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# Affect and psychological well-being in spouses of cancer patients: the mediating role of meaning in life and self-efficacy<sup>1</sup>

## Abstract

*The examination of the psychological functioning of cancer patients' spouses implies that affect and personal resources play an important role in their psychological well-being. This is a consequence of the severe stress caused by the medical conditions of a spouse and of responsibilities related to caregiving. This study aimed to examine the role of affect and purpose-oriented personal resources (meaning in life and self-efficacy) in shaping psychological well-being in the spouses of cancer patients. The participants were 214 spouses of gastrointestinal patients who were either undergoing medical treatment in hospital units or attending scheduled clinic appointments at outpatient medical clinics. The Positive and Negative Affect Schedule (PANAS-X), Psychological Well-Being Scale (PWB), Meaning in Life Questionnaire (MLQ), and General Self-Efficacy Scale (GSES) were used. The results indicated that positive affect was positively correlated with meaning in life, self-efficacy, and psychological well-being. In contrast, negative affect was negatively correlated with positive affect, meaning in life, self-efficacy, and psychological well-being. The mediation analyses demonstrated that meaning in life and self-efficacy*

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<sup>1</sup> Research funded by the University of Opole; Ethical approval: All procedures performed in the current study were approved by the ethics committee of the university at which the authors are working; the reference number: IEC – UO/04/2019.

were mediators between positive and negative affect and psychological well-being. The mediating function of meaning in life and self-efficacy revealed the significant role of personal resources based on purpose and self-motivation in the relationship between affect and psychological well-being. Positive and negative affect can influence motivational processes that enable patients and their families to constructively deal with challenging and illness-related situations. Caregivers and medical staff could take into account the important role of purpose-oriented resources as they affect the functioning of both patients and their families.

*Keywords:* spouses of cancer patients, families of cancer patients, affect, psychological well-being, meaning in life, self-efficacy.

## Introduction

The functioning of cancer patients is an important subject in the field of medicine and health psychology. However, less attention has been paid to the cognitive and affective processes of cancer patients' spouses. Having entered the terms *cancer patients* and *spouses of cancer patients* in the search engine Google Scholar, we obtained approximately 30 times more links to articles related to groups of cancer patients as opposed to their spouses (approximately 4 600 000 and 174 000, respectively).

Taking care of an ill person can negatively affect every sphere of caregivers' life. It has been demonstrated that cancer experience can influence distress experienced by both patients and their caregivers (Matthews, Baker and Spillers, 2003, pp. 47–49). Research revealed that a significant percentage of caregivers of cancer patients showed both somatic symptoms (e.g. headaches or asthenia) and psychological symptoms of anxiety and depression (Pellegrino *et al.*, 2010, p. 4460). There is no uniform factor causing distress in the spouses of cancer patients. Fear for the life of a loved one, the prospect of income changes, and a decreased level of a sick person's independence are only some distressful factors in the lives of families affected by cancer (Gilbar and Ben-Zur, 2002, pp. 40–49). Badr and colleagues (2014, p. 1009) suggest that caregiver's distress can increase over the course of the patient's treatment. This makes it necessary to examine variables that will significantly help not only cancer patients, but also their caregivers cope with cancer-related distress.

The important role of affect (Ross *et al.*, 2002, p. 1455) and purpose-oriented resources, such as meaning in life (Krok, Telka and Zarzycka, 2019, p. 1732) and

self-efficacy (Hinz *et al.*, 2019, pp. 2–6), have been well documented regarding the psychological functioning of cancer patients. This research showed that meaning in life, self-efficacy, and positive affect were positively related to psychological well-being of cancer patients. However, this relationship has never been verified in the group of the spouses of cancer patients. Taking into account both this trend and the impact of caring for a ill person on the spouses of cancer patients, this study aims to examine the role of affect, meaning in life, and self-efficacy in the shaping of psychological well-being in the spouses of cancer patients. We also decided to select spouse caregivers as participants due to two main factors. First, they were the primary caregivers who generally were spending most of the time with their spouse. Second, in most cases, spouse caregivers were living with a spouse for the most time of the spouse's adult life. Therefore, they were emotionally and socially the closest person who shared many aspects of spousal life.

