Original Papers

Dorota Kalka[*]
Bartosz Karcz[*]

Identity dimensions versus proactive coping in late adolescence while taking into account biological sex and psychological gender

Abstract*: The aim of study was to investigate the relationship between proactive coping strategies and the dimensions of identity formation, along with the role of biological sex and psychological gender as moderators for this relationship. We conducted analyses aimed at showing differences in terms of identity dimensions levels and proactive coping strategies used by a group of individuals with different biological sex and psychological gender. A group of 101 students from upper secondary schools (47 females, 54 males) from Pomeranian Voivodeship took part in the study. We used in our research The Dimensions of Identity Development Scale; The Psychological Gender Inventory and The Proactive Coping Inventory for Adolescents. We found, among others, that in the case of a proactive strategy, biological sex turned out to be a significant moderator in the relationship between this variable and identity dimensions: ruminative exploration, commitment-making and identification with commitment. In the case of instrumental support seeking, psychological gender turned out to be a significant moderator for the relationship between these variables and a part of identity dimensions. The obtained results show that, regardless of whether young people, in terms of characteristics that are stereotypically associated with biological sex, are described as aschematic (undifferentiated individuals) or schematic (sex-typed) when entering adulthood and attempting to constitute themselves, more often cope in a task-oriented manner by trying to create a set of information useful in difficult situations and aspire to obtain informational support from individuals in one's own social network, who are regarded as safe people.*

Key words*: adolescents, proactive coping, biological sex, psychological gender*

Adolescence: the time of identity formation

Adolescence can be defined as the time of transition from the position of dependence on caregivers to the position of independence and deciding about oneself. During this period, the basic activities of a person are concerned with realizing those objectives that bring him/her closer to adulthood (Trempała, 2012, p. 98). Contemporary researchers (Lanz, Tagliabue, 2007; Macek, Bejček, Vaníčková, 2007; Sirsch, Dreher, Mayr, Willinger, 2009) indicate that the period of adolescence has been prolonged, possibly by a few more years, because of career development (Brzezińska, 2011). Arnett (2000) described the phenomenon of delaying the acquisition of the typical roles of late adolescence as emerging adulthood, which is the distinct period between 18 and 30 years of age. Developmental tasks belonging to the period of adolescence and early adulthood, such as starting relatively long-lasting relationships with partners and taking on related commitments, as well as deciding on a particular career path, are realized even at the end of the third decade of life (Brzezińska, 2011). An important issue in the period of adolescence is seeking and attempting to establish identity, which has its origin in the early relationship with a mother (Marcia, 1989). Researchers suggest that personal identity is an intensive and changing process, which is influenced by new tasks and roles assumed by a person throughout the whole period of adulthood (Waterman, 1999; Bosma, Kunnen, 2001), meaning that it is not established once and for all and may be modified by new experience (Brzezińska, 2011).

According to Erikson (1968), the process of identity formation is the individual means by which a person makes his/her own choices as well as assimilates previous experience with the new, until a sense of continuity is achieved. Lewin (1963) described adolescence as

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[*] **SWPS University of Social Sciences and Humanities, Sopot Campus**

Corresponding author: Dorota Kalka, University of Social Sciences and Humanities, Sopot Campus, Polna 16/20, 81-745 Sopot, Poland.
Email address: dkalka@swps.edu.pl, bkarcz@swps.edu.pl

a marginal position with four types of consequence: shyness, sensitivity and aggressiveness; conflicts between values, ideologies and lifestyles, with emotional tension being the result of these conflicts; a tendency towards extremism, radicalism, and rigour in thinking and acting; and a rapid change of status. Oerter and Montada (1982) considered that the transition process from childhood to adulthood is characterized by the struggle to form a stable personality structure and strong identity. The authors differentiate between three dimensions of identity development: growing differentiation, growing stabilization, and a growing realistic attitude in self-esteem and self-concept creation. Obuchowski (1983, 2000) emphasized a phase-like aspect of identity formation associated with the sense of meaning in life. He distinguished a phase of identification with internal models, a chaotic and unreal phase of cosmos and a phase of mature meaning in life, when a person is able to identify oneself. According to Marcia (1989), a long-term process of identity formation is associated with an attachment and a sense of identity in infancy. Already in childhood, the search for self-knowledge based on reflection emerges, which may arouse anxiety, a sense of loss and joy, as well as a sense of autonomy. A sense of ambivalence is present both at the onset of the search, as well as in the period of the (final) identity formation.

The above-mentioned theories share a similar view on identity development in terms of being divided into stages, together with the fact that they include searching for and checking reality, along with the transition to a phase/stage of integrating personality/identity.

