The Mediating Effect of Social Capital on the Relationship Between Connection to the Mainland and Life Satisfaction as Perceived by Island Residents

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Abstract

This study aimed to confirm the mediating effect of social capital on the relationship between a sense of connection to the mainland and life satisfaction as perceived by island residents. To that end, the study drew on original data from the Survey of the Welfare Status and Needs of Jeonnam Island Residents conducted by the Jeonnam Welfare Foundation from October 11 to November 1, 2017. The respondents (N = 500) were residents of inhabited islands in Jeollanam-do. The data were analyzed using SPSS version 26.0. The results indicate a partial mediating effect of social capital on the relationship between connection to the mainland and perceived life satisfaction. Based on these results, the study makes a number of practical and policy suggestions.

Keywords

Connection to the Mainland, Social Capital, Life Satisfaction, Island Residents, Mediating Effect, Jeonnam-do

1. Introduction

While Korea's topography includes many islands, the country's main industrial, cultural, administrative, medical, and service centers are land-based and therefore difficult for island residents to access. For that reason, the living conditions of island residents are poor, and young people increasingly migrate to the cities. As a result, most of the islands are classified as extinction risk areas, and Korean government ministries (including the Ministry of Land, Infrastructure, and Transport; the Ministry of Culture, Sports, and Tourism; the Ministry of Safety and Public Administration; and the Ministry of Environment) are working together on a comprehensive approach to island development. However, despite these

efforts, the poor industrial base and living environment of the island region means that the population continues to flow to the mainland (Korea Research Institute for Local Administration, 2014).

Poor access to the mainland is the principal cause of backwardness in the islands. Ultimately, the critical factor for more fundamental development is connection to the mainland; resolving the backwardness of the island region will require major changes in traffic conditions to improve accessibility. In Shin and Park's (2019) survey of participants in the National Islander Convention, 39.2% of islanders identified "inconvenient transportation" as the biggest obstacle to island development. Bridges to the mainland enable island areas to overcome limitations of isolation, space, and appearance (Park, 2021). Increasing island residents' access to medical care, culture, and education plays a decisive role in enhancing life satisfaction (Korea Research Institute for Local Administration, 2014). Previous studies (Amherst H. Wilder Foundation, 2021; Korea Rural Economic Institute, 2019: Jeonnam Welfare Foundation, 2017) have also noted that connection to the mainland increases perceived life satisfaction among island residents.

Beyond these positive impacts, however, connection to the mainland may also diminish social capital. For example, Kim (2009) explained that the norms of trust and reciprocity, which are critical components of social capital, are relatively well preserved in the case of island residents, as 90% of those currently living in the islands are villagers, and 99% are engaged in fishing. Kim (2010) also observed that regional and blood ties among island residents are strong, with high social homogeneity. However, it can be assumed that improved connection to the mainland will increase the influx of outsiders, making it more challenging to preserve existing social capital.

In summary, it seems clear that while connection to the mainland increases the life satisfaction of island residents, it is also likely to reduce social capital, ultimately impacting negatively on life satisfaction. For present purposes, the term social capital refers to the bonds formed between neighbors, friends, and families sharing homogeneous demographic characteristics and, in particular, to the emotional support facilitated by norms of trust and reciprocity (Claridge, 2018; Sjoerd & Sjak, 2003). Emotional support and assistance is a resource embedded in the network of community residents (Lin, 1999). Previous studies have also highlighted a significant relationship between connection to the mainland and social capital (Kim, 2010) and between social capital and life satisfaction (Kim et al., 2015; Lee & Choi, 2016). As this suggests that social capital mediates the relationship between connection to the mainland and life satisfaction, the present study revisits the relevant data with a view to improving island residents' life satisfaction.

2. Theoretical background

2.1 Life satisfaction among island residents

Because their natural and cultural environments are relatively well preserved, the islands are seen as critical social assets; in reality, however, depopulation and a declining productive population make it challenging to ensure their sustainable development. The Korean government has introduced a range of policies to prevent the extinction of the islands, including the Island Development Promotion Act of 1986, which was a comprehensive ten-year development plan. The government also promotes cultural, welfare, and education projects to improve residents' life satisfaction. In particular, in the third ten-year comprehensive island development plan (2008–2017), government ministries committed to a total investment of 2.5 trillion in 351 classification projects (Korea Research Institute for Local Administration, 2014).