### Relationships between affect and psychological well-being

Affect refers to the experience of emotions and feelings. These experiences connect our mental and physical processes (Harmon-Jones, Gable and Price, 2013, p. 302; Hogg, Abrams and Martin, 2007, pp. 648–652). Bradburn (1969) states that the balance between positive and negative affect is the definition of happiness. It can influence the psychological well-being which encompasses the dimensions of existential life challenges, values, and personal development (Ryff and Keyes, 1995, p. 720). It refers to positive mental states in six different dimensions: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Taken together, they reflect human development, important values, and self-realisation (Ryff, 1989, p. 1079; Ryff and Singer, 2008, pp. 15–17).

Research has demonstrated the significant role of the relationship between affect and psychological well-being. Steptoe and colleagues (2008, pp. 410–412) showed a positive association between positive affect and psychological well-being in a sample of people with sleep problems. Positive affect was positively related to psychological well-being, while negative affect was negatively associated with psychological well-being. Relationships between positive affect, negative affect, and psychological functioning were also observed in a group of cancer patients (Pinquart, Fröhlich and Silbereisen, 2007, p. 430; Ross *et al.*, 2002, p. 1455; Voogt *et al.*, 2005, p. 271). However, there is no equivalent data regarding the spouses of cancer patients.

## Purpose-oriented resources and their relationship with affect and psychological well-being

Meaning in life and self-efficacy are psychological factors, which reflect purpose-oriented personal resources. Meaning in life can be defined as both our life aspirations and our understanding of our place in the surrounding world; it is a motivational force, which affects our psychological well-being (Frankl, 1963, pp. 21–31; Steger, 2012, p. 382). Self-efficacy can be described as an individual's assessment of their ability to deal with stress and involves assessing how well individuals perform and cope with upcoming situations (Bandura, 1982, pp. 25–32; 1995; Schwarzer *et al.*, 1997, pp. 71–73). Ryff and Singer (1996, p. 17) claim that positive functioning is related to a sense of direction, which affects the experience of meaningful life. Although there is some similarity between meaning in life and psychological well-being, research convincingly demonstrated that they were conceptually separate constructs playing a different role in individual and social behaviour (Kleftaras and Psarra, 2012, pp. 342–343; Zika and Chamberlain, 1992, pp. 141–143).

The relationships among affect and psychological well-being can be understood within the framework of the Affect Infusion Model (AIM; Forgas, 1995, pp. 43–47). Affect infusion is a process during which emotional information might influence perception, behaviour, and thinking. One of the conditions underlying this process is the ability to deal with difficult situations and events. Forgas (1998, p. 566) assumes that this effect will generally occur more often in situations that are more complex. The experience of spouses in the context of cancer is undoubtedly an accurate example of such a complex and difficult situation. It is associated with major life changes, sacrifices, and a high level of negative and positive emotions experienced by both patients and their families. They tend to experience strong emotional states, which affect their cognitions and behaviour.

According to AIM, an emotionally difficult situation will affect cognitive processes, such as perceived meaning in life or self-efficacy, which in turn may influence well-being and quality of life. Research demonstrated that experiences of positive and negative emotions exerted a strong influence on meaning in life (Hicks and King, 2008, pp. 54–55), which, in turn, could lead to changes in one's psychological well-being. This indicates that the relationship between affect and psychological well-being may not be direct, but rather indirect. Taking into account the theoretical background of AIM, it is plausible that meaning in life and self-efficacy could mediate the relationship between affect and psychological well-being in the spouses of cancer patients.