Marcia (1966) elaborated on Erikson's thoughts by suggesting a two-phase model of identity formation, divided into two stages: exploration and commitment (Marcia, 1966). Luyckx and his colleagues (2006) developed Marcia's theory by introducing the dual-cycle model of identity formation. According to this model, an individual's task is to achieve an identity, which is characterized by a rich and diversified experience, where exploration and commitment are interwoven (Luyckx et al., 2006). The model proposed by Luyckx's team includes six identity statuses: 1) identity achievement, 2) identity foreclosure, 3) being undifferentiated, 4) a ruminative moratorium, 5) carefree diffusion, and 6) diffused diffusion. A detailed description of the model, which was suggested by Luyckx's team, but adapted to Polish conditions, was presented by Brzezińska (Brzezińska & Piotrowski, 2009; Brzezińska & Piotrowski, 2010), in which she extensively described a modified approach to identity formation by taking into account five identity dimensions (Grotevant, 1987; Meeus, Iedema, Maasen, 2002; Waterman, Luyckx, Schwartz, Berzonsky, Soenens, Vansteenkiste, Smits, Goosens, 2008). Exploration in breadth corresponds to exploration, which is classically understood as the search for and investigation of various alternatives in relation to one's personal objectives. Exploration in depth, similar to exploration in breadth, is connected to a classical perspective on exploration, with an emphasis on its thorough analysis of previous commitments and choices.

Ruminative exploration concerns the process, in which an individual assesses developmental difficulties connected with identity formation, by determining a degree to which his/her choices match his/her expectations and aspirations. This element is, at the same time, associated with fear and difficulties in making commitments. Commitment-making defines a degree of commitment in reference to deciding upon choices, which influence the process of identity formation. Identification with commitment refers to self-confidence in meeting one's commitments and identifying with them.

Comparing the percentage of people from both reference groups belonging to particular statuses in line with those discussed in Luyckx (Luyckx, Goossens, Soenens, 2006; Luyckx, Goossens, Soenens, Beyers, 2006) and Brzezińska (Brzezińska & Appelt, 2008; Brzezińska & Piotrowski, 2009a) showed that, in the group of students, diffused and undifferentiated identity statuses appeared more often. This may indicate a modifying impact of higher education on identity formation. Such individuals reject previous commitments and do not undertake new ones. College days (the first years in particular) may act as a trigger for another identity crisis in the case of those who resolved it in their adolescence, or they may prolong such a crisis if it remains unresolved (Brzezińska & Piotrowski, 2009a).

The authors of the dual-cycle model of identity formation showed the relationship between age and intensity of exploration, together with a level of commitment-making. Older participants presented a lower exploration level and a higher level of commitment-making, as well as identifying with the commitments made (Lucykx, Schwartz, Goossens, Pollock, 2008). Brzezińska and colleagues showed that, as well as age exploration, intensity was decreasing, whereas commitment-making and identifying with those commitments were increasing.

Psychological gender

Identification with the gender role is one of basic developmental tasks in the period of adolescence. The understanding of gender roles has changed over the last few decades (Doyle & Paludi, 1996). Bem's (1976) gender schema theory refers to sex-typed individuals and, regardless of their biological factors, their predisposition to show feminine and masculine characteristics in two separate categories. Gender schemata are psychological characteristics associated with gender in relation to the most common definitions of femininity and masculinity in a given society. Gender schemata are associated with particular expectations regarding women's and men's roles (Bem, 1974, 2000). The development of psychological gender is influenced by the environment, as well as femininity and masculinity definitions already acquired by an individual. It is presented as a set of characteristics or a schema of roles, attitudes and behaviours, which are typical of men and women in a given environment or society (Bem, 2000). Bem (1998) differentiated between four gender categories: sex-typed (a high level of gender

characteristics corresponding to biological sex; feminine women and masculine men); cross-sex-typed (a low level of gender characteristics in line with biological sex; masculine women and feminine men); undifferentiated (a low level of characteristics of both sexes); and androgynous (a high level of characteristics of both sexes).

The results of many studies indicate that psychological gender is associated with a human being's functioning, behaviour and opportunities for development (Kuczyńska, 1992; Brzezińska, 2002; Szpitalak & Prochniak, 2013). In Bem's opinion, the androgynous type can easily adapt to changing conditions (Bem, Martyna, & Watson, 1976; Andersen & Bem, 1981). Further research shows that undifferentiated sexuality is related to depressive disorders and asocial behaviours (Brzezińska, 2002; Szpitalak & Prochniak, 2013). Sex-typing and androgyny among participants imply a better ability to deal with problematic situations, self-confidence and openness (Lelakowicz & Zdrojewicz, 2008). Androgynous and sex-typed individuals have greater abilities in relation to unlimited self-expression, whereas cross-typed individuals are prone to a higher level of stress (Brzezińska, 2002).

Proactive coping with stress

In the period of adolescence, many situations constitute the source of psychological stress. This stress is generated by both difficulties arising from current problems and awareness of various problems, which are associated with a performance of developmental tasks in early adulthood that may appear in the future. Well developed adulthood needs to be provided by many significant tasks as for example identity formation (Erikson, 2004), including psychosexual identity which is associated with the notion of psychological gender. Thus, coping with anticipated difficulties by using proactive coping strategies is of particular importance. These strategies are oriented towards anticipated stress and are used with the aim of avoiding, reducing and preventing the development of difficulties in their early phase, instead of eliminating stress factors after their activation (Aspinwall & Taylor, 1997). They enable personal development by making an individual accept challenges and helping to create and reinforce the resources needed to achieve one's own goals (Greenglass, 2002; Schwarzer 2001; Schwarzer & Taubert, 2002). The concept of proactive coping underlines both time perspective and positive aspect (Schwarzer & Knoll, 2003), as well as cognitive factors of coping (Aspinwall & Taylor, 1997). This corresponds well with the developmental characteristics and events of late adulthood, such as aiming at one's own resources, a positive attitude, a long-term forward-looking perspective while planning life goals, taking responsibility for one's own life, and a growing awareness that "every issue may be considered from many angles" (Brzezińska, 2005, p. 357). In late adolescence, planning and anticipating needs and situations are useful strategies, which imply an increase in positive mood and a decrease in

