

Predicting Students' Psychological Well-Being through Different Types of Loneliness

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Abstract Background/Objectives: Previous studies demonstrated that loneliness can predict psychological well-being (PWB). Nevertheless, loneliness in different areas of relationships (e.g., family, romantic/sexual, friendship, and group relationships) may affect PWB differently. Method: One hundred and eighty-two university students aged between 19 and 30 years old participated in this study. Ryff's 42-item PWB Scale, Differential Loneliness Scale - Student Version, and a Demographic Questionnaire were used. To differentiate the levels of PWB in terms of four types of loneliness, the means analysis was used. Also, the power of four types of loneliness in predicting the components of PWB was examined by the multiple linear regression - stepwise procedure. Results: The findings revealed that loneliness in romantic/sexual and friendship relationships can significantly predict all components of PWB in students. Compared with the other types of loneliness, students suffered more from loneliness in romantic/sexual and friendship relationships. Also, students who were living with their partners and had one sibling suffered less from loneliness in the area of romantic/sexual relationship. Conclusion/Implication: The study indicated that loneliness in romantic/sexual and friendship relationships could affect different aspects of PWB negatively. Therefore, mental health professionals can lead their intervention programs toward the romantic/sexual and friendship relationships to enhance students' psychological well-being.

Keywords Loneliness, Psychological Well-being, Romantic Relationship, Friendship Relationship

1. Introduction

Psychological well-being (PWB) reflects a worldwide utopia about what is 'good' for an individual. To inform and to make this utopia attainable, Ryff's theory of psychological well-being has emerged and developed through four *conceptual*, *instrumental*, *causal*, and *interventional* orientations historically. Although these trends have progressed parallel to each other, they can be explained separately. The *conceptual* orientation was focused on understanding, justifying, and theorizing the meaning and the characteristics of psychological well-being (Ryff, 1989; Ryff, 2013; Ryff, 2017). Following this trend, Ryff has scrutinized the features of psychological well-being in various perspectives and theories. Being influenced by the perspective of ancient Greek philosophers (e.g., Aristotle's) about happiness, eudaimonia, hedonia, and satisfaction, Ryff

introduced six major aspects of PWB from nine fundamental psychological theories (Figure 1) (Crisp, 2008; Raibley, 2010; Beecher, 2009; Bloodworth, 2005; Ryff, 1989; Ryff, 2013; Ryff, 2014; Ryff, 2017). These components are purpose in life, personal growth, self-acceptance, positive relations with others, environmental mastery, and autonomy (Ryff, 1989, Ryff, 2013, Ryff, 2014, Ryff, 2017).

In the line of the conceptual trend, the second orientation revolved around developing the *PWB instrument* to quantify and differentiate the components of PWB (Ryan & Deci, 2001, cited in Ahrens & Ryff, 2006; Ryff, 1989; Ryff & Singer, 2008; Westerhof & Keyes, 2010). These constituents inform two major dimensions of PWB including hedonic well-being (evaluations of happiness and life-satisfaction) and eudaimonic well-being (reaching human potential) (Ahrens & Ryff, 2006).

Giving a synopsis of the aspects of PWB, *purpose in life* is characterized by having a) meaningful aims in life, b) a crystal-clear understanding of the purposes, and c) a sense of self-oriented and intentionality. This component was rooted in Aristotle's, Sartre's, Kierkegaard's, Heidegger's, Nietzsche's perspectives (Corey, 2000, cited in Fitzgerald, 2005), and also was based on the other theories such as Frankl's, and Allport's theories (Ryff, 1989; Ryff & Singer,

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Published online at <http://journal.sapub.org/ijcp>

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2008). Constantly continuing in late adolescence, *purpose in life* appears in different behaviors such as seeking romantic relationships (Santrock, MacKenzie-Rivers, Leung, & Malcomson, 2005). Also, Demir (2008) argued that romantic

relationships had close association with psychological well-being and could define 3-6% of the variance in happiness in young adults.