Empirical data supports the fact that affect is related to meaning in life (Hicks *et al.*, 2012, p. 187; King *et al.*, 2006, p. 194) and self-efficacy (Tong and Song, 2004, p. 641). These relationships are also present in the case of terminally ill patients. The correlation between affect and self-efficacy has been demonstrated on a sample of multiple sclerosis (Calandri *et al.*, 2018, p. 293) and cardiac patients (Krok and Gerymski, 2019, p. 249). Meaning in life has also been significantly associated with affect in a sample of female cancer patients (Kállay, 2008, p. 179).

Research suggests that meaning in life and self-efficacy are important factors regarding the psychological functioning of cancer patients (Hinz *et al.*, 2019, pp. 3–5; Krok, Telka and Zarzycka, 2019, p. 1732). Through positive thinking about important goals and values, positive affect can make life more meaningful and purposeful for patients. On the other hand, negative affect does the opposite; it tends to decrease the ability of patients to discover meaning and purpose. Research has shown that personal resources, such as meaning in life or social support, play an important role in the course of chronic illness, due to the relationship they have with well-being and health-related quality of life (Dezutter *et al.*, 2013, p. 339; Dymecka and Gerymski, 2019, pp. 74–75). They act as a stress buffer by reducing the negative influence of the illness on the well-being of patients, strengthening their life attitude. Unfortunately, there has been little comparable research conducted on samples of terminally ill patients' families.

### Mediational role of meaning in life and self-efficacy

Earlier empirical data has highlighted the importance of affect, meaning in life, and self-efficacy in the quality of life and well-being of cancer patients; it has also suggested that affect may be related to well-being indirectly. Lightsey and Boyraz (2011, p. 211) revealed that meaning in life mediated a relationship between positive affect and life satisfaction. The mediating role of meaning in life was also confirmed on a group of cancer patients by Jim and Andersen (2007, p. 378) who proved that meaning in life was a mediating factor in the relationship between functioning and distress for cancer survivors. Furthermore, Liang *et al.*, (2016, p. 71) have shown how self-efficacy served as a mediator in the relationship between distress and quality of life among breast cancer patients. However, similar relationships have not been studied in a sample of the spouses of cancer patients.

## The present study

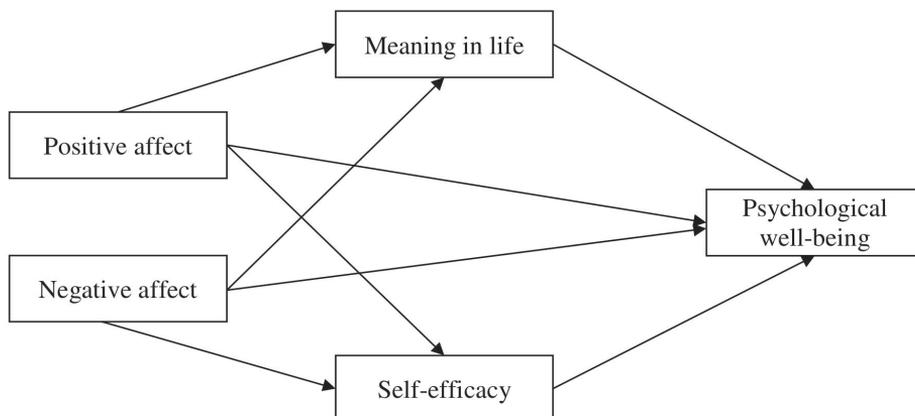
A recent review of literature implies that affect is related to meaning in life (Hicks *et al.*, 2012, pp. 185–186; King *et al.*, 2006, pp. 180–182) and self-efficacy (Calandri *et al.*, 2018, p. 293; Krok and Gerymski, 2019, pp. 70–71) which, in turn, is related to psychological well-being (Krok, 2018, pp. 104–105; Liang *et al.*, 2016, pp. 70–71). However, the mediating role of those individual resources related to purpose and desired goals is still unknown among the spouses of cancer patients. The main objective of this study is thus to explore whether meaning in life and self-efficacy mediate relationships between affect and psychological well-being in the spouses of cancer patients (see Figure 1). Three hypotheses were formulated: (H1) Positive affect has direct positive associations with psychological well-being, meaning in life and self-efficacy, while negative affect has direct negative associations with those factors; (H2) Stronger positive affect relates to higher psychological well-being indirectly through higher meaning in life and self-efficacy; (H3) Stronger negative affect relates to lower psychological well-being indirectly through lower meaning in life and self-efficacy.

