

The Moderating Effects of Empathy Ability on the Relationship Between University Students' Impulsivity and Suicidal Risk

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Abstract

In this study, it was noted that when the personality characteristics of university students showing suicide risk were identified, they were accompanied by a high level of impulsiveness. In other words, a high level of impulse can play a role in increasing the risk of suicide, so an approach is needed to reduce it. Therefore, in this study, we would like to see if impulsiveness controls the influence of suicide risk using empathy. To this end, a study was conducted on 772 students attending universities located in Daegu and Gyeongbuk. After obtaining approval from IRB. The measurement tools used in research analysis are impulsivity, suicide risk, and empathy. For the research analysis, the three-step control regression analysis proposed by Baron and Kenny was used. The research results are as follows. First, Empathy ability was shown to control the impact of impulsivity on suicidal risk. The higher the empathy ability, the lower the impact of impulsivity on suicidal risk. Second, Empathy ability was shown to control the impact of impulse on the suicidal risk sub-factor. The details are as follows. Empathy ability was found to control the impact of impulsivity on negative self-assessment, suicidal ideation, and hopelessness. The higher the empathy, the lower the impact of impulsivity on negative self-assessment, suicidal ideation, and hopelessness. Through this study, it can be found that it is necessary to improve the empathy ability to reduce the suicidal risk of university students.

Keywords: Suicidal risk, Impulsivity, Empathy ability, Moderating effect

1. Introduction

University students' psychiatric disease and suicide problems are showing an increasing trend day by day because of interpersonal relationships, employment stress, and economic difficulty. According to the report data regarding suicide rate by age group for 2019 in the Ministry of Health and Welfare, the suicide rate is diminishing in all age groups [1]. On the other hand, it was indicated that the suicide rate is not decreasing in their 20s. The suicide rate in their 20s of South Korea stands at 16.4 people, thereby being higher by 1.6 times than the average of OECD (Organization for Economic Cooperation and Development) countries. In this respect, a separate suicide prevention measure for undergraduates is in the real situation of being imminent above all. Kim [2] who researched a relevant factor of causing university students' suicidal ideation reported that a factor affecting suicidal behavior includes the psycho-emotional problem, the interpersonal problem, the learning and career problems.

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Especially, psycho-emotional problems such as depression, anxiety, impulsivity, and cognitive vulnerability are being classified into risk factors for predicting suicidal behavior. Wang et al. [3] who examined a psychiatric characteristic in university students of attempting suicide due to a psycho-emotional problem reported that risk-seeking behavior, namely, individual impulsivity, has the closest relationship with suicidal behavior.

Impulsivity implies a tendency of responding speedily and indiscriminately to internal or external stimulation without considering a negative outcome available for inflicting on oneself or others [4]. The research by Bender et al. [5] targeting university students shows a tendency in which the undergraduates with impulsive behavior have the high acquired capability for suicide. Thus, there is a suggestion that the approach for lowering an individual's impulsivity is needed. Targeting people who escaped from a risk of suicide, Bostik and Everall [6] explored a plan for overcoming this. As a result, a change in the perception of a relationship was clarified to be possibly cured. The happening of a change in negative self-awareness on oneself through positive experience in a relationship leads to coming to free from the danger of suicide [7][8]. Poindexter et al. [9] proposed the necessity of enhancing interpersonal relationships as a plan for lessening university students' suicide problems. As the most important element for the improvement in personal relations, empathy ability was reported to be very crucial. Through these previous researches, the empathy ability level that university students have can be found to be very significant as a way to reduce suicidal risk. Also, a person with a higher empathy ability may show a lower impulse problem compared to people who have a low empathy level. In this regard, a causality between two variables needs to be examined. Accordingly, this study is intended to inquire into whether a difference is indicated in impulsivity according to university students' empathy ability level.