suffering associated with experiencing negative emotions or with an inability to cope with stress (Frydenberg, 2008). Research conducted on a group of adolescents showed that using proactive strategies correlates with a lower level of depression symptoms (Bagana, 2014), and is also conducive to lowering social inhibitions and reducing non-assertive behaviours (Răban-Motounu & Vitalia, 2015). In her research, Ficková (2009) showed that girls more frequently use instrumental and emotional support-seeking strategies, while boys adopt preventive strategies, such that using these kinds of strategy correlates with the Big Five personality traits. Conversely, Gan and colleagues (2009) stated that male sex is generally associated with a common use of proactive strategies. Proactive coping strategies are also mediators in the relationship between optimism and subjective well-being (Chen & Chao, 2010), in turn constituting a predictor of positive emotions and satisfaction with life (Zhao, 2011).

There is no Polish research on proactive coping strategies among adolescents. Most of the research has been conducted on groups of adults. Research linking proactive strategies with the process of identity formation in the context of psychological gender is also absent. Thus, the current research has been concerned with this thematic area.

Aim and scope of the research

The aim of this study was to investigate the relationship between proactive coping strategies and the dimensions of identity formation, along with the role of biological sex and psychological gender as moderators for this relationship. The research was exploratory in nature and, therefore, no particular expectations were framed. We conducted analyses aimed at showing differences in terms of identity dimensions levels and proactive coping strategies used by a group of individuals with different biological sex and psychological gender. We also described intragroup differences regarding levels of identity dimensions and a frequency in using proactive strategies.

Research methods and procedure

Participants

A group of 101 students from upper secondary schools (47 females and 54 males) from Pomeranian Voivodeship took part in the study. The female mean age was 18.17 ($SD = 0.43$), while the male mean age was 18.35 ($SD = 0.55$). The age of both groups was, therefore, similar: $t(97.912) = -1.845$; $p < 0.068$. Participation in the study was voluntary, while participants were informed of its purpose. The fact that all the participants attended technical secondary schools was of importance to the research results.

The participants first provided their sex, year of birth, data concerning family and their first sexual experience[1]. They continued by filling out the following questionnaires: the Dimensions of Identity Development Scale (DIDS)

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[1] Data concerning family and first sexual experience were analysed in another publication, in preparation.

(Luyckx, Berzonsky, Soenens, Vansteenkiste, Smits, Goosens, 2008) in the Polish adaptation by Brzezińska and Piotrowski (2010); the Psychological Gender Inventory (Kuczyńska, 2012); the Proactive Coping Inventory for Adolescents (Greenglass, Schwrzer, Laghi, 2008; translated with the permission of the authors by Kalka, 2015); the Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larson, Griffin, 1985; adapted by Juczyński, 2001); and the Rosenberg Self Esteem Scale (SES) (Rosenberg, 1965; adapted by Dzwonkowska, Lachowicz-Tabaczek, Łaguna, 2008)[2].

The DIDS measures five dimensions of identity. It contains 25 items, which make up five subscales corresponding to the following identity dimensions: exploration in breadth, exploration in depth, ruminative exploration, commitment-making and identification with commitment. The participants answer using a six-point scale, from "definitely no" to "definitely yes" (Cronbach's α for the individual subscales is 0.6–0.91).

The Psychological Gender Inventory consists of two scales, which respectively relate to femininity and masculinity. Participants rate how each of the 35 characteristics relate to their own behaviour on a five-point scale (1 – "I don't relate to this at all"; 5 – "this is exactly me"). The inventory measures the compatibility of one's behaviours with cultural definitions of femininity and masculinity (Cronbach's α for the individual subscales is 0.72–0.81).

The Proactive Coping Inventory for Adolescents measures the following coping strategies: proactive coping, reflective coping, strategic planning, preventive coping, instrumental support seeking, emotional support seeking and avoidance. The participants answer on a four-point scale, where one is "never" and four is "always" (Cronbach's α for the individual subscales is 0.72–0.86).

Results

A statistical analysis was carried out with the use of an SPSS 23 package.

In the first place, the participants' distribution was analysed according to biological sex and psychological gender. The next stage was to analyse the gathered data, with a view to examine differences regarding identity dimensions and proactive coping strategies in the groups by taking biological sex into account. Additional analyses sought to verify intragroup differences in the levels of identity dimension, while the frequency of applying proactive strategies were also conducted[3]. Moderation analysis was used for particular strategies for proactive coping, taking into account biological sex/psychological gender and particular identity dimensions together with their interactions.