To determine an adequate sample size, we conducted an a priori power analysis on a basis of the guidelines and power tables proposed for moderated mediation models (Preacher, Rucker, & Hayes, 2007, pp. 880–885). The results indicated that a sample size of  $N = 200$  or more persons was sufficient to detect an effect size at  $p = .05$  and provide a statistical power of over .80 in all variables.

## Methods

### Participants

The participants were 214 spouses of gastrointestinal cancer patients who were either undergoing medical treatment (chemotherapy, radiotherapy or combined therapy) in hospital units or attending scheduled clinic appointments at outpatient medical clinics. Inclusion criteria were the following: (1) over 18 years of age, (2) ability to fill in the questionnaires used in the study, and (3) being a married spouse for over a year. Exclusion criteria were the following: (1) having a current serious psychiatric disorder that disturbed the spousal relationship, (2) serious illness or major fatigue that confounded the spouse's responses, (3) very rare contact with the patient. The preliminary section of our set of questionnaires included questions which provided answers to the above criteria.



*Figure 1.* A model of the mediating role of meaning in life and self-efficacy in associations between affect and psychological well-being.

## Procedure

A total of 245 spouses were recruited; 23 of them were excluded on the basis of the inclusion and exclusion criteria and eight spouses returned incomplete questionnaires. Overall participation level in this study was thus 89.16%. Spouses who met the above inclusion/exclusion criteria were approached by research assistants and given the informed consent form and study questionnaires to be completed at home. They were asked to return the questionnaires during their next visit at the hospital or outpatient medical clinic. After the study, the spouses were debriefed and given contact details in case of further queries. The study was conducted in major cities located in the southern parts of Poland (Opole, Gliwice, Strzelce Opolskie, Kędzierzyn-Koźle) between August 2019 and February 2020.

## Measures

This study used the following questionnaires which enabled us to assess levels of affect, psychological well-being, meaning in life and self-efficacy.

The Positive and Negative Affect Schedule (PANAS-X; Watson and Clark, 1999, pp. 5–9) assesses positive and negative affect, as well as 11 more specific emotions. As the aim of our research was to examine general affect scores, we only used positive and negative affect subscales. Positive affect reflects the extent to which people subjectively experience positive emotions and ex-

pression such as happiness, cheerfulness, and joy. Negative affect refers to the experiences of negative emotions and expression such as fear, sadness, and distress. Each of them consists of ten items which are rated on a 5-point Likert scale, ranging from 1 (very slightly or not at all) to 5 (extremely). The Cronbach's coefficients for the present study were .86 (positive affect) and .85 (negative affect).

The Psychological Well-Being Scale (PWB, Ryff and Keyes, 1995, pp. 723–725) measures one's well-being, conceptualised in terms of human development, important values, and self-realisation. The scale has six subscales: (1) autonomy – it emphasizes such qualities as self-determination, independence, and the regulation of behaviour from within, (2) personal growth – it reflects the self-realization of the individual, (3) positive relations with others – it describes one's feelings of empathy and affection for all human beings and the capacity for friendship and love, (4) purpose in life – it denotes people's search for meaning and purpose in their life, (5) environmental mastery – it represents people's ability to select/create environments fit to their mental conditions, and (6) self-acceptance – it encompasses awareness and acceptance of both personal strengths and weaknesses. A total score is calculated by adding all the subscale scores. The scale consists of 42 items which are rated on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The Cronbach's coefficients for the present study ranged from .74 to .90.

