Sports and leisure also allow people to pursue meaning in their lives and improve their self-worth (Zhuo, 1994). In this field, emotional contagion may be a major factor affecting individuals physically and mentally and thus merits study.

Many scholars have researched emotional contagion and have reported significant positive correlations between emotional contagion and *leisure benefits*, *flow*, *leisure involvement*, and other variables. Furthermore, leisure may have mediating effects on the relationship between emotional contagion and leisure benefits, but this has not yet been substantiated. The correlations between emotional contagion and the variables will first be described, and then the mediating roles of flow and leisure involvement will be derived.

Emotional contagion affects leisure benefits. Leisure benefits are benefits that an individual gains through engaging in leisure activities and can be distinguished into *psychological benefits*, *physical benefits*, and *social benefits* (Ho, 2008). Specifically, *emotional contagion has positive effects on psychological benefits* because, from a theory of emotional contagion perspective, emotional contagion refers to an individual's unconscious imitation of the facial expressions, vocal expressions, and postures of the people around them when socializing

and their "capture" of other people's emotions as a result of the facial, vocal, and postural feedback (Hatfield et al., 1994). When engaging in sports and leisure, such as in watching a ball game, laughter from a companion or fellow member of the audience will induce an individual to smile or laugh out loud and lead the observer to become more interested in the game (Weber & Quiring, 2017). They may even cheer out loud with other fans while watching the game. These behaviors assist with relieving mental pressure and promoting physical health. Furthermore, Chang et al.'s (2017) findings verified that positive emotional contagion among athletes has positive effects on team resilience. Resilience refers to an individual's ability to bravely face and attempt to resolve difficult environments and problems (Peterson et al., 2002). Ungar and Theron (2020) argued that resilience is the process of multiple biological, psychological, social, and ecological systems interacting in ways that help individuals to regain, sustain, or improve their mental wellbeing. Wu et al. (2020) concluded that resilience can greatly improve the mental health of university students. In emotional contagion also producing physical benefits, Hatfield et al. (1992) argued that emotional stimuli almost simultaneously trigger the mental perception and physiology of emotions. In a functional magnetic resonance imaging study, Nummenmaa et al. (2008) determined that emotions triggered by cognitive empathy assist physical, sensory, and movement performances. Furthermore, emotional contagion effects social benefits, as emotional contagion has the trait of empathy. Murphy et al. (2018) claimed that empathy refers to having emotions that feel the same. They stated that contagion of happy emotions is significantly positively correlated with compassion, care, and interpersonal attachments, whereas the reverse is true for meanness. As a result, when the same emotions are present between two people, they will naturally become friends, increase their recognition of each other as friends or colleagues, or develop their interpersonal relationship. As such, emotional contagion can promote leisure benefits; therefore, the following is posited:

H_1: Among university students, emotional contagion and leisure benefits are positively correlated.

Emotional contagion affects leisure involvement. In leisure activities, involvement is an unobservable state of motivation. It is aroused by specific stimuli or situations and has drive properties. Leisure involvement refers to how an individual sees leisure and entertainment, which then affects their behaviors (Havitz & Dimanche, 1997). Positive emotions, by being shared, cause people in a team to experience the same positive emotions (Savardelavar & Arvin, 2012). Chang et al. (2017) studied college athletes and also concluded that positive emotional contagion in teams positively affects sports training involvement. The current study focused on the contagion of positive emotions to investigate involvement in sports training. Negative emotions can similarly be contagious and affect leisure involvement. Therefore, the following is posited:

H_2: Among university students, emotional contagion and leisure involvement are positively correlated.

Emotional contagion also affects flow. Csikszentmihalyi (1990) described flow as an individual being intensely engaged in an activity, to the point that other matters feel inconsequential and the activity is so pleasurable that the individual intends to experience it at any cost. The topic of flow has been researched extensively, including in the field of sports. Flow is also likely present in games because, similar to sports, games provide goals and immediate feedback (Jackson & Csikszentmihalyi, 1999).