Biological sex versus psychological gender

In the first place, the participants' distribution was analysed according to biological sex and psychological

gender. The analysis of the results concerning psychological gender showed that nearly 39% of the participants belonged to a group described as androgynous (36.2% of females and 40.7% of males) because they showed both feminine and masculine characteristics. Whereas, 30.7% of the participants were sex-typed (feminine females and masculine males). The studied group consisted of 23.8% of undifferentiated individuals (25.5% of females and 22.2% of males). Almost 7% were individuals with dominant characteristics typical of the opposite sex (cross-sex-typed individuals); i.e., masculine females (8.5%) in the female group and feminine males (5.6%) in the male group. The distribution of the results is presented in the table below (Table 1).

Table 1. Biological sex versus psychological gender: results distribution

Psychological gender	Women	Men	Total
Sex-typed	29.8%	31.5%	30.7%
Androgynous	36.2%	40.7%	38.6%
Cross-sex-typed (masculine women, feminine men)	8.5%	5.6%	6.9%
Undifferentiated individuals	25.5%	22.2%	23.8%

Biological sex, level of identity dimensions and applied proactive strategies of coping with stress
Level of identity dimensions and applied proactive strategies of coping with stress

The next stage was to analyse the gathered data, with a view to examine differences regarding identity dimensions and proactive coping strategies in the groups by taking biological sex into account. In order to do that, we carried out the analyses with the Student's t-test for the independent groups. The results are presented in Table 2.

The statistical analysis showed that females and males differ significantly in terms of two identity dimensions: ruminative exploration $t(99) = 3.645$; $p < 0.001$ and commitment-making $t(99) = -2.716$; $p < 0.01$. Females showed a higher level of ruminative exploration ($M = 3.36$; $SD = 0.72$) than males ($M = 2.79$; $SD = 0.81$). In the case of commitment-making, a higher result was obtained by males ($M = 3.30$; $SD = 0.91$) in comparison to females ($M = 2.81$; $SD = 0.87$). No differences regarding exploration in breadth, exploration in depth and identification with commitment were found.

In the case of proactive coping strategies, the significant differences appeared in terms of instrumental support seeking $t(90.987) = 3.574$; $p < 0.001$ and emotional support seeking $t(90.845) = 3.645$; $p < 0.01$. Both in the first strategy (females: $M = 2.94$; $SD = 0.57$; males $M = 2.42$; $SD = 0.86$) and in the second (females: $M = 3.14$; $SD = 0.49$; males $M = 2.77$; $SD = 0.77$), a higher mean level concerned females.

Table 2. The comparison of the significance of differences in average identity dimension levels and proactive coping strategies in the group of females and males

	Women		Men		t	df	p
	M	**SD**	**M**	**SD**			
Exploration in breadth	3.17	0.59	3.48	0.76	1.740	99	0.086
Exploration in depth	3.41	0.50	3.23	0.67	1.480	99	0.141
Ruminative exploration	3.36	0.72	2.79	0.81	3.645	99	0.001
Commitment-making	2.81	0.87	3.30	0.91	-2.716	99	0.008
Identification with commitment	3.19	0.73	3.45	0.73	-1.770	99	0.080
Proactive strategy	2.89	0.46	3.01	0.47	-1.190	99	0.234
Reactive strategy	2.77	0.57	2.94	0.62	-1.370	99	0.172
Preventive strategy	2.93	0.45	2.98	0.48	-0.560	99	0.579
Strategic planning	2.50	0.78	2.42	0.69	0.590	99	0.555
Emotional support seeking	3.14	0.49	2.77	0.77	2.950	90.845	0.004
Instrumental support seeking	2.94	0.57	2.42	0.86	3.574	90.987	0.001
Avoidance	2.47	0.69	2.33	0.59	1.070	99	0.287

Psychological gender, level of identity dimensions and applied proactive strategies of coping with stress

The next stage was to analyse the gathered data with a view to examine differences regarding identity dimensions and proactive coping strategies in the groups by taking psychological gender into account. One-way analysis of variance was used to compare the independent samples. *Post hoc* analyses were calculated, depending on whether the condition of the equality of variances was met, by running the LSD or the Games-Howell test.

Given the small number of participants in the cross-sex-typed group (feminine males, masculine females), this group was omitted in the analysis. The analysis results are presented in Table 3.

A significant effect of the group was found in the case of commitment-making $F(2.87) = 5.49$, $p = 0.006$ and identification with commitment $F(2.86) = 7.94$, $p < 0.001$. In the first case, statistically significant differences were found between individuals with undifferentiated sex and the remaining groups. The lowest result was reported in the first group. In the second case, statistically significant differences were found between the group of undifferentiated individuals (a lower mean) and the group of sex-typed individuals.

In the case of proactive coping strategies, a group effect was found in terms of the following: proactive strategy $F(2.81) = 11.72$, $p < 0.001$; reflective strategy $F(2.86) = 4.59$, $p = 0.013$; instrumental support seeking $F(2.88) = 3.93$, $p = 0.023$; and emotional support seeking $F(2.86) = 4.36$, $p = 0.016$. As for proactive strategy, statistically significant differences were found between

undifferentiated individuals and the remaining groups. The lowest result was reported in the first group. As for reflective strategy, the differences concerned the group of undifferentiated individuals (a lower mean) and androgynous individuals. In the third and fourth case, a significant difference concerned groups of sex-typed individuals and androgynous individuals. In both cases, a lower mean was found in the first group.