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Despite these efforts, however, island residents' life satisfaction is reportedly low. In a study of participants in the National Islander Convention, Shin and Park (2019) reported that only 22.7% said they were satisfied with island life. In 2015, the Korea Research Institute for Local Administration found that the average level of life satisfaction among residents of 34 cities, towns, and villages, including islands, was 6.52—lower than the national average of 6.68 (cited in Korea Maritime Institute, 2018b).

The primary goal of the Korean government is to improve island residents' quality of life, both objective and subjective. Academic research measures subjective quality of life in terms of well-being. According to Diener (1984), subjective well-being comprises an affective component and a cognitive component; the former refers to an individual's positive or negative emotions, and the latter is a cognitive judgment about one's life (Diener, 1984). Researchers characterize well-being as an emotional factor and life satisfaction as a cognitive factor. A sense of well-being refers to "a person's feeling or feeling as measured at a specific point in time" (Cho, 2017). In other words, well-being is a momentary feeling experienced under certain conditions; for example, when a person has a positive experience, they feel happy, while an unhappy experience causes them to feel unhappy. As subjective well-being is measured at a specific point in time, it is likely to change, as emotions or feelings depend on the individual's experience (Lee, 1998).

On the other hand, as life satisfaction refers to "the overall cognitive evaluation or satisfaction with an individual's life" (Cho, 2017), this is less likely to change (as compared to happiness). In this context, 'there is a strong tendency to refer to life satisfaction—which is less likely to change—when evaluating the effectiveness of Korean government policies. On that basis, the present study uses life satisfaction variables to measure island residents' quality of life (Lee, 1998).

2.2 Island development and connection to the mainland

Article 3 of the Korean Constitution delimits the territory of the Republic of Korea as "the Korean Peninsula and its annexed doseo (islands)" (Seong, 2009). Combining do (island) and seo (islet), the term doseo implies classification by size (National Geographic Information Institute, 2016) and is used interchangeably with the term island. The dictionary definition of an island is "a piece of land completely surrounded by a body of water such as an ocean, inland sea, lake, or river." On the current criteria, an island is no longer an island if ten years have passed since it was linked to the mainland by a bridge (KRIHS, 2012: 18). As of April 2016, there were 3,677 islands (total area 3,547,385,094.3 m2) throughout Korea; of these, 1,967 (area 1,601,347,399.3 m2) were in Jeollanam Province, representing 45.14% of the province's land area (Ministry of Land, Infrastructure, and Transport, 2016).

These islands are surrounded on all sides by the sea, and their characteristics may account for the inadequacy of industrial, cultural, administrative, medical, and residential services. In overcoming this difficult reality, one of the key factors in implementing change is yeonryuk—connection to the mainland, which is typically in the form of a bridge (Kim, 2014). As of 2017, these bridges are found in Goheung-gun (one location), Yeosu-si (two locations), Mokpo-si (one location), and Haenam-gun (one location) (Jeonnam Welfare Foundation, 2017).

Connection to the mainland has a range of impacts, including positive effects on population change and economic development. According to Lee's (2017) analysis of population projections, the population of islands connected to the mainland will decrease by 40.2% over a period of fifty years (from 112,852 in 2016 to 67,542 in 2066). In the case of islands that remain unconnected to the mainland, the population is projected to decrease by 56.1% (from 119,183 in 2016 to 52.271 in 2066). In the latter case, 63 inhabited islands that are not connected to the mainland may become

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uninhabited. These findings confirm that connection to the mainland influences population change in island areas (Lee, 2017).

Second, regarding connection to the mainland as an economic development factor, Shin and Park (2019) reported that 12.5% of the obstacles to island development relate to product distribution channels. By implication, major obstacles to island development can be resolved by connection to the mainland. In Go's (2015) study, 41% of respondents anticipated further development in their region following construction of the New Millennium Bridge.

2.3 Social capital

The concept of social capital was first coined by Hanifan (1916); formed through everyday relationships, social capital plays an important role in society. Although various forms of the concept have since been widely discussed by scholars, no clear conceptual consensus has yet been reached. However, there is general agreement that social capital involves norms and networks based on trust and reciprocity (Lin, 1999; Portes, 1998; Burt, 1992). Trust refers to a state of mind in which one expects others to act favorably toward oneself. Reciprocity is a social norm based on the idea that others will offer favors in return for favors provided (Jang, 2005). In this context, the term network refers to resources that inform social relationships between individuals whose role and status are determined by their location in the network structure (Lin, 1999). As a resource embedded in a network based on norms of trust and reciprocity, social capital increases with access to resources, and cohesive social capital is rich in the network resources of mutual emotional support. Understood as a network structure, a bridge provides abundant resources for economic growth (Lin, 1999; Portes, 1998; Burt, 1992).