The reason emotional contagion affects flow, according to the theory of emotion, is that emotional contagion occurs when individuals spend time with others and unconsciously imitate their emotional expressions (Hatfield et al., 1994). If a spectator is engrossed in a game, emotional contagion causes other spectators to become engrossed too. According to the flow model, the phenomenon involves enthusiasm, total concentration, forgetting one's self, time moving faster or slower than usual, and participation in the activity itself as a type of encouragement, regardless of the results (Nakamura & Csikszentmihalyi, 2009). Therefore, when individuals experience emotional contagion while spectating, they become enthusiastic and totally focused, forget themselves, and experience warped time (time seems to pass faster), and this emotional expression is known as flow. Thus, the following is posited:

H_3: Among university students, emotional contagion and flow are positively correlated.

Flow affects leisure benefits. Flow is an expression of positive emotions and, in Fredrickson's (2001, 2003) broaden-and-build theory of positive emotion, positive emotions help individuals broaden their behavioral thinking abilities and establish new, lasting resources. These include intellectual resources, such as new knowledge and expanded problem-solving techniques; social resources, such as new or improved social relationships (interpersonal relationships); physical resources, such as increased physical coordination and improved health; and psychological resources, such as increased resilience, positive attitudes, and the expansion of one's sense of identity and goals. These resources demonstrate the implications with leisure benefits, which is that physical benefits, psychological benefits, and social benefits are correlated. Therefore, flow affects leisure

benefits; as such, the following is posited:

H_4: Among university students, flow and leisure benefits are positively correlated.

Leisure involvement affects leisure benefits. Involvement is the degree to which one exerts oneself in a matter (Chen et al., 2010). High involvement in an activity can improve exercise benefits (Lee & Hung, 2015). Empirical studies have indicated that exercise or leisure involvement has positive influences on leisure benefits, for instance, Yong and Jinxia's (2013) study on cyclists, Chung's (2015) study on slow pitch softball competitors, Ho and Yang's (2016) study on university students, Huang and Sun's (2017) study on pétanque competitors, and Kung's (2017) study on tennis competitors. The results of these studies demonstrated that exercise or leisure involvement had positive influences on leisure benefits, which is to say that benefits accrue with the effort exerted (Yu & Tian, 2013). Therefore, leisure involvement is deduced to affect leisure benefits, and the following is posited:

H_5: Among university students, leisure involvement and leisure benefits are positively correlated.

Last, as mentioned, emotional contagion affects leisure benefits and also affects flow, and flow can affect leisure benefits; as such, flow may play a mediating role between emotional contagion and leisure benefits. Similarly, leisure involvement also plays a mediating role. Thus, the following are posited:

H_6: Among university students, flow and leisure involvement has a mediating effect on the relationship between emotional contagion and leisure benefits.

Thus, the goal of this study was, in addition to verifying the correlations among emotional contagion, leisure involvement, flow, and leisure benefits in sports and leisure, to verify the mediating effects of flow and leisure involvement. Furthermore, past studies have not verified the mediating effects of flow and leisure involvement on the relationship between emotional contagion and leisure benefits, and this research gap may be filled by the findings of this study.

2. Method

2.1 Participants

Two batches of participants were recruited: survey pretest participants ($N = 81$) and formal participants ($N = 100$). The demographic variables of the participants are presented in Table 1.

Table 1. Demographic variables

Variable	Group		Pretest participants		Formal participants	
			Count	%	Count	%
School year	First		18	22.2	50	50.0
	Second		17	21.0	23	23.0
	Third		23	28.4	12	12.0
	Fourth		23	28.4	15	15.0
Area of study	1.	Related to sports and leisure	17	21.0	23	23.0
	2.	Unrelated to sports and leisure	64	79.0	77	77.0
Frequency of sports and	Once a week		21	25.9	27	27.0
leisure activity	Twice a week		13	16.0	17	17.0
	Three times a week		11	13.6	11	11.0
	Four or more times a week		36	44.4	45	45.0
Duration of activity	Half an hour		18	22.2	20	20.0
	One hour		20	24.7	25	25.0
	One and a half hours		19	23.5	26	26.0
	Two hours or longer		24	29.6	29	29.0
Gender	1.	Male	29	35.8	36	36
	2.	Female	52	64.2	63	63

2.2 Research Instruments

Four instruments measuring emotional contagion in sports and leisure were created for the study. Each instrument used 5-point Likert scales, with 1 to 5 points assigned to the responses (*does not match at all*, *slightly matches*, *somewhat matches*, *mostly matches*, and *fully matches*). The factors of the four instruments were very clear, and confirmatory factor analysis (CFA) was therefore used to revise the instruments. Furthermore, because the pretest sample comprised 81 people, variance-based SmartPLS 3.0, which is suitable for small sample sizes

(30−100), was used.