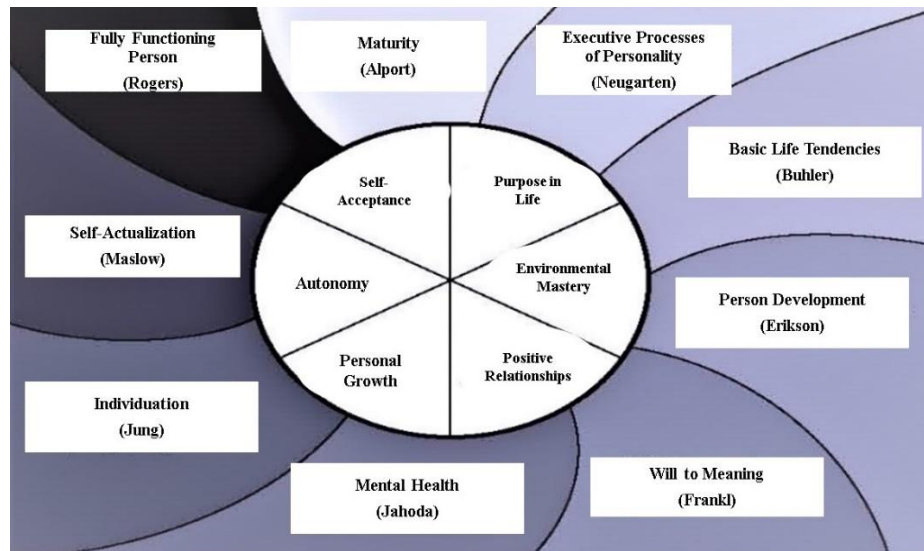


Figure 1. Core Dimensions of Psychological Well-being and their Theoretical Foundations (Adapted from Ryff, 2014, p. 11)

Personal growth refers to the personal tendency to develop one's potential and to grow as a person. *Self-acceptance* is seen as a "positive attitude toward the self, acknowledges and accepts multiple aspects of 'self' including good and bad qualities, and [positive feeling] about past life" (Ryff, 1989 p. 1072). This is also related to the "recognition of personal abilities and achievements, together with acknowledgement and acceptance of personal limitation" (Corsini, 1999 p. 875).

Positive relationship with others is characterized by warm, trustful, mature, close, intimate, generative, satisfied, open, and stable interactions with others (Ryff, 1989; Ryff, 2013; Ryff, 2014). As stated by Ryff, individuals who achieve high scores on PWB scale do not show difficulty in keeping their relations open, warm, trusting or sustaining important ties with others. Referring to an individual's ability to select or generate suitable environments for her or his psychic conditions, *environmental mastery* (the fifth component of PWB) is identified as a capacity to manage and manipulate complex environments as well as the ability to plan, organize and change the environment toward healthy situations (Ryff, 1989, Ryff, 2013).

Autonomy, as the "state of independence and self-determinism" (Corsini, 1999, p. 86) or the degree to which individual feels free to act (Prezza, & Giuseppina Pacilli, 2007), is seen as a degree of freedom by which a person can partake in an activity independently. Autonomy is not only characterized by participation and independence, it is also determined by the regulation of behavior (self-regulation), self-determination (Ryff, 1989), self-direction, self-initiative, and self-management (Savicki, 1999).

Global using of Ryff's PWB scale was concurrent with the third and fourth research orientations that revolved around bio-psycho-social correlates of PWB and interventional programs to enhance PWB components in diverse groups mainly those suffer from different mental disorders or mental health problems (Ryff, 2017; Ryff, 1989; Ryff & Singer, 2008; Westerhof & Keyes, 2010; McDowell, 2010; Gallagher, Lopez, & Preacher, 2009; Ryff, Heller, Schaefer, Reekum, & Davidson, 2016).

Pursuing the third and the fourth orientations, several studies have been conducted and demonstrated that the components of PWB are correlated with different parts of the brain structurally and functionally; for example, the association between rapid brain-based emotional recovery and high levels of purpose in life (Schaefer et al. 2013 cited in Ryff, 2017), the association between activity in reward circuitry and eudaimonic well-being (Heller et al. 2013 cited in Ryff, 2017), and the negative correlation between PWB and neuroticism (Saricaoğlu & Arslan, 2013).

Although diverse psycho-social correlates and predictors of PWB were studied, loneliness as a psychological factor was rarely investigated in relation to the components of PWB. Loneliness, which is relatively prevalent and has a negative impact on different aspects of mental health (Allen-Kosal, 2008; Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Cacioppo, Hawkley, Norman, & Berntson, 2011; Shahidi, 2013), refers to an afflictive and enduring state of emotional, cognitive, and social experience through which individuals display a sense of distress for being ignored or rejected by others and feeling strange in an environment (Solomon, 2000). Also, loneliness, as a multidimensional phenomenon (Chipuer, 2004), is

characterized by three bio-psycho-social domains including, a) distressed feelings (emotional experiences such as feeling silly, empty, upset, not right, disappointed, confused, sad, and bored), b) social rejection (social experiences such as having no one to talk with, being rejected by peers or being left out), and c) references to self, which refers to cognitive experiences such as a sense of being different or being in your own world (Chipuer, 2004; Solomon, 2000).