Additional analyses sought to verify intragroup differences in the levels of identity dimension, while the frequency of applying proactive strategies were also conducted[4]. In order to do that, we carried out the analyses with the Student's t-test for the dependent samples, which showed that the lowest (significantly lower than others) level of identity dimension in the female group concerned commitment-making, whereas the highest related to exploration in depth. Conversely, in the case of males, the lowest result concerned ruminative exploration, while the highest concerned exploration in breadth and identification with commitment.

In the group of undifferentiated individuals, the lowest level concerned commitment-making and was statistically significant, compared to the other dimensions. The highest level concerned exploration in breadth and differs significantly from the level of exploration in depth. In the group of sex-typed individuals, the lowest level concerned ruminative exploration, whereas the highest concerned identification with commitment and exploration in breadth. In the androgynous group, a statistically significant (and, in fact, the highest) level concerned exploration in breadth, whereas the lowest was concerned with commitment-

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[4] These analyses will be presented in a separate publication. At this point we only mention it.

Table 3. The comparison of the significance of differences in average identity dimension levels and proactive coping strategies in the groups with various psychological genders

Zmienna	undifferentiated (1)		sex-typed (2)		androgynous (3)		f	df	p
	M	SD	M	SD	M	SD			
Exploration in breadth	3.39	0.82	3.63	0.59	3.70	0.68	1.51	2.88	0.228
Eksploration in depth	3.08	0.69	3.47	0.46	3.35	0.61	2.64	2.87	0.077
Ruminative exploration	3.22	0.72	2.90	0.79	3.13	0.79	1.23	2.86	0.299
Commitment-making	2.56	0.89	3.35	0.76	3.07	0.91	5.49	2.87	0.006
Identification with commitment	2.86	0.73	3.63	0.44	3.28	0.79	7.94	2.86	0.001
Proactive strategy	2.60	0.48	2.94	0.35	3.16	0.45	11.72	2.81	0.001
Reactive strategy	2.62	0.55	2.88	0.52	3.07	0.61	4.59	2.86	0.013
Preventive strategy	2.76	0.45	2.97	0.35	3.04	0.47	2.99	2.85	0.056
Strategic planning	2.21	0.62	2.39	0.68	2.64	0.73	2.65	2.83	0.076
Emotional support seeking	2.88	0.58	2.62	0.75	3.10	0.68	3.93	2.88	0.023
Instrumental support seeking	2.54	0.80	2.35	0.84	2.91	0.69	4.36	2.86	0.016
Avoidance	2.61	0.74	2.28	0.64	2.29	0.53	2.24	2.83	0.113

making (which was not significantly different from ruminative exploration).

In the case of proactive strategies, it was found that the most often used in the female group was emotional support seeking, while the least often was avoidance (at a similar level to strategic planning). Among males, the most often used strategy was the proactive one (with an insignificant difference in comparison to preventive and reflective strategies), while the least often used was avoidance strategy (at a level similar to instrumental support seeking and strategic planning).

In the group of undifferentiated individuals, the most often used was emotional support seeking (with a significant difference compared to instrumental support seeking and strategic planning), while the least often used was strategic planning (at a level similar to instrumental support seeking and strategic planning). In the group of sex-typed individuals, the most often used strategy was the preventive one (with a significant difference only in comparison to instrumental support seeking and avoidance), while the least often was avoidance (at a level similar to strategic planning and support seeking). Androgynous individuals most often used a strictly proactive strategy (with an insignificant difference in comparison to reflective, preventive and emotional support seeking strategies), while the strategy that was chosen least often was avoidance.

In order to verify a moderation role of biological sex/ psychological gender for the relationship between identity dimensions and proactive coping strategies, a number of hierarchical regression analyses were conducted with an interaction component being biological sex/psychological gender. It was assumed that it would affect the direction and/or the strength of the relationship between variables.

The correlation matrix between variables is presented in Table 4.

Moderation analysis was used for particular strategies for proactive coping, taking into account biological sex/ psychological gender and particular identity dimensions together with their interactions. Biological sex does not moderate the relationship between coping strategies (reflective, preventive, strategic planning, emotional support seeking and avoidance) and identity dimensions. In the case of a proactive strategy, biological sex turned out to be a significant moderator in the relationship between this variable and identity dimensions: ruminative exploration, commitment-making and identification with commitment. In the first case, the regression analysis model with an interaction component is significant and well matched $F(3.82) = 3.05$; $p = 0.033$ (*beta* = -0.268; $p = 0.019$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by 7%. Further analysis of the relationship between commitment-making and a strictly proactive strategy in the groups, when singled out in respect of biological sex, showed that the model is only well matched in the male group $F(1.45) = 7.33$; $p = 0.010$, while the relationship is significant and negative (*beta* = -0.38, $p = 0.010$) and explains 12% of a dependent variable variation.