2.2.1 Sports and Leisure Emotional Contagion Scale

The five factors of Doherty's (1997) Emotional Contagion Scale were referenced in this study; combined with sports and leisure scenarios, the scale items were revised to form an initial draft comprised of 27 items in total for Love (6 items, e.g., On the sports field, seeing the support and comfort between my peers made my heart full of warmth), Happiness (6 items, e.g. When my sports peers smile warmly at me, I feel warm inside and smile too.), Fear (6 items, e.g., During a game, sitting next to an angry crowd made me feel restless.), Anger (5 items, e.g., Seeing teammates accusing each other of negligence made me uncomfortable.), and Sadness (4 items, e.g., Watching fans cry as the team they support loses a game, I unconsciously shed tears.).

Four practitioners with backgrounds in sports and leisure were invited to revise the draft. Two practitioners were university students; one had expertise in cycling, and the other had expertise in tennis. The third practitioner was employed in an indigenous hunter school. The fourth practitioner was a high school teacher with expertise in badminton.

The PLS-CFA test results indicated that in composite reliability (CR), the five factors met the benchmark of .70. However, for average variance extracted (AVE), *Love* = .46 and *Anger* = .47, failed to meet the benchmark of .50; the reason for their not meeting the benchmark was the factor loading λ. In structural equation modeling (SEM), the benchmark for λ is .50−.95, and Hair et al. (2014) argued that observation indicators with λ values between .40 and .70 may be eliminated if doing so will result in the CR or AVE values meeting the benchmark. Therefore, "Love 6: When teammates or companions hug me enthusiastically, I return the hug" (λ = .57) and "Anger 5: When I see other fans accuse the referee of unfairness, I join in" (λ = .46) were eliminated from the instrument.

After these two items were removed, the factor AVEs improved; *Love* = .51, and *Anger* = .56, meeting the benchmark of AVE being equal to or greater than 50%. The final CFA results indicated that among the 25 items: Love (5 items), Happiness (6 items), Fear (6 items), Anger (4 items), and Sadness (4 items), the λ values were .60−.86; the factor CR values were between .83 and .90, and the AVE values were .51−.59. Based on the cross-factor loadings, the observation indicators were more highly correlated with the factor to which they belonged than to other factors and, therefore, the discriminant validity (DV) of the results was also consistent.

These numbers indicate that the revised sports and leisure emotional contagion scale had acceptable reliability and validity.

2.2.2 Sports and Leisure Involvement Scale

McIntyre (1989) proposed that leisure involvement is a multidimensional concept with three factors: attraction, self-expression, and centrality. These factors can explain leisure involvement (Kyle & Mowen, 2005). In Taiwan, for instance, Lin et al. (2016) and Tsao et al. (2016) used them to measure leisure involvement. They have also been used to measure leisure involvement in western countries, such as in studies by Kyle and Mowen (2005) and by Sosianika et al. (2020). The factors were also used in the present study.

The first draft of the Leisure Involvement Scale was drafted in reference to Chang's (2007) Activity Involvement Scale for hikers and Yeh et al.'s (2007) Online Game Leisure Involvement Scale. Therefore, with reference to the content of the two scales, language about sports and leisure were added to the items to create five items on attraction (e.g., The sports and leisure activities I do is very interesting for me.), five items on centrality (e.g., The sports and leisure I am engaged in occupy a central position in my life), and four items on self-expression (e.g., The sports and leisure activities I am engaged in made me truly express myself.).

The CFA results of the Leisure Involvement Scale (see Table 3) indicated that the CR values of the three factors were between .92 and .96, exceeding the benchmark of .70. The AVE values were between .71 and .83, exceeding the benchmark of .50. The λ values of the items were between .71 and .93, thus meeting the benchmark of .50−.95. Therefore, all the items were retained. In the cross-factor loadings, the observation indicators were more highly correlated with the factor to which they belonged than to other factors, and the DV results were therefore also consistent.