Synthesizing the results of previous researches, people's impulsivity and suicidal risk can be known to be possibly changed depending on empathy ability level. Undergraduates' impulsivity can be known to function as a causal variable of raising their suicide risk. Research by Soloff et al. [10] stated that a change in individual empathy ability can act as a factor of dropping aggression and suicide attempt including their impulsivity is signifying the necessity of inspecting the moderating effect of empathy ability. Hence, this study aimed to check the moderating effect of empathy ability in a relationship between impulsivity and suicide risk after selecting empathy ability as a variable for changing the influence of impulsivity upon a suicidal risk. Also, the existing researches relevant to impulsivity and suicide are in the real situation of being hardly performed. Research targeting adolescents is being mainly carried out in the country. Therefore, this study is intended to progress research for bringing down the suicidal risk of university students who are exposed to a lot of stress. Based on the previous research, this study established the research problem as "what about the moderating effect of empathy ability in the influence of undergraduates' impulsivity upon a suicidal risk?"

2. Research method

2.1. Participants and place

To conduct this study, a questionnaire survey was carried out targeting students who are attending universities located in Daegu and Gyeongbuk after obtaining approval from IRB (Institutional Review Board). Excluding students who gave insincere responses or refused to disclose information among 793 people who participated in the questionnaire survey, 772

participants were finally selected of which 324 or 42% are male while 448 or 58% are female. The school year was indicated of which 241 or 31.2% are freshman while 196 or 25.4% are sophomore, 184 or 23.8% are junior, 151 or 19.6% are senior. The major was shown to be 290 or 37.6% are humanities science while 184 or 23.8% are social science, 143 or 18.5% are science subjects, 73 or 9.5% are science and engineering, 82 or 10.6% are others.

2.2. Research tools

2.2.1. Suicidal risk

To measure a suicidal risk, this study used the scale that Kim and Lee [11] adapted, modified, and supplemented through applying the suicide probability scale that Cull and Gill [12] developed. The item-based response mode consists of a 4-point Likert scale. The use of average value for each item implies that the higher average mean leads to the higher suicidal risk. As a result of analyzing reliability among items, it was indicated to be negative self-assessment with .735, suicidal ideation with .700, hopelessness with .782, and hostility with .577.

2.2.2. Impulsivity

To gauge impulsivity, this study used the NEO-II personality test that Ahn and Ahn [13] standardized Big 5 Personality Scale, which was developed by Costa and McCrae [14]. This scale is composed of extroversion, openness, affinity, sincerity, neurosis. Still, this study used an impulsive factor of neurosis. The research analysis was applied the standardized T-score. It implies that the higher average value leads to higher impulsivity.

2.2.3. Empathy ability

To measure empathy ability, this study used the scale that Park [15] adapted, modified, and supplemented the interpersonal reaction tool, which was developed by Davis [16]. The item-based response mode comprises a 4-point Likert scale. The use of average value for each item implies that the higher average mean leads to the higher empathy ability. In consequence of analyzing reliability among items, it was shown to be cognitive empathy with 0.745 and emotional empathy with 0.726.

2.3. Research analysis method

For the data analysis of this study, the statistical analysis was carried out as follows by using SPSS 18.0 program. First, to inquire into a variable-based relationship, a correlation analysis was implemented. Second, to look into a moderating effect of empathy ability in the influence of impulsivity upon a suicidal risk, the 3-step moderated regression analysis that Baron and Kenny [17] presented was executed. To grasp whether the form of a moderating variable is a pure or quasi moderating variable, the analysis was carried out by applying a method of distinguishing a moderating variable that Sharma, Durand, and Gur-Arie [18] suggested.

3. Result

3.1. A Correlation among suicidal risk, empathy ability, and impulsivity

As a result of examining a correlation among suicidal risk, empathy ability, and impulsivity in university students, first, the whole and sub-factors of suicidal risk are showing a significant negative correlation with the whole and sub-factors of empathy ability ($r=-.20\sim-.42$, $p<.05$). Second, the remaining factors excluding hostility factor ($r=.03$, $p>.05$) out of sub-factors in suicidal risk are indicating a significant positive correlation with impulsivity factor ($r=.28\sim.43$, $p<.05$). Third, all the whole and sub-factors of empathy ability are representing a significant negative correlation with the impulsivity factor ($r=-.16\sim-.24$, $p<.05$).