For present purposes, the key characteristics of social capital can be summarized as follows. First, social capital is accumulated through relationships with others and cannot be produced in isolation (Portes, 1998). Second, unless individuals make ongoing efforts to preserve norms of trust and reciprocity, social capital cannot be maintained and is easily diminished. Third, social capital is easily accumulated if the number of actors and relationships is significant. Fourth, the norms of reciprocity sometimes coincide or with a time lag (Korea Institute for Health and Social Affairs, 2009). Fifth, actors in the network play a positive-sum game to increase capital (Tremmel, 2009).

2.4 Review of existing research

2.4.1 The relationship between connection to the mainland and life satisfaction

As islands are surrounded on all sides by the sea, they are typically seen as an attractive natural environment (Shin & Park, 2019). This makes island areas a significant tourist resource and generally explains why residents make their homes there. A recent analysis of the island region of Ando, Yeosu by the Korea Maritime Institute (2018b) noted that continuous tourism business created added value based on the natural environment, fishing, and the fishing village experience. In Go's (2015) survey of residents of Amtaedo, 29% referred to the natural environment as the reason for their satisfaction with the village they lived in.

In contrast, the negative aspects of island living include separation from the mainland (Shin & Park, 2019). In particular, compared to those living on the mainland, island residents suffer discrimination in terms of medical, transportation, and education services. While 82.5% of suburban residents in urban areas use hospitals and clinics, only 25.8% of island residents can access these services (Lee, 2011). Second, island residents experience difficulties in traveling to urban

centers. While only 3.2% of urban and suburban residents need more than an hour to reach the seat of city or county government, the figure is 90.4% for island residents (Lee, 2011). Finally, in relation to kindergarten and elementary school services, no urban or suburban residents chose to go to other towns to access these services, but 23.4% of island residents chose to do so (Lee, 2011).

Connection to the mainland is a drastic change that can help to ameliorate island residents' poor living conditions by altering traffic conditions and inducing other positive changes that will ultimately improve life satisfaction—a view supported by a number of previous studies. Among these, a study conducted by the Amherst H. Wilder Foundation (2021) found that constructing a bridge to the mainland had significant mediated effects on mental health. Similarly, the Korea Rural Economic Institute's (2019) study at Daeshin Village in Geoje found that the construction of a bridge to the mainland contributed to increased life satisfaction by enabling residents to access treatment at large medical institutions on the mainland, visit children's houses, and shop at department stores. The Jeonnam Welfare Foundation (2017) also confirmed that island residents' life satisfaction increased with connection to the mainland.

2.4.2 The relationship between connection to the mainland, social capital, and life satisfaction

Connection to the mainland (Kim, 2014) impacts in several ways on the island area. In particular, connection changes the community as a network, as exchanges with mainland residents become more active while exchanges between island residents decrease accordingly. This alters the island network structure, as bonding social capital gives way to bridging social capital. Bridging social capital develops among people with diverse demographic and sociological characteristics. Because bridging social capital has a heterogeneous network structure, it forms weak ties. However, this also makes it possible to acquire new information and resources, with positive effects on economic development (Claridge, 2018; Sjoerd & Sjak, 2003). And bonding social capital develops among people with similar demographic characteristics, such as family members and neighbors. Frequent exchanges between homogeneous members of the network facilitate the norms of reciprocity and trust that promote cooperation. However, an excessively dense network is likely to promote prejudice or discrimination, closing the network to outside groups (Claridge, 2018; Sjoerd & Sjak, 2003). As indicated in Figure 1, previous studies suggest that bonding social capital decreases when an island is connected to the mainland. According to Kim (2010), resident trust and reciprocity decreases as group heterogeneity increases.