2.2.3 Sports and Leisure Flow Scale

The Flow Scale was drafted referencing the Flow Subscale (9 items) in Hou's (2012) Positive Emotion Scale of College Students. The subscale was based on flow theory (Nakamura & Csikszentmihalyi, 2009) and referenced the Flow Questionnaire proposed by Csikszentmihalyi and Csikszentmihalyi (1992) and the Game Flow Experience and Motivation Questionnaire developed by Wang and Chen (2010).

Wallis (2020) argued that flow can be viewed as a single-factor concept. The items in Hou's (2012) scale had a theoretical basis and, like this study, were designed for university students. Therefore, the Flow Subscale was selected for this study. The items were revised based on a sports and leisure perspective. For instance, the original item "When I am interested in and committed to a problem that has not yet been completed, I think about it all the time" was revised to "When I am interested in a sports and leisure problem that hasn't been resolved yet, I think about it all the time."

The first draft of the Flow Scale had nine items, and the CFA results (Table 4) indicated that the CR was .95, meeting the benchmark of .70, and the AVE was .66, meeting the benchmark of .50. The factor loadings (λ) of the nine observation indicators were between .68 and .90, meeting the benchmark of being between .50 and .95. Therefore, all the items were retained.

2.2.4 Sports and Leisure Benefits Scale

Studies on Leisure Benefits Scales (Hung & Crompton, 2006; Ho, 2008; Akgül et al., 2018) have proposed that leisure benefits can be distinguished into three types: 1) Physiological benefits (such as disease prevention and control); 2) Social benefits (such as social relationship and family bonding developments); 3) Psychological benefits (such as self-growth and mental stress relieving). In Taiwan, the most recent studies—e.g., Chin et al. (2020) and Lai et al. (2020)—also used these three elements. In this study, the implications ascribed by Huang et al. (2012) for the three types of leisure benefits and the tennis player scale developed by Huang et al. (2014) were referenced. The tennis player scale also measured three factors, namely psychological, physiological, and social benefits, and was used to measure the benefits gained by members of the public engaged in tennis.

The Sports and Leisure Benefits Scale comprised 21 items in total, with 9 items on psychological benefits, 7 on physiological benefits, and 5 on social benefits. The CFA results indicated all three factors had CRs greater than .90, exceeding the benchmark of .70, and the AVEs were between .65 and .75, exceeding the benchmark of .50. The factor loadings (λ) of the 12 observation indicators were between .62 and .91, meeting the benchmark. In the cross-factor loadings, the observation indicators were more highly correlated with the factor to which they belonged than to other factors; therefore, the DV results were also consistent. Therefore, all the items were retained.

2.3 Data Analysis

The formal sample size in this study was 100 people, and variance-based SmartPLS 3.0, which is suitable for small sample sizes (30−100), was used to verify the hypotheses. Furthermore, whether the statistical effects were statistically meaningful was analyzed using the built-in bootstrapping function in SmartPLS to perform 5000 extractions.

3. Results

From Baron and Kenny's (1986) perspective, the analysis of mediating effects involves three steps: 1) confirm that a correlation exists between the exogenous variable (emotional contagion) and endogenous variable (leisure benefits); 2) confirm that correlations exist among the exogenous variable, the mediating variables (flow and leisure involvement), and the endogenous variables; and 3) after establishing steps 1 and 2, verify the mediating effects. The mediating effects were verified using partial least squares (PLS) SEM; this method was also recognized by Hair et al. (2014).

3.1 Verifying Correlations Among Emotional Contagion, Flow, Leisure Involvement, and Leisure Benefits

Steps 1 and 2 verified whether the correlations among emotional contagion, flow, leisure involvement, and leisure benefits were significant. As shown in Table 2, the path coefficients among the exogenous variable (emotional contagion), mediating variables (flow and leisure involvement), and endogenous variable (leisure benefits) all met significance. The path coefficients (β) among the four latent variables were .51 or greater, and every *t* value was 6.30 or greater; all the *p* values were less than .001. Within the 95% confidence interval, 0 did not fall between the lower and upper limits, indicating that significance was met. Therefore, steps 1 and 2 established that significant correlations were present among emotional contagion, flow, leisure involvement, and leisure benefits.