Loneliness was also characterized by social rejection, lack of social skills, and a low sense of social-competence showing an impairment in the different types of social relationships (Masi, Chen, Hawkley, & Cacioppo, 2011; Allen-Kosal, 2008). Apart from aforementioned symptoms, the most pervasive features of loneliness are the lack of positive purposeful relationships with others, the lack of social partners for desired activities (e.g., friendship - Brage, Meredith, & Woodward, 1993; Masi et al., 2011), the lack of quantity and quality of social interactions with family and large groups (Hawkley & Cacioppo, 2010; Chipuer, 2004; Allen-Kosal, 2008), and the lack of social integrations and opportunities for emotional intimacy such as romantic relationships and intimate partner (Solomon, 2000). These characteristics of loneliness were seen integratively as a gestalt (Shahidi, 2013). With this gestaltqualitat, Shahidi (2013) demonstrated that loneliness can predict 45.4% of the variability of psychological well-being.

However, since loneliness can occur in the different types of relationships (Schmidt & Sermat, 1983; Shaked & Rokach, 2014; Firmin, Firmin, & Lorenzen, 2014; Russell, Cutrona, Mcrae, & Gomez 2012), it was hypothesized that loneliness in four types of relationships (e.g., romantic/sexual relationships, peer friendships, relationships with family, and relationships with larger groups) may have different effect size in predicting the components of PWB.

2. Method

Sample

One hundred and eighty-five students who enrolled in psychology and sociology programs at Islamic Azad University-Tehran Central Branch (IAU-TCB) participated

in this study. All participants were selected randomly and were informed about the ethics and confidentiality in this research before receiving the questionnaires. After collecting and exploring data, three responses were excluded from the study. Of 182 remained participants, 32% were aged between 19 and 21 years old, 40% were between 22 and 26, and 28% were between 26 and 30 years old. Similar to the characteristics of the student population, 78% of participants were female and 22% male. The proportional discrepancy between female and male students in Iranian universities is mostly based on women's cultural preferences and universities' admission policy by which female students are remarkably more than male students (Rezai-Rashti, 2012; World Bank Middle East and North Africa Social and Economic Development Group, 2009). More than half of participants were single (70%), and 15% were married and the rest did not specify their marriage status.

Instruments

PWB Scale: Ryff's Psychological Well-Being Scale was used to measure six components of PWB including self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth (Ryff, 1989, 2013, 2017; Van Dierendonck, 2005; Cheng, & Chan, 2005; McDowell, 2010). This scale is constructed based on clinical and life span developmental theories related to mental health (Van Dierendonck, 2005). From different versions, the 42-item scale was used in this study. The scale had reasonable validity and reliability examined by several researchers in different societies (Van Dierendonck, 2005; Ryff, 1989; Ryff, & Singer, 2008; McDowell, 2010; Shahidi, 2013). In the target population (IAU-TCB), two primary psychometric studies were done on the 42-item version of Ryff's PWB scale demonstrating Cronbach's Alpha 0.88 (Fattahi, 2016) and 0.87 (Rezaghan, 2018). As Table 1 displays, in the current study, the internal consistency for each subscale and the total items of the scale is acceptable.

Differential Loneliness Scale (DLS): Differential Loneliness Scale (DLS) – short student version was introduced to researchers by Schmidt and Sermat (1983).

Table 1. Cronbach's Alpha Reliability of Subscales of Ryff's Well-Being Scale

Psychological Well-being Components*						
	Autonomy	Positive relations with others	Environmental mastery	Personal growth	Purpose in life	Self-acceptance
Cronbach's Alpha	0.72	0.83	0.74	0.61	0.74	0.73
						Overall Items
						0.88

*Number of items in each subscale of Ryff's Psychological Well-being Scale was 7.

The scale was designed to particularly assess loneliness in students in different areas of relationships including romantic/sexual relationships (R/M), friendships (Fr), relationships with family (Fam), and relationships with larger groups (Gr). The person completing the measure reads

each 20-item stems and then indicates whether it is True or False. Blazin and his colleagues (2008) demonstrated that the scale has acceptable reliability for research. In this study, the psychometric properties of DLS have shown a reasonable internal consistency with Cronbach's Alpha 0.70. The

correlations among all subscales, and also with the total score of DLS revealed that all subscales have significant association with the total score of DLS, and each subscale shows low correlation with each other indicating that they are not overlapped (Table 2). This aligns with Tabachnick's and Fidell's (2007) view that indicates the correlation between factors should be moderate enough not to have redundancy. The convergent validity of the scale was examined by Shahidi (2013) through using R-UCLA Loneliness Scale that indicated an acceptable validity.