The Meaning in Life Questionnaire (MLQ; Steger *et al.*, 2006, pp. 89–90) assesses presence of meaning in life and search for meaning in life. The presence subscale measures the extent to which individuals perceive their lives as meaningful and purposeful, while the search subscale evaluates the level to which individuals are seeking meaning or purpose during their daily life. Each subscale comprises five items rated on a 7-point Likert scale, ranging from 1 (absolutely untrue) and 7 (absolutely true). As the objective of the current study was to examine the extent of meaning in life at a given moment, we only used the presence subscale. The Cronbach's coefficient for the present study was .84.

The General Self-Efficacy Scale (GSES; Schwarzer and Jerusalem, 1995, pp. 35–37) was used to assess a general sense of perceived self-efficacy i.e. to what degree individuals can deal with unexpected difficulties and achieve desired goals. The scale includes ten items which are rated on a 4-point scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The total score is a sum of answers to those items, and higher scores represent increased self-efficacy. The Cronbach's coefficient for the current study was .92.

## Data analysis

All the data were cleaned prior to the statistical analysis. Missing data were identified in eight study participants. It was decided to exclude the results of these participants from the statistical analyzes (see Procedure section). Next, data were also verified for the possible outliers. For this purpose, descriptive statistics analyses and data visualization methods (such as scatterplots and histograms) were used. No outliers were identified in the final version of the database. The study hypotheses were tested in two steps. First, Pearson's bivariate correlations were calculated to assess the associations among the variables. Second, multiple mediator models were tested using the PROCESS macro for SPSS software, which examines the statistical significance of the direct and indirect effects. They were assessed using bootstrap procedures (samples = 5,000; 95% bias-corrected confidence intervals) (Model 4) (Preacher and Hayes, 2008, pp. 881–885). Bootstrapping consists in resampling with replacement, from which a sampling distribution of the indirect effect is built and applied to construct confidence intervals. The indirect effects are significant at the .05 level, when the 95% CIs for the estimates exclude zero. This examined whether relationships between affect and psychological well-being are mediated by two variables (meaning in life and self-efficacy) which were entered simultaneously as mediators.

## Results

### Sample characteristics

The final sample comprised 214 spouses (118 women and 96 men). Their age ranged from 27 to 83 years ( $M = 51.16$ ,  $SD = 12.08$ ). Precise characteristics of the sample are shown in Table 1. In addition, we examined the participants' age and gender in relation to all variables considered. The correlations between age and affect, meaning in life, self-efficacy, and psychological well-being turned out to be non-significant. As regards gender, women were characterised by slightly lower positive affect than men ( $t = -1.98$ ,  $p < .05$ ).

Table 1. Demographic characteristics of the spouses.

Spouses	<i>M</i>	<i>SD</i>
Age	51.16	12.08
Length of the marriage	25.53	7.78
	<i>N</i>	%
Sex		
Female	118	55.1
Male	96	44.9
Education		
Basic vocational education	49	22.9
High school education	104	48.6
University education	61	28.5
Number of children		
one	32	14.9
two	105	49.1
three	54	25.3
more than three	23	10.7

Table 2. Descriptive statistics and correlations among age, affect, meaning in life, self-efficacy, and psychological well-being.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Age	35.19	11.50	-					
2. Positive affect	3.45	.61	-.08	-				
3. Negative affect	2.03	.71	.11	-.31***	-			
4. Meaning in life	5.77	1.03	-.01	.22***	-.26***	-		
5. Self-efficacy	3.06	.45	-.09	.49***	-.50***	.31**	-	
6. Psychological well-being	5.81	.78	-.14*	.65***	-.54***	.36***	.63***	-

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

### **Associations between affect, meaning in life, self-efficacy, and psychological well-being**

The results of bivariate correlations indicated that age negatively correlated only with psychological well-being. The positive affect scores were significantly positively correlated with meaning in life, self-efficacy, and psychological well-being. In contrast, the negative affect scores were significantly negatively correlated with positive affect, meaning in life, self-efficacy, and psychological well-being. Meaning in life had positive significant correlations with self-efficacy and psychological well-being (Table 2).