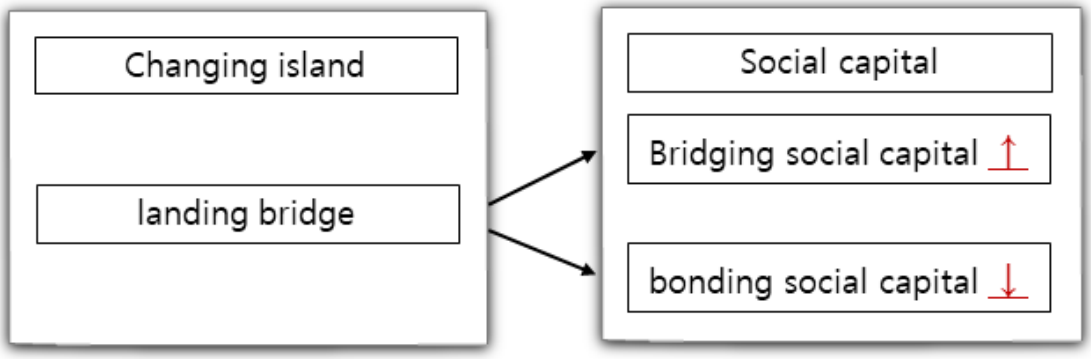

Fig 1. Bridging social capital vs bonding social capital

The process of social capital formation is shown in Figure 2. As collective assets, norms of trust and reciprocity become embedded in the network, and accessible and mobilizable resources are distributed to individuals (Lin, 1999), in turn affecting the individual's instrumental and expressive actions.

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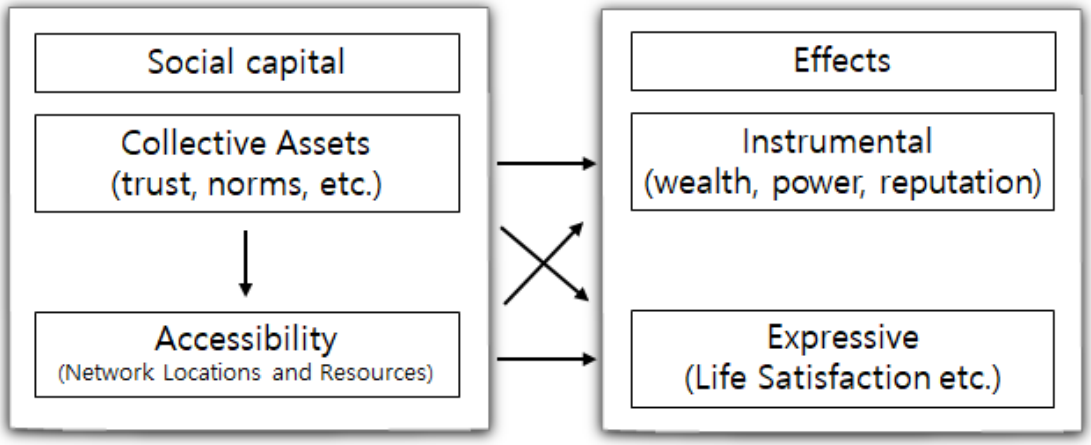

Fig 2. The process and consequences of social capital development (adapted from Lin, 1999)

Instrumental behavior has economic, political, and social consequences for individuals. Economic outcomes manifest as stratification; outcomes of political change affect hierarchical positioning, and outcomes of social change affect prestige. Instrumental behaviors can be accessed more easily within the relational structure of an open network (Lin, 1999). Expressive behavior enhances personal life satisfaction as a result of sharing one's resources with others (Lin, 1999). In particular, Lin noted that expressive behavior can be accessed more easily within networks characterized by denser and more intimate relationships among members.

By implication, it can be inferred that bonding social capital, which involves a high density of relationships among network members, enhances individual life satisfaction. According to Kim et al. (2015), social capital is a strong predictor of life satisfaction, and Lee and Choi (2016) reported that norms, trust, and networks—key elements of social capital—significantly affect life satisfaction.

3. Research method

3.1 Research model

The present study sought to examine the mediating effect of social capital on the relationship between connection to the mainland and life satisfaction as perceived by island residents. To that end, a research model (Figure 3) was developed with regard to the relevant theoretical background.