Table 2. Correlations among Subscales of Differential Loneliness Scale (DLS)

		2	3	4	5
1	DLS-Family	.14	.23**	.50**	.66**
2	DLS-Romantic/Sexual	1	-.13	.04	.61**
3	DLS-Group Relationship		1	.39**	.47**
4	DLS-Friendship Relationship			1	.71**
5	Total DLS				1

** $p < 0.01$

Demographic Questionnaire: To assess other variables such as marital status, age, gender, living status and other general variables an author-developed demographic questionnaire was used.

3. Results

The results of descriptive indexes are shown in Table 3. Descriptive indexes were explored to find missing data and were checked for the assumption of normality. Exploring variables showed that a few of responses in all major scales were missing. That is, the respondents did not answer from 2% to 8% of questions in a few subscales. Since the missing data was less and because the number of samples for each independent variable is more than 1/15 for statistical analysis (e.g., *T*-test, MANOVA, and linear regression- Beshlideh,

2012), the different valid *N* did not violate fundamental assumptions of used statistical methods and then the missing data were not replaced with means. However, the valid *N* was different in each variable resulted different *df* in statistical procedures.

Table 3. Descriptive Indexes of PWB and DLS

Variables	Mean	Std. Deviation
PWB - Autonomy	28.23	5.59
PWB - Positive Relation with Others	32.38	6.23
PWB - Environmental Mastery	29.03	5.47
PWB - Personal Growth	32.67	4.50
PWB - Purpose of Life	32.06	5.84
PWB - Self-Acceptance	30.15	5.97
DLS Family	0.62	0.97
DLS Romantic/Sexual	1.83	1.86
DLS Group Relationship	1.67	0.99
DLS Friendship Relationship	1.19	1.31

Levels of Loneliness and PWB in Students

Using one-sample *t*-test to examine the significance of different levels of loneliness in four types of relationship showed that most of students suffer from loneliness in the areas of romantic/sexual relationship ($M = 1.83$, $SD = 1.86$), $t(164) = 12.642$, $p < 0.000$ and group relationship ($M = 1.67$, $SD = 0.99$), $t(169) = 21.960$, $p < 0.000$. Also, they were less suffering from loneliness in the area of family relationship ($M = 0.62$, $SD = 0.969$), $t(175) = 8.426$, $p < 0.000$ (Figure 2).

Results of one-sample *t*-test to examine the different levels of PWB showed that autonomy ($M = 28.23$, $SD = 5.59$), $t(171) = 66.242$, $p < 0.000$, environmental mastery ($M = 29.03$, $SD = 5.465$), $t(169) = 69.262$, $p < 0.000$, and self-acceptance ($M = 30.15$, $SD = 5.971$), $t(163) = 64.661$, $p < 0.000$ in students are lower than other PWB components. This result indicates that students have low level of autonomy, environmental mastery and self-acceptance with regard to cut-score (Figure 3).