These correlations allowed us to optimally select the independent and mediating variables and test them in multiple mediator models, by retaining a link with the dependent variable that was significant at  $p < .05$ . In addition, to assess the role played by gender we conducted t-Student test for all the variables. The only significant result was obtained for positive affect ( $t = 1.98, p < .05$ ) with men scoring higher ( $M = 3.54$ ) than women ( $M = 3.37$ ).

### **The mediating effects of meaning in life and self-efficacy on the relationship between affect and psychological well-being**

Before verifying whether meaning in life and self-efficacy mediate relationships between affect and psychological well-being in the spouses of cancer patients, we decided to check whether our study was affected by a common method bias. For this purpose, it was decided to use the identification of common method bias based on collinearity assessment. This approach was applied, because the collinearity test is a successful method in the identification of common method bias in a situation, where usually used factor analysis fails (Kock, 2015, p. 6). For that purpose, Variance Inflation Factors (VIF) were utilized as a measure of multicollinearity in the studied model. Obtained VIF coefficients ranged from 1.13 to 1.64 with a tolerance between 0.610 and 0.886. Therefore, our model can be considered free of common method bias (Kock and Lynn, 2021, p. 16). To investigate whether meaning in life and self-efficacy mediate the relationship between affect and psychological well-being, we performed two separate regression-based mediation analyses for positive and negative affect in accordance with the procedures provided by Preacher and Hayes (2008, pp. 879–891). The results are shown in Table 3.

The direct effect size measures revealed that positive affect was positively associated with meaning in life and self-efficacy. On the contrary, negative affect was negatively associated with meaning in life and self-efficacy. For both pos-

Table 3. Mediation estimates for meaning in life and self-efficacy in mediating associations between affect and psychological well-being.

Variables	<i>B</i>	$\beta$	<i>SE</i>	<i>t</i> [ <i>LLCI</i> , <i>ULCI</i> ]	Model <i>R</i> <sup>2</sup>
<b>DIRECT EFFECTS</b>					
Positive affect as an independent variable					
Positive affect → Meaning in life	.36	.21	.11	3.22 [.14, .58]	.05**
Positive affect → Self-efficacy	.35	.48	.04	8.08 [.27, .44]	.24***
Meaning in life → Psychological well-being	.12	.16	.03	3.31 [.04, .18]	
Self-efficacy → Psychological well-being	.65	.37	.09	7.02 [.46, .82]	
Positive affect → Psychological well-being	.55	.43	.06	8.35 [.41, .67]	.57***
Negative affect as an independent variable					
Negative affect → Meaning in life	-.38	-.26	.09	-3.95 [-.57, -.19]	.07***
Negative affect → Self-efficacy	-.32	-.50	.04	-8.49 [-.39, -.24]	.25**
Meaning in life → Psychological well-being	.12	.16	.04	3.00 [.04, .19]	
Self-efficacy → Psychological well-being	.77	.44	.10	7.61 [.57, .97]	
Negative affect → Psychological well-being	-.30	-.27	.06	-4.71 [-.42, -.17]	.48***
<b>TOTAL EFFECTS</b>					
Positive affect → Psychological well-being	.81	.65	.01	12.36 [.68, .94]	
Negative affect → Psychological well-being	-.59	-.53	.01	-9.27 [-.07, -.05]	
<b>INDIRECT EFFECTS</b>					
Positive affect as an independent variable					
Positive affect → Meaning in life → PWB	.04	.03	.02	.01	.07
Positive affect → Self-efficacy → PWB	.23	.18	.04	.12	.24
Total	.27	.21	.04	.14	.28
Effect contrast (Meaning in life - Self-efficacy)	-.19	-.15	.02	-.10	-.16
Negative affect as an independent variable					

Negative affect as an independent variable					
Negative affect → Meaning in life → PWB	-.05	-.04	.02	-.08	-.01
Negative affect → Self-efficacy → PWB	-.25	-.22	.03	-.29	-.15
Total	-.29	-.26	.04	-.35	-.18
Effect contrast (Meaning in life - Self-efficacy)	.20	.18	.01	.01	.14

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

itive and negative affect as independent variables, meaning in life and self-efficacy were positively associated with psychological well-being. The indirect effect measures demonstrated that meaning in life was a mediator between positive and negative affect and psychological well-being. Self-efficacy also turned out to mediate the relationships between both types of affect and psychological well-being. The direct effects of positive affect on psychological well-being ( $B = .06$ ; 95%  $CI [.04, .07]$ ) and negative affect on psychological well-being ( $B = -.03$ ; 95%  $CI [-.04, -.17]$ ) were significant.