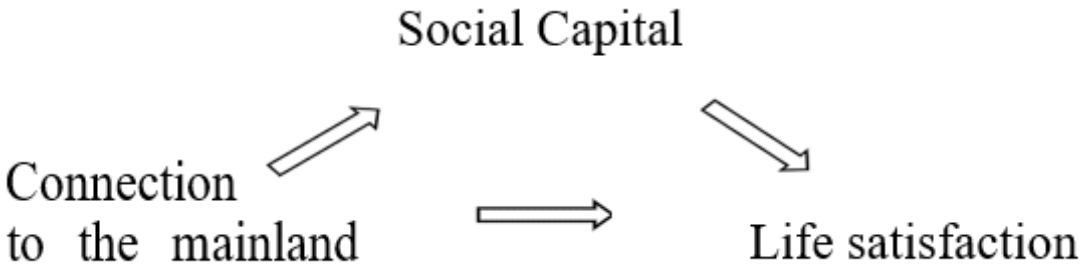

Fig 3. Research model

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3.2 Research participants and method

The study drew on raw data from the Welfare Status and Needs Survey of Jeonnam Island Residents conducted by the Jeonnam Welfare Foundation in 2017. The respondents were island residents (N = 500) living on inhabited islands in 10 cities and counties of Jeollanam Province (Yeonggwang-gun, Goheung-gun, Yeosu, Mokpo, Sinan-gun, Jindo-gun, Haenam-gun, Muan-gun, Boseong-gun, and Wando-gun). Two-step stratification extraction was applied to the survey results for region, city, and county (eup/myeon/dong), household, and population. The survey was conducted between October 11 and November 1, 2017 by 21 researchers, who visited the area to conduct individual face-to-face interviews.

SPSS version 24.0 was used to analyze the data. To begin, frequency analysis and descriptive statistics were used to identify the characteristics of the major variables. Correlation analysis was then used to investigate the relationship between the independent (control) variable and the dependent variable and to check for any problem of multicollinearity. Finally, hierarchical regression analysis was performed to assess the mediating effect of social capital on the relationship between connection to the mainland and life satisfaction, and the Sobel test was performed to assess the significance of any mediating effect.

3.3 Measurement tools

The scale used to rate “overall life satisfaction” ranged from 1 (not at all satisfied) to 5 (very satisfied), which meant that a higher score indicated a higher level of life satisfaction. Connection to the mainland was treated as a dummy variable, where 1 indicated connection and 0 indicated non-connection. Social capital was measured using Heo and Park’s (2016) scale, which comprises two items related to trust, two items related to norms, two items related to participation, and two items related to networks; the participation sub-factor was not included. The social capital scale ranged from 1 (do not agree at all) to 5 (completely agree), which meant that a higher score indicated a higher level of social capital. As measured by Cronbach's alpha, the credibility of this index of social capital was .880. The control variables were gender (female = 0; male = 1), age, and education (middle school or lower = 0; high school or higher = 1). Gender and education were treated as dummy variables.

4. Results

4.1 Demographic characteristics

Table 1 shows the demographic characteristics of respondents. Females accounted for 52.0% of the sample, and the remaining 48.0% were male. Regarding age, 56.1% of participants were aged 50 or younger, and the remaining 43.9% were aged 60 or older. In terms of education, a lower proportion of respondents (44.8%) graduated from middle school or lower, while 55.2% graduated from high school or higher. In total, 84.2% of respondents reported that their place of residence was not connected to the mainland, while 15.8% were connected.

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Table 1. Demographic characteristics

Category		Frequency	Percentage
Gender	Female Male	260 240	52.0 48.0
Age	50s or less 60s or older	280 220	56.1 43.9
Education	Junior high school or lower High school or higher	222 273	44.8 55.2
Connected to the mainland	No Yes	421 79	84.2 15.8

4.2. Descriptive statistics for key research variables

Table 2 shows descriptive statistics for the key research variables. The mean score for social capital was 4.07 (SD .547), and mean life satisfaction was 3.29 (SD .761).