3.2. A moderating effect of empathy ability in the influence of university students' impulsivity upon a suicidal risk

As a result of verifying a moderating effect of empathy ability in the influence of impulsivity upon a suicidal risk, it is as [Table 1].

Table 1. A moderating effect of empathy ability in the influence of impulsivity upon a suicidal risk

	Step1	Step2	Step3
Independent variable(X)	0.295*	0.269*	0.262*
Moderating variable(M)		-0.277*	-0.244*
X × M			-0.141*
R ²	0.087	0.163	0.182
Δ R ²		0.076*	0.019*

* $p<.05$

At step 1 on the influence of impulsivity upon a suicidal risk, the higher impulsivity ($\beta=0.295$, $p<.05$) led to the higher suicidal risk. The explanation power appeared to be 8.7%. At step 2 that injected a moderating variable (empathy ability), the explanation power with 7.6% was indicated to rise significantly($p<.05$). In other words, it implies that the higher empathy ability($\beta=-0.277$) leads to lower suicidal risk. At stage 3, a moderating effect of empathy ability was examined. The increment of the determination coefficient with 1.9% rose significantly($p<.05$). Accordingly, the empathy ability was shown to regulate the influence of impulsivity upon a suicide risk. Examining the form and the effect of empathy ability that Sharma, Durand, and Gur-Arie (1981) presented, in consequence of inspecting the form of a moderating effect, even the moderating variable in the interaction term appeared to be significant. Thus, the empathy ability can be known to play a role of a quasi-moderating variable. As a result of checking an effect, the case that a mark in independent variable and moderating variable includes +, - can be known that the bigger moderating value leads to the Wesker positive (+) impact of the independent variable on the dependent variable. That is to say, it implies that the higher empathy ability leads to the lower influence of impulsivity and suicidal risk. The whole value of suicide risk was seen to have a significant influence. Thus, a moderating effect was verified on a value by sub-factor of suicide risk. The results are as [Table 2].

Table 2. A moderating effect of empathy ability in the influence of impulsivity upon sub-factor of suicidal risk

Variable		step 1	step 2	step 3
Negative self-	Independent variable(X)	.425*	.407*	.400*

assessment	Moderating variable(M)		-.204*	-.173*
	X × M			-.128*
	R ²	.181	.222	.238
	ΔR ²		.041*	.015*
Suicidal ideation	Independent variable(X)	.283*	.263*	.254*
	Moderating variable(M)		-.215*	-.175*
	X × M			-.171*
	R ²	.080	.126	.153
	ΔR ²		.046*	.027*
Hopelessness	Independent variable(X)	.031	.013	.012
	Moderating variable(M)		-.192*	-.187*
	X × M			-.022
	R ²	.001	.038	.038
	ΔR ²		.037*	.000
*p<.05				

The empathy ability appeared to regulate the influence of impulsivity upon sub-factor of suicidal risk. Also, as a result of inquiring into the form of empathy ability, it can be known to act as a quasi-moderating variable. In the outcome of examining the effect, it can be known that the higher empathy ability as a moderating variable leads to the lower positive (+) influence of impulsivity upon sub-factor suicidal risk. This result implies that the higher empathy ability leads to the lower influence of impulsivity and sub-factor suicidal risk.

4. Discussion

The discussions according to the results of this study are as follows. A moderating effect of empathy ability was searched in the influence of university students' impulsivity upon a suicidal risk. In consequence of inspecting the influence of impulsivity upon a suicidal risk at step 1, the outcome was drawn that the higher impulsivity in undergraduates may lead to the higher suicide risk. The result of this study is being supported by the research report by Wo and Kim [19] who reported that people thinking of suicide have emotional and affective impulses rather than accurate recognition of reality. Impulsivity is not only a factor in increasing a suicidal risk but also the major factor of allowing more fatal suicide attempts to be made. In this context, the methodical approach that reduces the impulsivity of being possessed by an individual can be found through this study. In step 2, the influence of university students' empathy ability upon a suicidal risk was checked. As a result, it was shown that the higher empathy ability leads to lower suicidal risk.