In the second case, the regression analysis model with an interaction component is significant and well matched $F(3.84) = 7.391$; $p = 0.001$ (*beta* = 0.29; $p = 0.005$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by 8%. Further analysis of the relationship between commitment-making and a strictly

Table 4. Correlations between the analysed variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	–												
2	.747**	–											
3	.538**	.417**	–										
4	.024	.152	-.655**	–									
5	.240*	.253*	-.427**	.799**	–								
6	.124	.175	-.193	.366**	.398**	–							
7	.252*	.280**	.143	.122	.227*	.480**	–						
8	.150	.237**	.130	.009	.026	.343**	.498**	–					
9	.302**	.361**	.037	.190	.262*	.570**	.751**	.600**	–				
10	.247*	.281**	.231*	-.022	.006	.260*	.304**	.295*	.259*	–			
11	.021	.111	.112	-.073	-.087	.312**	.100	.166	.166	.764**	–		
12	.005	-.024	.218*	-.242*	-.322**	-.381*	-.174	-.074	-.208	-.055	-.037	–	
13	-.194	-.158	-.422**	.313**	.211*	.140	.113	.113	.084	-.353**	-.309**	-.070	–
14	.162	.119	.008	.157	.131	.008	.311**	.274*	.234*	.250*	.195	-.168	.079

1 – Exploration in breadth, 2 – Exploration in depth, 3 – Ruminative exploration, 4 – commitment-making, 5 – Identification with commitment, 6 – proactive strategy, 7 – reactive strategy, 8 – preventive strategy, 9 – strategic planning, 10 – emotional support seeking, 11 – instrumental support seeking, 12 – avoidance, 13 – biological sex, 14 – psychological gender

proactive strategy in the groups, when singled out in respect of biological sex, showed that only in the male group is the model well matched $F(1.46) = 25.79$; $p < 0.001$, while the relationship is significant and positive (*beta* = 0.64, $p < 0.001$) and explains 35% of a dependent variable variation.

In the third case, the regression analysis model with an interaction component is significant and well matched $F(3.82) = 6.56$; $p = 0.001$ (*beta* = 0.22; $p = 0.050$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by only 4%. Further analysis of the relationship in the groups, when singled out in respect of biological sex, showed that only in the male group is the model well matched $F(1.46) = 21.46$; $p < 0.001$, while the relationship is significant and positive (*beta* = 0.57, $p < 0.001$) and explains 31% of a dependent variable variation. In the case of instrumental support seeking, biological sex turned out to be a significant moderator for the relationship between this variable and commitment-making.

The regression analysis model with an interaction component is significant and well matched $F(3.88) = 7.46$; $p = 0.001$ (*beta* = 0.24; $p = 0.017$), but introducing the interaction component to the model significantly increases the percentage of the described variance by only 6%. Further analysis of the relationship in the groups, when singled out in respect of biological sex, showed that only in the male group is the model well matched $F(1.49) = 4.08$; $p = 0.049$, while the relationship is significant, strong and positive (*beta* = 0.28, $p = 0.049$) and explains 8% of a dependent variable variation.

Psychological gender is not a moderator in the relationship between identity dimensions and the following strategies: strictly proactive, reflective, strategic planning, preventive and avoidance. In the case of instrumental support seeking, psychological gender turned out to be a significant moderator for the relationship between these variables and a part of identity dimensions. Psychological gender is a moderator for the relationship between instrumental support seeking and exploration in breadth, exploration in depth and ruminative exploration. In the first case, the regression analysis model with an interaction component is significant and well matched $F(3.86) = 4.93$; $p = 0.003$ (*beta* = -0.34; $p = 0.025$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by only 5%. Further analysis of the relationship in the groups, when singled out in respect of psychological gender, showed that only in the undifferentiated group is the model well matched $F(1.23) = 7.87$; $p = 0.01$, while the relationship is significant, strong and positive (*beta* = 0.51, $p = 0.01$) and explains 23% of a dependent variable variation. In the second case, the regression analysis model with an interaction component is significant and well matched $F(3.85) = 5.88$; $p = 0.001$ (*beta* = -0.32; $p = 0.039$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by 5%. Further analysis of the relationship in the groups, when singled

out in respect of psychological gender, showed that in the group of undifferentiated individuals the model is well matched $F(1.22) = 8.31$; $p = 0.009$, while the relationship is significant, strong and positive (*beta* = 0.53, $p = 0.009$) and explains 28% of a dependent variable variation. Similarly, in the sex-typed group, the model is well matched $F(1.26) = 12.34$; $p = 0.002$. This relationship is significant, strong and positive (*beta* = 0.57, $p = 0.002$) and explains 33% of a dependent variable variation. In the third case, the regression analysis model with an interaction component is significant and well matched $F(3.84) = 5.81$; $p = 0.001$ (*beta* = -0.45; $p = 0.010$). Additionally, introducing the interaction component to the model significantly increases the percentage of the described variance by only 7%. Further analysis of the relationship in the groups singled out in respect of psychological gender showed that only in the group of sex-typed individuals is the model well matched $F(1.25) = 7.31$; $p = 0.012$, while the relationship is significant, strong and positive (*beta* = 0.49, $p = 0.012$) and explains 23% of a dependent variable variation.