Table 2. Characteristics of key research variables

Category	Score range	Min. value	Max. value	Mean	Std. deviation
Social capital	1 to 5	2.17	5.00	4.07	.547
Life satisfaction	1 to 5	1.00	5.00	3.29	.761

4.3. Correlation matrix of key research variables

Table 3 shows that life satisfaction is significantly correlated with gender ($r = .102$, $p < .05$), connection to the mainland ($r = .205$, $p < .001$), and social capital ($r = .092$, $p < .05$). In other words, social capital and life satisfaction are higher if the respondent was male and connected to the mainland. In addition, the correlation coefficient for the independent variables ranged between the absolute values of .002 to .666, and there was no distortion of the results by multicollinearity

Table 3. Correlation matrix of variables

Category	Gender	Age	Education	Connection to the mainland	Social capital	Life satisfaction
Gender	-					
Age	-.006	-				
Education	.126**	.666***	-			
Connection to the mainland	-.032	.008	.038	-		
Social capital	-.053	-.002	-.050	-.172***	-	
Life satisfaction	.102*	.032	-.012	.205***	.092*	-

*p＜ .05; **p＜ .01; ***p＜ .001

Note: Dummy variables: gender (male=1); educational background (high school or higher=1); connection to the mainland (connected=1).

4.4. Mediating effect of social capital on the relationship between connection to the mainland and life satisfaction as perceived by island residents

The three-step method of analysis proposed by Baron and Kenny (1986) (1: independent variable → dependent variable; 2: independent variable → parameter; 3: independent variable, parameter → dependent variable) was used to verify the mediating effect of social capital on the relationship between connection to the mainland and life satisfaction as perceived by island residents. The Sobel test was performed to confirm the significance of any mediating effect.

4.4.1 The relationship between connection to the mainland and life satisfaction (Step 1)

Results for the relationship between connection to the mainland and life satisfaction as perceived by island residents are presented in Table 4. In Model I, demographic characteristics (gender, age, educational background) accounted for 1.6% of the variance in life satisfaction, but the results were not statistically significant. In Model II (controlling for demographic characteristics and inputting the variable connection to the mainland), the explanatory power of life satisfaction was 5.2%—an increase of 4.2% when compared to Model I. As connection to the mainland was found to have a significant influence on life satisfaction (β = .209), it can be inferred that greater connection to the mainland increases island residents' life satisfaction.

Table 4. The effect of connection to the mainland on life satisfaction

Stage	Life satisfaction							
	Model I				Model II			
	B	S.E	β	t	B	S.E	β	t
Gender Age Education	.177 .135 -.132	.070 .094 .095	.116 .088 -.086	2.527* 1.430 -1.396	.184 .145 -.148	.069 .092 .093	.121 .094 -.097	2.682** 1.572 -1.596
Connection to the mainland					.438	.093	.209	4.719***
Model Fit	Constant = 3.207 F = 2.588 adj. R^2 = .010				Constant = 3.138 F = 7.594*** adj. R^2 = 0.052 R^2 Change = 4.2			

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

Note: Dummy variables: gender (male=1); educational background (high school or higher=1); connection to the mainland (connected=1).

4.4.2 The relationship between connection to the mainland and social capital (Step 2)

Results for the relationship between connection to the mainland and social capital as perceived by island residents are presented in Table 5. In Model I, demographic characteristics (gender, age, educational background) were found to explain 0% of the variance in social capital. In Model II (controlling for demographic characteristics and inputting the variable connection to the mainland), the explanatory power of social capital was 2.7%—an increase of 2.7% when compared to Model I. As social capital was found to have a significant influence on life satisfaction (β = -.171), it can be inferred that greater connection to the mainland is associated with lower social capital for island residents.

Table 5. The effect of connection to the mainland on social capital

Stage	Social capital							
	Model I				Model II			
	B	S.E	β	t	B	S.E	β	t
Gender Age Education	-.046 .055 -.086	.051 .068 .068	-.042-.078	-.912 .807 -1.261	-.052 .045 -.070	.050 .067 .067	-.047 .041 -.063	-1.044 .672 -1.039
Connection to the mainland					-.259	.068	-.171	-3.823***
Model Fit	Constant = 4.108 F = .966 adj. R^2 = 0.000				Constant = 4.148 F = 4.399** adj. R^2 = 0.027 R^2 Change = .027			

*p< .05; **p< .01; ***p< .001
Note: Dummy variables: gender (male=1); educational background (high school or higher=1); connection to the mainland (connected=1).

4.4.3 The relationship between connection to the mainland, social capital, and life satisfaction (Step 3)

Table 6 shows the effects of connection to the mainland and social capital on life satisfaction as perceived by island residents. In Model I, demographic characteristics (gender, age, educational background) accounted for 1.1% of the variance in life satisfaction, and only gender was a significant influence. In Model II (controlling for demographic characteristics and inputting the variables connection to the mainland and social capital, the explanatory power of life satisfaction was 7.0%—an increase of 5.9% when compared to Model I. As connection to the mainland (β = .233) and social capital (β = .134) significantly influenced life satisfaction, greater connection to the mainland was associated with higher social capital and higher life satisfaction.