This outcome keeps in with Kang's [20] research as saying of being able to show the tendency of trying to overcome along with psychological difficulty that oneself faced now through positive interaction with other people, rather than the negative thought like suicidal ideation in case of the high empathy ability when being exposed to a stressful situation. The most important empathy ability in forming positive interpersonal relationships can not only reduce a suicidal risk but also play a role in preventing a person who already attempted suicide from thinking of suicidal ideation anymore. In this aspect, the enhancement in an individual's empathy ability can be known to be very important. At step 3, a moderating effect of empathy ability was checked in the influence of university students' impulsivity upon a suicidal risk. As a result, it could be known that the influence of impulsivity upon a

suicide risk can be dropped when the level of empathy ability as a moderating variable gets higher.

The research by Velotti et al. [21], which reported that individual impulsivity can be diminished given being provided an environment available for full empathy in interpersonal relationships, is alluding to the necessity of raising an individual's empathy ability level as a plan for regulating impulsivity. In the preventive approach for bringing down impulsivity and suicidal risk, it is very crucial to improve university students' empathy ability level. Hence, before exploring the influence upon a suicidal risk, the program and educational approaches need to be made so that undergraduates can enhance empathy ability in interpersonal relationships.

5. Conclusion

Through this study, it was found that empathy ability controls the influence of impulsiveness on suicide risk. Therefore, it can be found that the empathy ability needs to be improved as a way to reduce the suicide risk of university students. The significances of this study are as follows. First, this study has a meaning about having targeted university students who show the trend of continuously rising among subjects with a suicide attempt by age. Second, this study inquired into impulsivity as a causal variable, which is one of the behavioral problems, which are shown in common in people who are linked to a suicide attempt. Furthermore, to find a plan for decreasing university students' impulsivity and suicidal risk, the empathy ability corresponding to a relational factor was applied. This study led to being capable of finding that the positive interaction with the surrounding environment can be very effective for preventing a suicidal risk.

The following include the limitations in this study and the suggestions for further research. First, this study conducted a questionnaire survey targeting students who are attending universities where are located in Daegu and Gyeongbuk. Accordingly, follow-up research needs to raise generalization of the findings through carrying out a questionnaire survey targeting students who are attending universities in various districts. Second, this study implemented the analysis regardless of gender even if there may a difference by gender in impulsivity, empathy ability, and a suicide risk factor that were used in this study. Also, much more significant data will be able to be secured if later research examines a causality according to gender. Third, this study looked at the influence upon a suicide risk in impulsivity factor of corresponding to behavioral aspect in university students. However, the depression and anxiety factor, which is relevant to the emotional aspect, can also act as a factor in predicting suicide risk. Thus, follow-up research needs to verify even the emotional aspect that an individual has. Fourth, this study inspected a moderating effect focusing on the whole value with seeing empathy ability as a primary factor. But there may be a difference in the influence upon a suicide risk according to emotional and cognitive empathy ability. Hence, further research is proposed to examine the influence related to a suicide risk through elaborating this a little more.