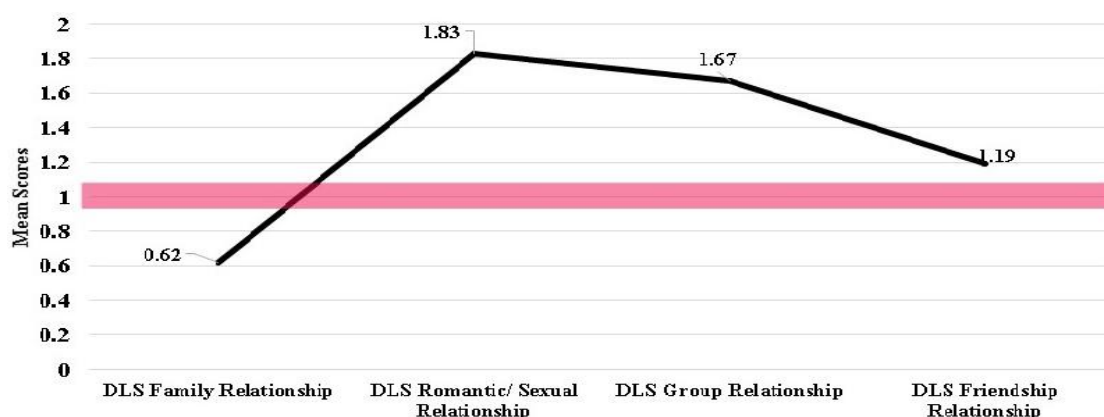


Figure 2. Students' Mean Scores in Four Types of Loneliness

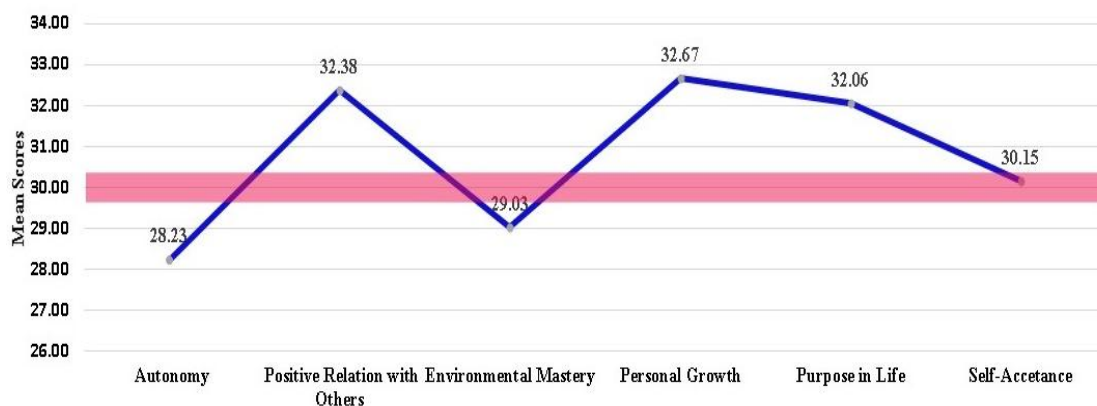


Figure 3. Students' Mean Scores in PWB Components

Relationship between PWB and DLS

As seen in Table 4, the overall score of loneliness was negatively associated with the all components of PWB; that is, individuals whose scores on the DLS were high, had low scores on the PWB components. However, loneliness in romantic/sexual relationship had only negative association with the component of purpose in life, $r = -.29$, $p < 0.01$.

Predicting PWB Components through Different Types of Loneliness:

Since there was no relationship between some of variables (see Table 4), a stepwise multiple-linear regression was calculated to determine the maximum portion of variance of each predictor in predicting PWB's components. A separate stepwise linear regression method for each of PWB components was also used. In this procedure, the models of predictors that were not significant were removed and the summary of results was presented in Table 5 and Figure 4. As results showed, the component of autonomy can be reliably predicted through DLS-friendship relationship $R = 0.21$, $F(1, 148) = 6.93$, $p < 0.000$. It indicates that the sense of loneliness in friendship relationship can predict students' scores on PWB-autonomy for 4% ($\beta = -0.89$, $p < 0.000$). Focusing on the role of each DLS subscale in predicting the other PWB components, the result revealed that 24% of the variability of PWB-positive relation with others ($\beta = -0.49$, $p < 0.000$) can be predicted by DLS-friendship relationship $R = .49$, $F(1, 150) = 46.98$, $p < 0.000$. Also, the roles of DLS-romantic/sexual relationship and friendship relationship in predicting PWB-purpose in life were significant in this study. Thus, 12% of the variability of PWB-purpose in life can be predicted by students' scores on DLS-romantic/sexual relationship and friendship, and 10% of variability of PWB-self-acceptance can be predicted by DLS-friendship relationship. The roles of DLS subscales in predicting other PWB components were less but significant (see Table 5 and Figure 4).

Loneliness, PWB, and Demographic Factors

Before conducting the one-way multivariate analysis of variance (MANOVA), a series of Pearson correlations between all the endogenous variables were performed to check the assumption of MANOVA by which dependent