Summary and discussion

Adolescence is a special period in every person's life. It is a time of identity formation and looking to the future. According to Fadjukoff (2007), the objective indicators of entering adulthood are: leaving the parental household and starting one's own, completion of schooling, building a lasting and intimate relationship including marriage, childbearing and parenting, and entering the labour force in a full-time job. Luyckx and colleagues (2008) showed that the subjective feeling about being an adult is closely related to objective indicators of adulthood, such as starting a job or building a relatively durable partnership and a sense of coherence (cf. Antonovsky, 1995), which is understood as a global orientation based on a sense of confidence, predictability of the world and possessing the resources needed to cope in this world. The research by Arnett (2000), which preceded the results obtained by Luyckx (2008), showed that individuals, who subjectively describe themselves as adults, have already assumed the roles of adulthood and performed the tasks connected with it. A level of identity formation and an ability to cope in various situations are important for taking up and performing the tasks of adulthood while entering this period of life. The aim of our own research was to verify a moderating role of biological sex and psychological gender for the relationship between the dimensions of identity formation and proactive coping strategies, as well as verifying the differences in the identity dimensions intensity and the frequency of coping strategies, which are used by the groups when singled out in respect of biological sex/psychological gender. The research showed that biological sex does not have an impact at the level of the search for one's own, a well matched lifestyle nor a detailed evaluation of the choices made. That means young people who took part in this study showed that the (biological) sex differences do not affect their identity on certain levels, in particular searching for their life purpose, needs in the

presence or in the future, presented life style or what is important for them to take in their future from the presence (or family standards). The research by Luyckx, Schwartz, Berzonsky, Soenens, Vansteenkiste, Smits, Goosens (2008) showed that the last aspect was more typical for women. The research by Brzezińska, Piotrowski, Garbarek-Sawicka, Karowska and Muszyńska (2010) showed that both exploration in breadth and in depth were dimensions with a higher intensity in a group of women. In the present research, the level of anxiety and the intense nature of the problems connected with engaging in the areas significant for identity formation was higher in the female group. This may be indicative of possible difficulties in relation to refraining from thinking about the future, and problems in terms of defining one's own life goals, uncertainty and a sense of incompetence. Such a situation may imply a lower level of quality of life and appearance of stress. Luyckx's (2008) and Brzezinska's (2010) research teams also reported a higher level in this aspect in the female group. This situation may be connected with developmental tasks, which appear when entering the next developmental stage, namely early adulthood. Nowadays, women tend to delay developmental tasks connected with motherhood. Most frequently, this is linked to the sequential way of setting and carrying out the tasks, as well as with deciding on their order. Nowadays both women and men have almost the same opportunities and share traditional social roles of their and are seen as equal (Melosik, 2002), and that fact can pursue women to dedicate themselves to their career faster and longer. On the other hand, young women are still expected by society to take up the tasks connected with starting up a family and parenting relatively quickly, as well as performing the remaining tasks at the same time. This area needs to be analysed in detail in further research.

Men are characterized by a higher level of intensity in making commitments, along with the scope of choices concerning issues important for identity formation, which are related to the vision of their own future. A degree of identification with the choices and the commitments made, which imply a sense of security and confidence in the context of compliance between life plans and lifestyles, is similar in both women and men. The first result stands in contradiction to the results obtained by Luyckx's (2008) and Brzezińska's (2010) teams, while the other one coincides with them. The higher level of commitment-making in the male group may result from the educational context of the participants; in other words, these were the students of a technical secondary school. This type of school requires specific competences, which are more focused on the future than a high school, and is also characterized by taking up activities related to a future career (traineeship).

By taking psychological gender into account, verification of intragroup differences revealed that undifferentiated individuals, compared with other persons, are characterized by a narrower scope when making choices about the issues important for identity formation concerning their own future. The intensity of identification with choices and commitments made is also lower in this group than

in the case of sex-typed individuals. This may be related to the fact that these individuals have not recognized their competence and, therefore, cannot ascribe themselves to any of the social functioning gender models. According to the results of numerous research studies, this group is characterized by bigger difficulties in adapting to social challenges, the highest level of depressive disorders (Szpitalak & Prochowicz, 2013), a lower level of satisfaction with life, optimism, conviction about one's own effectiveness, personal competence (Lipińska-Grobelny, 2011) and relationship quality (Kuczyńska, 2002). Non-sex-typed individuals present a higher level of indirect self-destructiveness (Tsirigotis et al., 2014).

In the case of proactive strategies, women more often than men use future-oriented coping strategies associated with a social network: emotional support seeking and instrumental support seeking. They also more often use their own social network in order to socialize and open up emotionally, while they also aspire to a greater extent to obtain information and tools as well as find ways of coping with problems than men do. This result corresponds with the research results obtained by Ficková (2009). The remaining strategies – strictly proactive, reflective coping, strategic planning, preventive or avoidance – are used at a similar level. Pursuing new aims in life, creating overall alternative plans and evaluating their effectiveness, drawing up schedules of specific activities oriented towards a particular goal, assessing risk with a view to prevention, as well as distancing oneself from problem situation remain at the similar level, regardless of biological sex. No sex differences in terms of most of the proactive strategies contradict the research findings by Gan and colleagues (2009), who showed that male sex is in general connected with using proactive strategies more often.