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References

- [1] Korea Suicide Prevention Center, “White book,” Ministry of Health and Welfare, (2020)
- [2] Kim J. J., “An analysis of variables related to university student’s suicidal ideation: Regarding effect of suicidal attempt experience, mental health, psychosocial problems,” *Mental Health and Social Work*, vol.32, pp.413-436, (2009)
- [3] Wang L., He C. Z., Yu Y. M., Qiu X. H., Yang X. X., Qiao Z. X., Xiong H. S., Zhu Z., and Yang Y. J., “Associations between impulsivity, aggression, and suicide in Chinese college students,” *BMC Public Health*, vol.14, no.1, pp.551-558, (2014) DOI: 10.1186/1471-2458-14-551.
- [4] Moeller F. G., Barratt E. S., Dougherty D. M., Schmitz J. M., and Swann A. C., “Psychiatric aspects of impulsivity,” *American Journal of Psychiatry*, vol.158, no.11, pp.1783-1793, (2001) DOI:10.1176/appi.ajp.158.11.1783.
- [5] Bender T. W., Gordon K. H., Bresin K., and Joiner Jr T. E., “Impulsivity and suicidality: The mediating role of painful and provocative experiences,” *Journal of Affective Disorders*, vol.129, no.1-3, pp.301-307, (2011) DOI: 10.1016/j.jad.2010.07.023
- [6] Bostik K. E. and Everall R. D., “Healing from suicide: Adolescent perceptions of attachment relationships,” *British Journal of Guidance and Counselling*, vol.35, no.1, pp.79-96, (2007) DOI: 10.1080/03069880601106815
- [7] Seo B. A., “Effects of mother attachment on suicidal desire with negative self-esteem as a mediator in high school students,” M.S. Thesis, Counseling Education, Sungkyunkwan University, Seoul, (2012)
- [8] Koyama E., Zai C. C., Bryushkova L., Kennedy J. L., and Beitchman J. H., “Predicting risk of suicidal ideation in youth using a multigene panel for impulsive aggression,” *Psychiatry Research*, vol.285, pp.112726, (2020) DOI: 10.1016/j.psychres.2019.112726
- [9] Poindexter E. K., Mitchell S. M., Brown S. L., and Cukrowicz K. C., “Interpersonal trauma and suicide ideation: The indirect effects of depressive symptoms, thwarted belongingness, and perceived burden,” *Journal of Interpersonal Violence*, 0886260520917513, (2020) DOI: 10.1177/0886260520917513
- [10] Soloff P., White R., and Diwadkar V. A., “Impulsivity, aggression and brain structure in high and low lethality suicide attempters with borderline personality disorder,” *Psychiatry Research: Neuroimaging*, vol.222, no.3, pp.131-139, (2014) DOI: 10.1016/j.psychresns.2014.02.006
- [11] Go H. J., Kim D. J., and Lee H. P., “A validation study of the suicide probability scale for adolescents (SPS-A),” *Journal of Korean Neuropsychiatric Association*, vol.39, no.4, pp.680-690, (2000)
- [12] Cull. G. J., and Gill, S. W., “Suicidal probability scale (SPS) manual,” Los Angeles: Western Psychological Service, (1988)
- [13] Ahn H. N. and Ahn C.K., “NEO-II personality assessment interpretation guidelines,” Seoul: Hakjisa, (2015)
- [14] Costa Jr. P. T. and McCrae R. R., “Four ways five factors are basic,” *Personality and Individual Differences*, vol.13, no.6, pp.653-665, (1992) DOI: 10.1016/0191-8869(92)90236-I
- [15] Park S. H., “Empathy, empathic understanding,” Seoul: Wonmisa, (1994)
- [16] Davis M. H., “A multidimensional approach to individual difference in empathy,” *American Psychological Association*, vol.10, pp.1-19, (1980)
- [17] Baron. R. M. and Kenny. D. A., “The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations,” *Journal of Personality and Social Psychology*, vol.51, no.6, pp.1173-1182, (1986)
- [18] Sharma S., Durand R. M. and Gur-Arie O., “Identification and analysis of moderator variables,” *Journal of Marketing Research*, vol.18, no.3, pp.291-300, (1981) DOI: 10.1177/002224378101800303
- [19] Wo C. Y. and Kim P, H., “The multidimensional structure analysis of variables related to adolescents’ suicidal ideation,” *Korean Journal of Youth Studies*, vol.18, no.4, pp.219-240, (2011)
- [20] Kang J. H., “Effects analysis of adolescents’ stress on suicidal ideation: Focusing on the mediating effects of depression and social support,” M.S. Thesis, Youth Guidance, Myongji University, Seoul, (2013)

- [21] Velotti P., Garofalo C., Dimaggio G. and Fonagy P., "Mindfulness, alexithymia, and empathy moderate relations between trait aggression and antisocial personality disorder traits," *Mindfulness*, vol.10, no.6, pp.1082-1090, (2019)

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