variables should be correlated in a moderate level (Meyers, Gamst, & Guarino, 2006). As Table 2 shows, there were moderate correlations amongst most of the endogenous variables showing appropriateness of MANOVA. Additionally, Box's M was used to examine the assumption of homogeneity of variables. Huberty and Petoskey (2000), argued that the Box's M should be nonsignificant to confirm that the assumption was not violated. Also, Hahs-Vaughn (2017) recommended a non-significant Box's M with a smaller Alpha level at (e.g., 0.001) for this assumption. Examining this assumption, the results showed that Box's M value was 137.580, $p = 0.018$. The value was greater than what Hahs-Vaughn (2017) recommended. Thus, the covariance matrices are roughly not equal indicating that MANOVA was appropriate to use. After analysing the multivariate ANOVA comparisons on different types of loneliness and demographic factors (e.g., living status, number of siblings, gender, marital status, and age), the results showed that only the living status (Roy's Largest Root = 0.132, $F(4, 123) = 4.045$, $p < 0.001$) and the number of siblings (Roy's Largest Root = 0.125, $F(4, 123) = 3.841$, $p < 0.001$) had significant effects on loneliness in the area of romantic/sexual relationship. However, the interaction of living status and number of siblings was not significant (Roy's Largest Root = 0.221, $F(16, 123) = 1.700$, $p > 0.05$); that is, these factors did not have effects on loneliness in the area of romantic/sexual relationship conjointly.

Also, multivariate effect sizes were estimated at 0.12 for living status and 0.11 for the number of siblings, which imply that the amount of percentages of the variance in the canonically derived those endogenous variables were accounted for by living status and number of siblings.

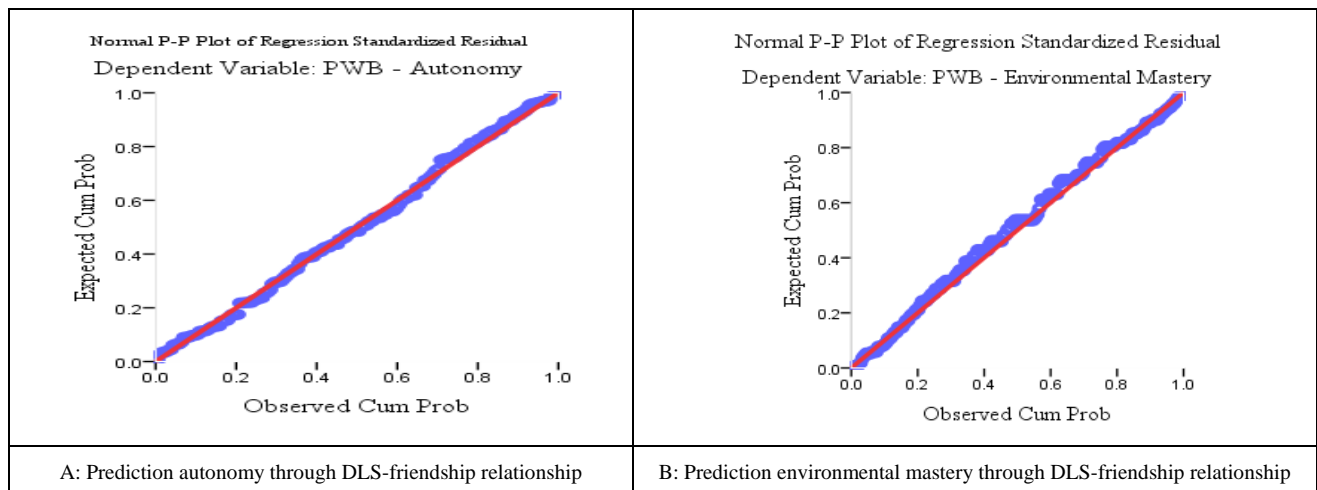
Thus, living status and number of siblings had separately effects on loneliness in the area of romantic and sexual relationship. The comparison of means of loneliness in this area across the levels of living status and the number of siblings showed that students who live with their partners and have one sibling were less suffering from loneliness in the area of romantic/sexual relationship. Multivariate analysis on PWB and other demographic factors did not show any significant results.

Table 4. Correlations among PWB's Components and DLS's Subscales

		PWB Components						
Differential Loneliness Subscales		Autonomy	Positive Relation with Others	Environmental Mastery	Personal Growth	Purpose in Life	Self-Acceptance	Overall PWB
	Family	0.01	-.41**	-.20*	-0.10	-.16*	-.27**	-.25**
	Romantic/Sexual	-0.14	-0.11	-0.15	-0.11	-.29**	-0.07	-0.15
	Group Relationship	-0.03	-.22**	-0.14	0.07	-.16*	-.22**	-.18*
	Friendship	-0.14	-.50**	-.31**	-0.12	-.20**	-.35**	-.38**
	Overall DLS	-.20*	-.46**	-.32**	-.18*	-.35**	-.32**	-.38**

** $p < 0.01$, * $p < 0.05$ **Table 5.** Results of Stepwise Multiple Regression in Predicting PWB Components through DLS