Consistent with the recommendations of Preacher and Hayes (2008, pp. 879–891), the aforementioned mediation results reflect a situation in which the direct effects of positive and negative affect on psychological well-being (separately) remain statistically significant in the context of significant total effects occurring between affect, meaning in life, self-efficacy, and psychological well-being. Specific indirect effect contrast, which compares indirect effects in multiple mediator models (in the models of the current study: meaning in life *minus* self-efficacy), demonstrated that the results for positive and negative affect were statistically significant, yet with different signs. This is an interesting finding which indicates that the mediating power of meaning in life compared to the power of self-efficacy was weaker in the relationship between positive affect and psychological well-being ( $B = -.02$ ; 95%  $CI [-.03, -.01]$ ), but it was stronger in the relationship between negative affect and psychological well-being ( $B = .02$ ; 95%  $CI [.01, .03]$ ).

## Discussion

This study aimed to examine meaning in life and self-efficacy as mediators of the relationship between affect and psychological well-being in a group of the spouses of cancer patients. Analysis using the PROCESS macro showed that the

proposed mediation model was significant, which is consistent with the theoretical and empirical background presented in our study. According to our current knowledge, the proposed mediation models have not yet been examined on a group of cancer patients' spouses.

The results of correlation analysis indicated significant relationships among positive and negative affect, purpose-oriented resources, and psychological well-being. Positive affect was positively correlated with meaning in life, self-efficacy, and psychological well-being. In contrast, negative affect was negatively associated with all of the above factors. These results are consistent with previous empirical data which revealed similar associations (King *et al.*, 2006, p. 194; Krok and Gerymski, 2019, p. 249; Steptoe *et al.*, 2008, pp. 410–412). Yet, our study extends the existing literature by showing that the relationships between the tested variables were also significant in a group of cancer patients' spouses. Our results demonstrated that the more the spouses experienced positive emotions, the higher the level of their meaning in life and the occurrence of well-being focused on values, personal growth, and self-realisation. This allows us to confirm our first hypothesis.

The main finding of the current study was related to the mediational model. As expected, both meaning in life and self-efficacy served as mediators between affect and psychological well-being. As all the direct and indirect effects were significant, this indicated the occurrence of mediation in both cases. However, the relationships do not have any causal character. Stronger positive affect was related to higher psychological well-being indirectly through higher meaning in life and self-efficacy. Conversely, stronger negative affect was related to lower psychological well-being indirectly through lower meaning in life and self-efficacy. Furthermore, effect contrasts demonstrated that meaning in life and self-efficacy had different mediational effects for positive and negative affect, with self-efficacy exerting a stronger effect. These results support our second and third hypotheses which assumed such relations between the variables tested in the mediational model.

Our findings appear interesting as they confirm that positive and negative affect might be indirectly related to the psychological functioning. The relationship between affect and psychological well-being was evidently mediated by motivational factors embedded in life goals and meaning, and the ability of an individual to cope with stressful situations (i.e. meaning in life and self-efficacy). This interpretation is consistent with previous research in which meaning in life mediated the relationship between positive affect and life satisfaction (Lightsey and Boyraz, 2011, p. 211), and where self-efficacy served as a mediator in the relationship between distress and quality of life among breast cancer patients

(Liang *et al.*, 2016, p. 71). The mediating effects obtained in our study support the claim that the experience of cancer can impact associations between negative and positive affect and psychological well-being not only in patients, but also in their spouses.