Non-sex-typed individuals, compared with sex-typed individuals and androgynous persons, use strictly proactive strategies less often, and also generate new goals associated with the process of self-realization less often. Non-sex-typed individuals also create general alternative activity plans and evaluate individual effectiveness less often than individuals declaring traits attributed to both sexes. This may be due to the fact that these strategies require abilities to rely on one's own well-recognized competence, which may be difficult in this group. Sex-typed individuals less often use their social network in order to open up emotionally and to socialize. They also aspire towards obtaining information and tools as well as finding ways of coping with problems less than androgynous individuals. In Bem's opinion, the androgynous type can function the most effectively because of a broader range of possible behaviours, which allow an individual to easily adapt to changing conditions because such a person is not limited by stereotypical gender roles (Bem, Martyna, & Watson, 1976; Andersen & Bem, 1981). At the same time, this type of individual creates and uses a broader range of coping strategies, including strategies oriented towards future situations.

A moderating impact of biological sex on relationships between some dimensions of identity formation and some proactive strategies was confirmed in our own research. It turned out that biological sex changes the relationship between some variables.

The effect of a moderating role of biological sex concerns the relationship between ruminative exploration and commitment-making, ruminative exploration and a strictly proactive strategy, as well as commitment-making and instrumental support seeking in the male group. Men, who are more engaged to areas relevant to identity development and are making more choices regarding this issue have higher a sense of security and confidence in the context of compliance with plans, life expectations and lifestyles, often in the face of anticipated difficulties when setting themselves autonomous goals and undertaking cognitive and behavioural actions to achieve them. Additionally, men who make more choices regarding the issues important for the development of identity, as well as concerning their own vision of the future in the case of anticipated difficult situations, more often aspire to obtain information and tools as well as find ways of dealing with problems. In our opinion, the obtained results correspond with the concepts of agency and communion (Bakan, 1966; Helgeson 1994, 2003). These orientations refer to a relatively stable differentiation between the ways in which people see themselves, which are also key components of an identity. Agency, which is understood as "a focus on self and on oneself as achieving goals" (Wojciszke, 2010, p. 173), is attributed to men, whereas communion means "a focus on others and on one's relationships with others" (Wojciszke, 2010, p. 173) to women. A task-oriented approach makes men, who are faced with constituting themselves, prepare in a task-oriented manner for possible difficult situations by generating their own resources and seeking information that will be useful when dealing with such situations.

The research also confirmed a moderation role of psychological gender in the relationship between some dimensions of a forming identity and one of the strategies in proactive coping: namely, instrumental support seeking. A moderation effect of psychological gender in the relationship between exploration in breadth, exploration in depth and instrumental support seeking concerns the group of non-sex-typed individuals. A moderation effect of psychological gender concerning the relationship between exploration in depth, ruminative exploration and instrumental support seeking concerns the group of sex-typed individuals. Individuals, who report a few characteristics, which are stereotypically associated with male and female sex, as well as seek their own well-matched lifestyle to a larger extent, are characterized by a greater aspiration to obtain information and tools as well as find ways of dealing with problems in the case of anticipated difficulties. A similar aspiration may be observed in this group in the case of persons making a more meticulous evaluation of their choices. Individuals reporting to have many characteristics, who are stereotypically associated with their biological sex and make a more meticulous evaluation of their choices, are characterized by a greater aspiration to obtain

information and tools as well as find ways of dealing with problems. A similar tendency may be noticed in this group in the case of individuals who tend not to be engaged into areas important for identity formation. The obtained results show that, regardless of whether young people, in terms of characteristics that are stereotypically associated with biological sex, are described as aschematic (undifferentiated individuals) or schematic (sex-typed) when entering adulthood and attempting to constitute themselves, more often cope in a task-oriented manner by trying to create a set of information useful in difficult situations and aspire to obtain informational support from individuals in one's own social network, who are regarded as safe people.

It is worth noticing that biological sex and psychological gender play a significant role as moderators in the context of the relationship between dimensions of identity and coping strategies. As regards the role of various ways of coping, we may observe that young women and men studied in Polish conditions differ in this respect. By taking psychological gender into account, we can treat these findings as information regarding different educational needs, when practising appropriate coping strategies and reinforcing coping competence, or ways to find the best resources available to women and men. According to Laura M. Padila-Walker et al. (2008), apart from risky behaviours and threats associated with the period of emerging adulthood, it is worth underlining prosocial and task-oriented values found in this period of life.

The conducted study has limitations, one of them being a small number of individuals from the population of cross-sex-typed individuals, such that it would be worthwhile to concentrate on this population in further research. It would also be significant to broaden the scope of exploration by verifying a moderation role of psychological gender within the division of biological sex. It would also be worthwhile to expand on analyses by verifying the significance of other socio-demographic variables for the relationship between identity dimensions and proactive coping strategies, and also extend the age group and introduce other variables in the form of reactive coping strategies.

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