Table 2. Steps 1 and 2 for verification of mediating effect

	β	*t*	*p*	95%CI	
				LL	*UL*
Step 1					

Emotional contagion to leisure benefits	.53	6.27	< .001	.36	.69
Step 2					
Emotional contagion to flow	.50	6.46	< .001	.34	.64
Leisure involvement to leisure benefits	.83	14.66	< .001	.75	.89
Flow to leisure benefits	.83	26.55	< .001	.77	.89

3.2 Verifying the Mediating Effects of Flow and Leisure Involvement Between Emotional Contagion and Leisure Benefits

After verifying the presence of correlations in steps 1 and 2, step 3 was carried out. This involved placing the four latent variables into one model, with flow and leisure involvement as the mediating variables, to analyze their mediating effects between emotional contagion and leisure benefits. And according to Hair et al. (2014), the fitness of the mediating effect model can be determined by the measurement model and the structural model.

3.2.1 Fitness of the Measurement Model

In PLS path modeling, the measurement model is known as the outer model. According to Table 3, the observation indicators of the four latent variables had factor loadings (λ) between .81 and 1.00 (Figure 1), which meets the benchmark of being between .50 and .95; the latent variables' CRs were .93 or greater, exceeding the CR ≥ .60 benchmark; and the AVEs were .71 or greater, exceeding the ≥ .50 benchmark. As for DV, as long as the square root of the AVE of a latent variable is greater than the value of the variable's correlation with other variables, then DV is present (Fornell & Larcker, 1981); the results also fit this benchmark. In summary, λ, CR, AVE, and DV were in line with the benchmarks, indicating model fitness. Furthermore, because flow had only one dimension and no variance, its CR, AVE, and DV were 1.00.

Table 3. Fitness of the measurement model

	λ	CR	AVE	DV				
				1	2	3	4	Results
1. Leisure benefits	.90–.94	95	.86	**.93**				Yes
2. Leisure involvement	.88–.91	.93	.81	.83	**.90**			Yes
3. Flow	1.00	1.00	1.00	.83	.88	**1.00**		Yes
4. Emotional contagion	.81–.90	.93	.71	.53	.51	.50	**.84**	Yes

Note. The bold black font in the DV field is the square root of AVE.
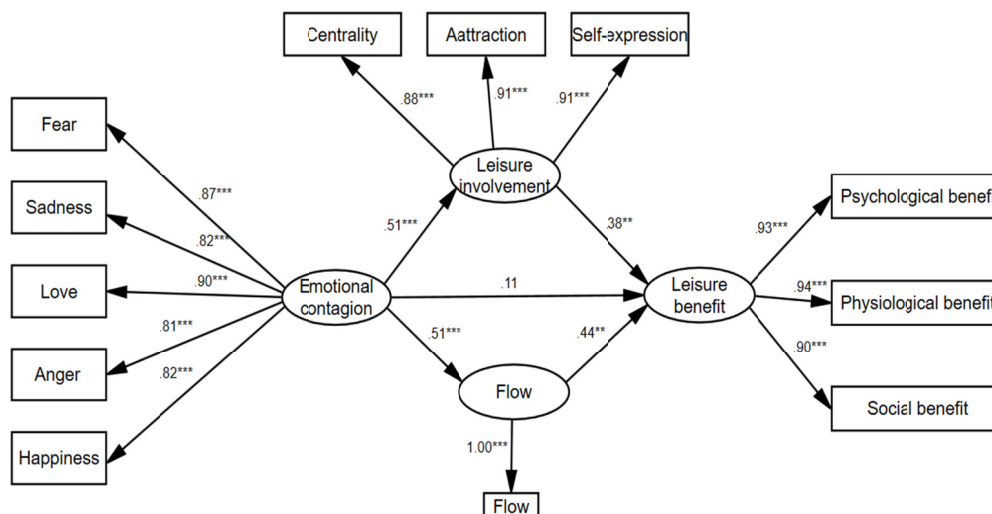

Figure 1. Verifying the mediating model

Note. ** *p* < .01. *** *p* < .001.

3.2.2 Fitness of the Structural Model

In PLS-SEM, the structural model is also known as the inner model. As for its fitness, first, collinearity was determined based on the variance inflation factors (VIFs). The VIFs among the four latent variables were between 1.00 and 4.52, that is, less than 5.00, indicating the problem of collinearity is small.