Table 6. The effects of connection to the mainland and social capital on life satisfaction

Stage	Life satisfaction							
	Model I				Model II			
	B	S.E	β	t	B	S.E	β	t
Gender Age Education	.191 .126 -.128	.070 .094 .095	.125 .082 -.084	2.715** 1.336 -1.351	.206 .131 -.135	.068 .092 .092	.135 .085 -.088	3.003** 1.428 -1.462
Connection to the mainland Social capital					.495 .185	.095 .062	.233 .134	5.211*** 2.983**
Model Fit	Constant = 3.208 F = 2.838* adj. R^2 = .011				Constant = 2.375 F = 8.159*** adj. R^2 = .070 R^2 Change = .059			

*p< .05; **p< .01; ***p< .001
Note: Dummy variables: gender (male=1); educational background (high school or higher=1); connection to the mainland (connected=1).

4.4.4 Verification of the mediating effect of social capital

Results for the mediating effect of social capital based on Baron and Kenny's (1986) method are shown in Figures 4 and 5. In step 1, the relationship between connection to the mainland (independent variable) and life satisfaction (dependent variable) was confirmed to be statistically significant for p < .001 (Figure 4). In step 2, the relationship between the independent variable (connection to the mainland) and the parameter (social capital) was statistically significant for p <

.001 (Figure 5). When the three-step independent variable (connection to the mainland) and the parameter (life satisfaction) were inputted simultaneously, a significant effect was observed for the dependent variable (satisfaction with life) for p < .001 (Figure 5). This confirmed the partial mediating effect of social capital on the relationship between connection to the mainland and life satisfaction as perceived by island residents.

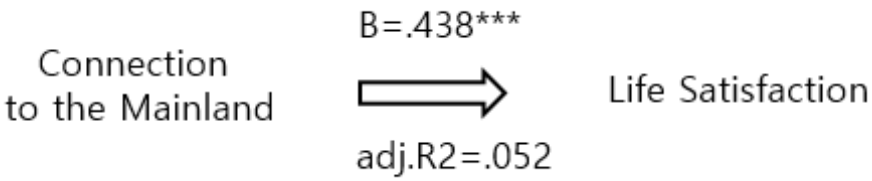

Fig 4. Results: Step 1

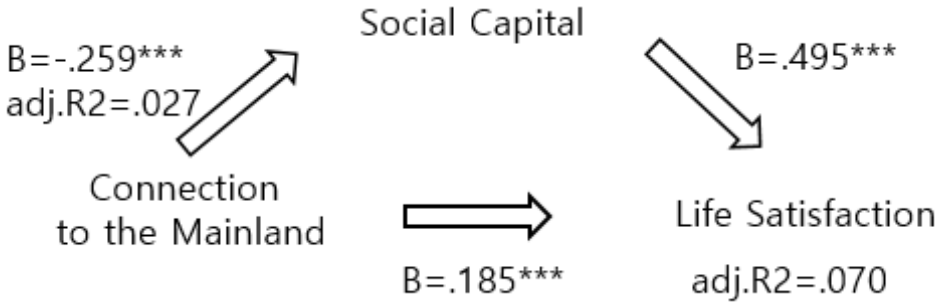

Fig 5. Results: Steps 2 and 3

4.4.5 Verification of significance of the mediating effect of social capital

As shown in Table 7, the mediating effect of social capital was significant for z = -.062 and p = .019.

Table 7. Results of Sobel test to assess the mediating effect of social capital

Route	Z	P
Connection to the mainland → social capital → life satisfaction	-.062	.019

5. Conclusion

The purpose of this study was to confirm the mediating effect of social capital on the relationship between connection to the mainland and life satisfaction as perceived by island residents. Hypothesis testing revealed the partial mediating effect of social capital, and this has a number of practical and policy implications. First, this finding aligns with earlier evidence (Amherst H. Wilder Foundation, 2021; Korea Rural Economic Institute, 2019; Jeonnam Welfare Foundation, 2017) that connection to the mainland plays a decisive role in enhancing island residents' life satisfaction. The key effects of this connection are increased tourist numbers, reduced distribution costs, and increased resident income, along with improved access to medical, cultural, and educational services (Korea Research Institute for Local Administration, 2014). In short, the material and non-material effects of connection to the mainland enhance life satisfaction.