PWB Components	Predictors	U-Beta	S-Beta	R	R ²	F**	df	R Square Change
Autonomy	Constant	29.37						
	Friendship	-0.89	-0.21	.21**	0.04	6.93	(1, 148)	-
Environmental mastery	Constant	30.52						
	Friendship	-1.28	-0.31	.31**	0.09	15.42	(1, 150)	-
Personal growth	Constant	33.46						
	Friendship	-0.61	-0.18	.18**	0.03	4.73	(1, 150)	-
Positive relationship	Constant	35.31						
	Friendship	-2.27	-0.49	.49**	0.24	46.98	(1, 150)	-
Purpose in life	Constant	33.55						
	Romantic/Sexual Relationship	-0.85	-0.27	.27**	0.07	11.65	(1, 149)	0.07
	Constant	34.60						
	Romantic/Sexual Relationship + Friendship	-0.83	-0.26	.34**	0.12	9.69	(1, 148)	0.04
Self-acceptance	Constant	31.90						
	Friendship	-1.47	-0.32	.32**	0.10	16.87	(1, 146)	-

** $P < 0.000$ 

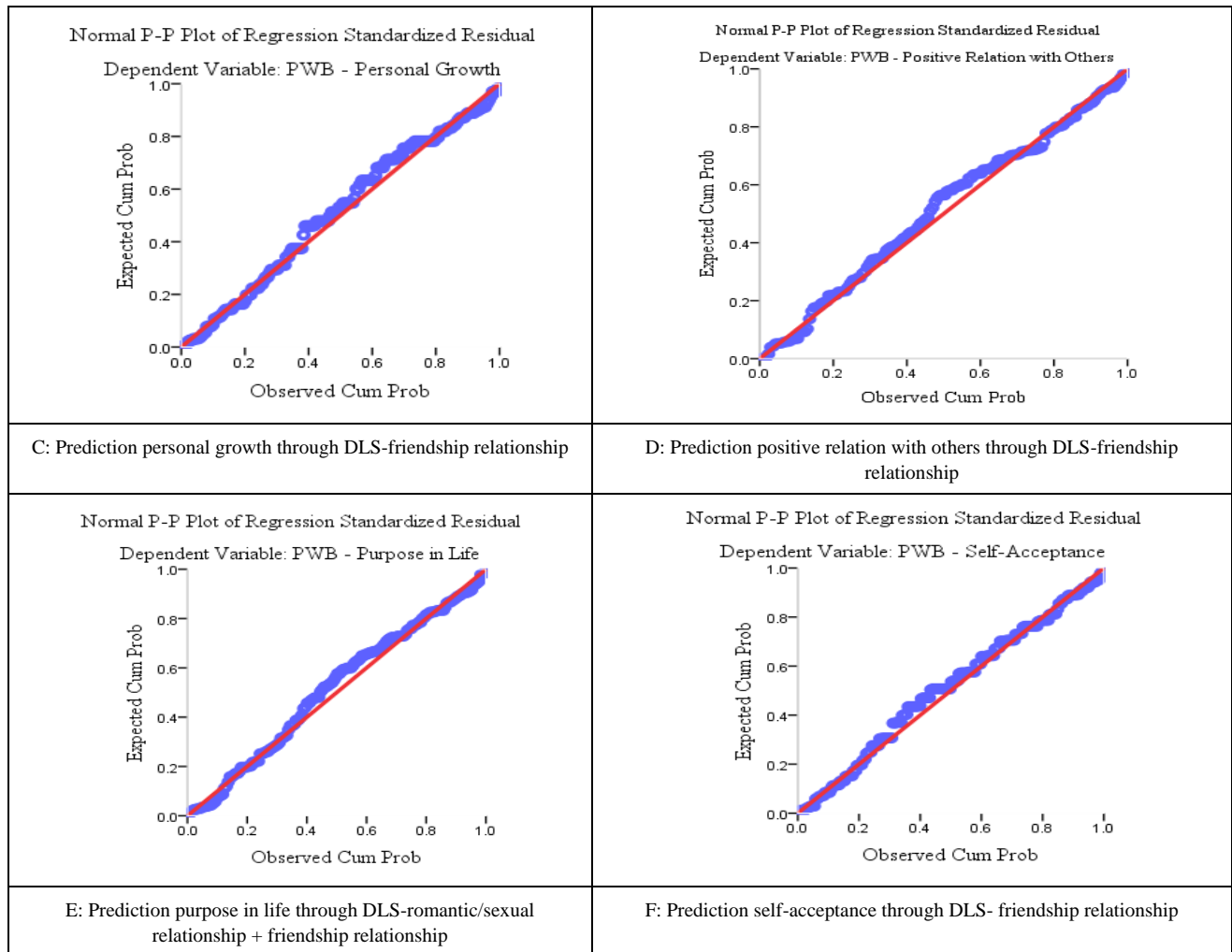


Figure 4. Scatterplots of Regression in Predicting PWB Components through Four Types of Loneliness