Second, the coefficient of determination (R^2) represents the accuracy of the prediction; it also represents the overall explanatory effect of all the exogenous variables on the endogenous variables in the model (Hair et al., 2014). In the mediating effects model, the endogenous variable was leisure benefits, and, in relation, emotional contagion, flow, and leisure involvement were the exogenous variables. The analysis found R^2 to be .74, which represented the overall explanatory power of emotional contagion, leisure involvement, and flow for leisure benefits. The explanatory power was moderate, according to the R^2 benchmarks proposed by Hair et al. (.75 for high, .50 for moderate, and .25 for low).

Third, for effect size f^2, which is the change in R^2 after eliminating a specific exogenous variable, was .17 for leisure benefits, .13 for leisure involvement, and .04 for emotional contagion. According to Cohen (1992), an f^2 of .02 indicates a small effect size, .15 a moderate effect size, and .35 a large effect size. Based on these benchmarks, emotional contagion, leisure involvement, and flow had small to moderate levels of effects on leisure benefits.

Last, for Q^2, which is predictive correlation (Note 1), the benchmark is greater than zero. The results for Q^2 were leisure involvement = .20, flow = .249, and leisure benefits = .62, indicating that predictive correlations were present; emotional contagion had predictive correlations with leisure involvement, flow, and leisure benefits.

3.2.3 Analysis of the Mediating Effects

The results verifying the mediating effects models indicated that both the measurement and structural models were fit. Therefore, the mediating effects were analyzed. Mediating effects can be direct, indirect, or total (see Table 4).

Direct effects can be captured with the coefficient values (β) of the five paths involving emotional contagion, leisure involvement, flow, and leisure benefits in the mediating effects model. The coefficient values were as follows: leisure involvement to leisure benefits = .38 ($p = .007$), flow to leisure benefits = .44 ($p < .001$), emotional contagion to leisure benefits = .11 ($p = .094$), emotional contagion to leisure involvement = .51 ($p < .001$), and emotional contagion to flow = .50 ($p < .001$). In addition to the direct effect of emotional contagion on leisure benefits achieving significance, the other four paths of direct effect also achieved significance, as 0 did not appear between the lower and upper limits of the 95% confidence interval.

Indirect effects are described as the product of two path coefficients, which are the exogenous variable to mediating variable and the mediating variable to endogenous variable path coefficients. This mediating model had two indirect pathways. One was the emotional contagion to leisure involvement to leisure benefits pathway; in this pathway, leisure involvement was the mediating variable, and the value of the indirect effect was .20 (.51 times .38). The second pathway was emotional contagion to flow to leisure benefits, and the value of the indirect effect was .22 (.50 times .44).

The total effect is the sum of the direct effect and the indirect effect. The total effects of pathways without mediating variables are the direct effects. For the two pathways with mediating variables, the total effect of the emotional contagion–leisure involvement-leisure benefits pathway was .31, and the total effect of the emotional contagion–flow–leisure benefits pathway was .33.

In the mediating model, the direct effect of emotional contagion on leisure benefits was .11 ($p > .05$) and did not reach significance. Accordingly, leisure involvement and flow had full mediating effects between emotional contagion and leisure benefits. Whether these two mediating effects were statistically meaningful was verified using the built-in bootstrapping function in SmartPLS. For leisure involvement, $t = 2.52$, $p = .012$, and 95% CI [.05, .34]. The results for flow were $t = 2.75$, $p = .006$, and 95% CI [.08, .40]. The results indicated that the two mediating effects were statistically meaningful.

Table 4. Direct, indirect, total effect

Path	Direct effect	Indirect effect	Total effect	Significance of direct or indirect effect			
				t	p	95%CI	
						LL	UL
Leisure involvement to leisure benefits	.38	-	.38	2.69	.007	.10	.66
Flow to leisure benefits	.44	-	.44	3.18	< .001	.18	.71

Emotional contagion to leisure benefits	.11	-	.11	1.68	.094	-.02	.24
Emotional contagion to leisure involvement	.51	-	.51	6.14	<.001	.34	.67
Emotional contagion to flow	.50	-	.50	6.28	<.001	.34	.66
Emotional contagion to leisure involvement to leisure benefits	.11	.20	.31	2.52	.012	.05	.34
Emotional contagion to flow to leisure benefits	.11	.22	.33	2.75	.006	.08	.40

4. Discussion

Six hypotheses were posited in this study and, based on the analysis of the mediating model, only "H_1: Among university students, emotional contagion and leisure benefits are positively correlated" was not supported. The other hypotheses were supported. Discussions as below:

No research on the relationships of emotional contagion (including positive and negative emotions) with other variables in sports and leisure has been conducted in Taiwan. According to doctrine, theory, and inference, "H_2: Among university students, emotional contagion and leisure involvement are positively correlated" was proposed. Some studies have argued that positive emotions, by being shared, cause others on a team to feel them and influence the team's work or sports involvement (Chang et al., 2017; Savardelavar & Arvin, 2012). As H_2 was supported, positive or negative emotional contagion in sports and leisure affects leisure involvement.