It follows that more islands should be connected to the mainland. However, according to Article 4 of the Preliminary Feasibility Study Operation Guidelines, construction and other projects with a total cost of 50 billion won or more and national financial support of 30 billion won or more must undergo a preliminary feasibility study (Kim, 2013). Many projects are rejected at this stage for economic reasons, as in the case of a proposed bridge in the Chupo-Bigeum area of Sinan-gun, Jeollanam Province. To solve this problem, the Korean government must address a number of policy issues. In Aphae-Haenam-gun and Shinan-gun, a bridge project was exempted from the preliminary feasibility study for reasons that included balanced regional development (Kim, 2013), and this exemption should be extended to projects connecting islands to the mainland. If such an exemption proves difficult, the weighting of feasibility study items should be adjusted to reflect the characteristics of the island area.

Where a bridge cannot be built to link an island to the mainland, other measures must be implemented to increase the life satisfaction of the island's residents. As indicated above, the key benefit of connection to the mainland is improved access to services ranging from hospitals to beauty salons. In the absence of such a connection, islanders have to pay for transport in the form of passenger ships, buses, and taxis. In addition, they may have to stay overnight on the mainland if, for example, passenger ships only operate daytime services. The Korean government should therefore introduce free public transport services (e.g., ocean greyhounds, cargo ships). Based on enacted ordinances, Sinan-gun and Wando-gun currently operate night passenger ships, and central government should provide services of this kind for all island areas. Additionally, as sea transportation routes are often closed for lengthy periods because of bad weather, larger passenger ships should be introduced that are less affected by such weather changes (Lee, 2017).

Second, the present results confirm the mediating effect of social capital on the relationship between connection to the mainland and life satisfaction. This finding aligns with earlier evidence of a significant relationship between connection to the mainland and social capital (Kim, 2010) and between social capital and life satisfaction (Kim et al., 2015; Lee & Choi, 2016). Social capital develops through relationships among neighbors, friends, and families with homogeneous demographic characteristics. In particular, bonding social capital promotes norms of trust and reciprocity that facilitate emotional support (Claridge, 2018; Sjoerd, Sjak, 2003) as a resource embedded in community networks (Lin, 1999: 41).

As connection to the mainland diminishes social capital by reducing contact within homogeneous groups, it can be assumed that this in turn reduces the available social support and so reduces life satisfaction. For that reason, a range of social initiatives must be introduced to reinforce the social capital of island residents. Volunteering programs are typically used to enhance social capital; in particular, active encouragement of volunteering at the village or family level can help to improve bonding social capital. Other initiatives include time banks and volunteer credit systems that offer credits based on recorded volunteer hours and types. Volunteers can cash in their credits when they are themselves in need of help (Seoul Development Institute, 2010).

As bonding social capital is developed through interactions with neighbors and friends, programs should be devised to strengthen these relationships. Recently, town-level events like festivals have helped to revitalize the economy, and this approach should be extended to village-level events to expand social capital and revitalize the community. In the present context, Kim (2009) noted that social capital in the island region is maintained through self-sustaining organizations like fishing cooperatives, senior citizens' associations, women's associations, and youth associations, and community programs in the island region should establish connections with these organizations.

Social capital depends on continuous efforts to develop norms of interpersonal trust and reciprocity. As social capital is otherwise likely to diminish (Korea Institute for Health and Social Affairs, 2009), it is necessary to manage the island

region's social capital in a systematic way. For example, Daejeon Metropolitan City currently runs the Social Capital Research Center and Social Capital Support Center to support the expansion of social capital through the 2019 Daejeon Metropolitan City Social Capital Expansion Ordinance. The Social Capital Research Center develops relevant strategies for Daejeon Metropolitan City, and the Social Resources Support Center offers a range of programs that include village development projects. Local governments should enact social capital-related ordinances and at least consider establishing a social capital support center.

While these are significant findings, the present study has some limitations. In particular, the study considered only the role of social capital in the relationship between connection to the mainland and life satisfaction as perceived by island residents. Follow-up studies should examine a wider range of potential mediating factors, such as economy, culture, and lifestyle. In addition, the study only investigated bonding social capital, and future research should also look at bridging social capital.

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