4. Discussion and Implication

Adequate functioning in PWB components can strengthen positive mental health for young adults. However, there are many factors that may limit the chance of achieving PWB. These factors sometimes increase the risk of mental health problems in adolescents and young adults (Santrock et al., 2005; Michaud & Fombonne, 2005). Unfortunately, these influential factors, which differ in type, effect size, and predictive value, were less studied. Among these factors, the impact of loneliness on PWB was studied based on the theory of unidimensionality (Shahidi, 2013). However, there is another view in which loneliness often occurs in the different types and levels of relationships (Firmin et al., 2014; Russell, Cutrona, Mcrae, & Gomez 2012). Accordingly, loneliness in such relationships may have different impacts on individuals' PWB.

To examine this hypothesis, the level of loneliness and PWB in students, the association between four types of loneliness with PWB components, the predictive role of four types of loneliness in PWB, and the role of some demographic variables in four types of loneliness were

analyzed. As the results of this study showed, students at the age between 19 and 26 years old were more suffering from loneliness in romantic/sexual relationships compared with the other types of their relationships (Figure 1).

Using cut-score based on students' mean scores in PWB, the results revealed that their autonomy and environmental mastery are lower than baseline compared with the other PWB components. The association between PWB components and loneliness in four types of relationship revealed that the increase of loneliness in three types of relationships including family, group, and friendship is negatively associated with all PWB components. This aligns with previous studies in which loneliness was associated with PWB negatively (Shahidi, 2013). However, loneliness in romantic/sexual relationship was only associated with the component of purpose in life in Ryff's PWB scale negatively. This finding supported the previous research in developmental psychology that indicated adolescents and young adults are more seeking romantic relationship as a major purpose in their lives (Santrock et al., 2005; Demetriou, Doise, & Van Lieshout, 1998), and romantic frustration makes them more vulnerable to loneliness (Seepersad, Choi, & Shin, 2008).

In addition to significant effect size in predicting the component of purpose in life (Table 5), loneliness in the areas of friendship and romantic/sexual relationships could predict the other components of PWB. One of the justifications of this result refers to emotional development during 19-26 years of age. Since adolescents' and young adults' relationships are romantic, sexual, and friendship-oriented developmentally (Santrock et al., 2005; Håkansson, 2010; Gillibrand, Lam, & O'Donnell, 2011), and because they are vulnerable to negative changes in such relationships (Pedersen & Pithey, 2018; Seepersad et al., 2008), it can be concluded that loneliness in the area of romantic/sexual relationships is more effective in reducing their psychological well-being, particularly their purpose in life.

In relation to demographic factors, the results showed that students who live with their partners and have one sibling were less suffering from loneliness in the area of romantic/sexual relationship. This finding supports Stronge, Overall, and Sibley's (2019) research that indicated having romantic partner increases subjective well-being. There are some implications of such results. Mental health professionals should direct their interventional programs toward two major factors, romantic/sexual relationship and friendship relationship, for individuals whose age is in the range of 19 to 26 years old and suffer from loneliness. Particularly, when they use interventional programs for enhancing PWB in adolescents it may be necessary to assess adolescents' and young adults' levels of loneliness. Also, these findings should direct the attention of families, educational policy makers, and universities governors toward the effect of friendship relationship in enhancing adolescents' self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth.

5. Conclusions

Generally, the current research indicated that the sense of loneliness in university students, which mostly was attributed to romantic relationships, was higher than other types of loneliness. Also, this type of loneliness, which may happen due to the lack of or failure in romantic relationships, was negatively associated with PWB-purpose in life. Having significant effect size in predicting the components of PWB, students' loneliness in *friendship relationship* and *romantic relationship* were interpreted through the hedonic and eudaimonic approaches of well-being that was postulated in Ryff's perspective of well-being. However, the lack of gender comparison and the lack of large sample size were major limitations the research faced. Accordingly, to interpret and generalize the findings of the current research, these limitations along with the cultural context of university students should be considered. The future studies may be directed toward the gender comparison and cultural differences in PWB and four types of loneliness through

using large sample size.

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