Similarly, the correlation between emotional contagion and flow among university students has been substantiated by other studies. Based on doctrine and theoretical inference, a positive correlation was posited; "H_3: Among university students, emotional contagion and flow are positively correlated," which was supported by the empirical results. During sports and leisure, members unconsciously and synchronously imitate the emotional expressions of others (Hatfield et al., 1994). Using sports spectating as an example, emotional contagion allows individuals to be intensely focused on watching the game, which is in line with the phenomenon of flow (as mentioned in the theory of flow), which is to be in a state of enthusiasm and total concentration, forgetting one's self (Nakamura & Csikszentmihalyi, 2009).

"H_4: Among university students, flow and leisure benefits are positively correlated" was also supported. This is consistent with Chen's (2011) discovery that flow and leisure benefits are significantly correlated among participants in road running. Road running is a leisure sport and, thus, the results of the current study are supported. The correlation can be explained using broaden-and-build theory (Fredrickson, 2001, 2003), as flow is a positive emotion, and positive emotions can broaden individuals' abilities in behavioral thinking and building lasting new resources. These include intellectual resources, such as developing problem-solving techniques and absorbing new knowledge; social resources, such as solidifying existing and new social relationships (interpersonal relationships); physical resources, such as increasing physical coordination and improving health; and psychological resources, such as increasing resilience and positive attitudes and expanding one's sense of identity and goals. These four types of resources demonstrate the implications of leisure benefits—that physical benefits, psychological benefits, and social benefits are consistent.

"H_1: Among university students, emotional contagion and leisure benefits are positively correlated" not being supported may have been due to the effects of leisure involvement and flow in the mediating model. In the first of the three steps verifying the mediating effects, the presence of a significant relationship between the exogenous and endogenous variables was confirmed; which is to say, a significant relationship was observed between emotional contagion and leisure benefits. However, once leisure involvement and flow were introduced, emotional contagion and leisure benefits were no longer significantly correlated. This also indicates that leisure involvement and flow have full mediating effects between emotional contagion and leisure benefits. Therefore, "H_5: Among university students, flow has a mediating effect on the relationship between emotional contagion and leisure benefits" and "H_6: Among university students, leisure involvement has a mediating effect on the relationship between emotional contagion and leisure benefits" were supported. This also indicates that emotional contagion in sports and leisure increases leisure involvement and flow, which then increase perceptions of leisure benefits. Therefore, the mediating roles of leisure involvement and flow cannot be overlooked in studies with university students on relationships between emotional contagion and leisure benefits in sports and leisure.

In terms of research limitations, this study is aimed at college students, so the results of the study are only applicable to college students. When inferred to other levels of education, it must be carefully considered. In addition, this study adopted purposive sampling, the sample size is 220 college students. For future research, the sample size can expand. Third, the different dimensions of emotional contagion and leisure benefits, flow and

leisure involvement have been proposed by different scholars, so that the inference of results is limited to the same dimensions of four scales in the present study.

In In terms of further research, the present study focuses on the mediating effect of flow and leisure involvement, and also found that the two have a fully mediating role between the relationship of the emotional contagion and leisure benefit. Future studies can replace different mediating or regulating variables according to the literature.

5. Conclusion

Past studies have described a positive correlation between emotional contagion and leisure benefits, but in the mediating model in this study, the correlation was nonsignificant. This indicates that the correlation between emotional contagion and leisure benefits is produced by leisure involvement, while flow exerting ~~their~~ mediating effects between them and promoting the leisure benefits.

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Notes

Note 1. $Q^2 = 1 − (\Sigma_D \text{SSE}_D)/(\Sigma_D \text{SSO}_D)$. D: missing distance. SSE: the sum of the square of the predicted error. SSO: the sum of the square of the observed value.

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