In addition, due to the fact that meaning in life and self-efficacy are widely considered to be cognitive and motivational elements (Bandura, 1995, pp. 1–46; Steger, 2012, p. 382), their mediating role highlights the interplay of cognitive-motivational and emotional processes in forming the dimensions of values, personal growth, and self-realisation in cancer patients' spouses. Emotionally demanding situations can influence the perceived meaning in life and self-efficacy of spouses, which in return can shape their psychological well-being. This finding can be explained within AIM (Forgas, 1995, pp. 39–66; 1998, pp. 565–577). Positive affect may lead to higher perceptions of meaning in life and self-efficacy, and negative affect may be associated with lower perceptions of these factors in the spouses of cancer patients. Consequently, these perceptions can influence the processes responsible for the perceived meaning and happiness experienced by spouses, which can further regulate the level of their psychological well-being. The spouses who are characterised by higher positive affect and lower negative affect probably more constructively perceive significance and purpose in their lives and more efficiently deal with forthcoming situations, which, in turn, can result in a higher levels of perceived meaning in life, self-efficacy and well-being.

The mediating function of meaning in life and self-efficacy also indicates how important role those resources play in coping with a spouse's illness, especially in the context of recovery from illness. According to some authors, self-efficacy (Bandura, 1993, p. 128; Robinson-Smith *et al.*, 2000, p. 461) and meaning in life (Dezutter *et al.*, 2013, p. 334) are key determinants of behavioural changes connected to well-being. Positive and negative affect may initiate motivational resources, which provide patients and their families with a sense of purpose and self-efficacy that act as coping mechanisms in illness-related situations.

The current study is not free of limitations. First, it was conducted in a group of spouses of gastrointestinal cancer patients who were undergoing medical treatment. Therefore, the results may not be representative for the entire population of cancer patients' spouses, e.g. those whose spouses do not receive any treatment or are in terminal stages. Second, as our results are based on a cross-sectional study, the mediational model does not allow us to draw any causal conclusions regarding the observed relationships. Although the opposite causal direction (i.e., well-being may contribute to meaning, which in turn con-

tributes to affect) can occur, our model based on the theoretical background of the Affect Infusion Model validates the current findings without any definite causal statements. Longitudinal research would be needed to determine the final causality. Third, although the PWB scale is a reliable and widely used measure of psychological well-being, there are also other measures that can efficiently quantify a level of personal growth and self-realisation, e.g. the Flourishing Scale (Diener *et al.*, 2010, pp. 143–156) or the Questionnaire for Eudaimonic Well-Being (Waterman *et al.*, 2010, pp. 41–61). Fourth, in our research, we did not measure more detailed information on the characteristics of the support offered by cancer patients' spouses. Variables such as the time of caring for a spouse or satisfaction with the provided support could significantly differentiate the relationships we studied. Moreover, the health of the caregivers could also significantly correlate with our studied variables. These data should be taken into account in future research projects.

In sum, despite the above limitations the current study has shed new light on the mediational model in which meaning in life and self-efficacy mediated the relationship between affect and psychological well-being. The results demonstrated the significance of positive and negative affect and personal resources based on meaning and self-efficacy in the sphere of values, personal growth, and self-realisation among the spouses of cancer patients. These personal resources could be more deeply addressed by caregivers and medical staff working with cancer patients as they are associated with positive outcomes and offer support during the caregiving period. The meaning-centred psychotherapy offers promising prospects for cancer patients in terms of their sense of meaning and well-being (Applebaum *et al.*, 2018, p. 854; Breitbart *et al.*, 2018, p. 3236). This indicates an important role of meaning-oriented resources in the process of coping with cancer illness among cancer caregivers. Meaning-centred interventions could thus improve caregivers' sense of meaning and well-being by increasing their awareness of the ability to make important existential decisions, engage with life, and realise their potential.

Data wpłynięcia: 2021-04-10;

Data uzyskania pozytywnych recenzji: 2021-10-24;

Data przesłania do druku: 2021-12-30.

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