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Adolescents' Coping Strategies Influence Their Psychosocial Well-Being

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Aims: Adolescence is a developmental period characterized by many physical, psychological and social transformations, eliciting experiences of emotional arousal that might increase psychopathology risk (e.g. affective and behavioral disorders). The study tested adolescents' use of coping strategies and their psychosocial well-being.
Methods: Participants (N 1060) were Italian students, 14 to 21 years old, attending senior high school or first years of university, who completed a survey. Psychosocial well-being, and its relation to coping strategy use, was assessed by measuring subjective health perception, life satisfaction, positive and negative felt affect, emotional and social loneliness.
Results: Adolescents were found to use the healthier strategies of Seeking social support, Problem Orientation, and Positive attitude more than the less functional strategy of Avoidance; a Transcending Orientation was also not much reported. Preferences for strategy type formed a coherent pattern - e.g., Problem Orientation was positively associated with Positive attitude. Preferences for strategy type were significantly associated to well-being levels in the expected direction. Avoidance was found to be the most important coping strategy, negatively associated with most well-being indicators, e.g. predicting greater Emotional loneliness, and lower perceived Health; vice versa, Seeking social support and Problem solving were associated with lesser Social loneliness and higher levels of Positive affect and Life satisfaction. Although result patterns were quite similar across age groups and sex, some differences were observed.

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Conclusion: Preferences for more or less functional coping strategies impact on well-being, suggesting that a better understanding of these processes in adolescence and early adulthood may help us understand individual differences in mental health and adjustment.

Keywords: Adolescence; coping strategies; psychosocial well-being; Italian adolescents.

1. INTRODUCTION

Adolescence is a crucial life period in which several physical, cognitive, emotional and behavioral changes occur, including attachment-pattern changes that imply changes in emotional experiences about self, parents and peers [1]. Such changes imply frequent new and intense emotional experiences - more so than occurs in other developmental stages [2,3] - that need to be coped with in the best possible way. For instance, adolescents frequently report school-related stressors, including being victims of bullying, as well as interpersonal stressors such as conflicts with parents, siblings, and peers. Such daily stressors are significantly related to psychological symptoms, including increased emotional instability, and a higher frequency of both internalizing (e.g., depression) and externalizing (e.g., antisocial behaviors) disorders) [4,5,6]. Compared with other life stages, we might thus say that adolescence is a period that requires complex adaptation processes in order to adjust, and respond, to the rapidly internal and external environment changes and challenges. In what ways adolescents cope with such changes and challenges is therefore of paramount importance. Indeed, the literature shows that coping difficulties in adolescence are linked with disorders such as depression, anxiety, and problem behavior [2,3,5,6] and that children's and adolescents' coping abilities play a significant moderating role on psychopathology. Recent developments in neuroscience and neurobiology have take away recently pointed out that regulation and coping problems might be related to the fact that prefrontal cortical regions in the brain that support regulatory functions are not yet fully developed during adolescence. As a consequence, motivational reward cues are particularly salient, leading to greater risk of suboptimal choices, i.e., to less effective coping in order to implement goal-oriented behavior [7,8].

We might define coping as the process that concerns the continuous evaluation (or appraisal) of how a stressful event encountered by the person unfolds, given the involved people's mental or behavioral actions - see [9] [10]. The literature, starting with Lazarus' extremely influential analysis of coping, back in the last decades of the XX century [9], has for long time distinguished two main coping types: Problem-focused coping, aimed at changing or altering the source of stress, at doing something to remove or evade the stressor, and emotion-focused coping, aimed at minimizing, reducing the distress associated with the stressor. This distinction has later been questioned as too simple to account for the complexity and multidimensionality of coping, leading to theoretical models that emphasized the need to consider coping strategies less broadly, i.e., analyzing strategies in terms of their functionality and type of process or activity they imply. Finer theoretical distinctions as regards strategy types, and related theoretically-based assessment measures, were therefore introduced, such as distinguishing between actual actions and their effects, and mental ones and their effects - e-g., turning to others to obtain instrumental support, or positively re-interpreting the stressor situation [9]. Other distinctions at the basis of many empirical studies focused on weather coping is functional or not, adaptive or maladaptive, harmful or helpful, based on approaching versus avoiding the stressor, and consisting of voluntary or involuntary responses [3,4,10,11,12].

An important point to consider, furthermore, is that in the last two decades coping has often been discussed in relation to *emotion regulation*. Emotion regulation is a 'younger' construct whose development actually is strictly related, historically, to the long-standing research tradition on coping (see [13,14] for extensive reviews) which originated the mentioned distinction between problem-focused and emotion-focused coping. As coping refers to non-emotional actions aimed at achieving non-emotional goals, as well as to emotional ones, coping is a conceptually broader category than emotion regulation [13]. On the other hand, as coping often refers to strategies that might be conceptualized as emotion-focused (e.g., avoidant thinking, seeking social support, and

re-appraising the importance or meaning of the stressor), it is not surprising that, as a perusal of studies in the last two decades shows, emotion regulation studies and coping studies often overlap at least to some extent as regards the theoretical models they refer to, and the operationalization of their constructs – for reviews and studies that include both constructs see [10,11,12,13]. For instance the "emotion regulation strategies" reviewed by Aldao et al. [15] include *avoidance* and *problem solving*, strategies typically conceptualized and assessed in studies of coping, as well as *reappraisal*, a strategy that refers to re-evaluating the eliciting event and its effects in order to reduce distress, i.e., a mental process, much discussed in the emotion regulation literature [13,14,15], that the coping literature refers to as positive problem orientation, positive attitude, positive reframing, positive refocusing [9,11,16]. When focusing on "cognitive coping", coping is at times actually defined as "an aspect of emotion regulation" [16], This at least partial conceptual overlap between the *coping* and the *emotion regulation* research domains, as well as the great variety of measures assessing coping and/or regulation, measures whose conceptualization and operationalization differ to a varying extent one from the other [3,4,10,11,12,16], imply that the results obtained across studies in the two fields are not easily comparable nor integrated, making it advisable to refer to *specific* aspects of coping, and to specific measures, when discussing coping strategies.

1.1 Aims and Hypotheses

From infancy through early adulthood, the preference for this or that coping strategy is likely to change as a function of individual experiences with, and knowledge about, the likely outcome of this or that strategy – e.g., recurring to social support or employing a problem-solving approach. Since we might hypothesize that adolescence is a very crucial period in the development and maturation of coping strategies, the analysis of such strategies may help us better understand individual differences in psychosocial well-being and adjustment [3], the onset of psychosocial difficulties and psychopathology development [15,16,17,18,19], and, in the end, may help us prevent problems linked with the use of dysfunctional coping (and/or regulation) strategies in adulthood.

The present study[1] – part of a larger research project on adolescents' and adults' emotional competences, in relation to a variety of socio-demographic and personal traits, and to well-being (see [20,21,22,23] for details on methods and results with regard to specific issues) aimed to contribute to a better understanding of which coping strategies adolescents use and with what frequency, i.e., to test to what extent adolescents prefer this or that coping strategy. The study also aimed to test whether coping-strategies preferences are associated with psychosocial well-being and functioning in adolescence.

Although the adolescence period might be strictly defined as encompassing the 13-18 years age span, studies on 'adolescents' typically show much variability in the *age span* of participants so defined, and as regards what specific age groups are considered - e.g., 'adolescents' might be as young as 12 years [3], or 11 years [11]; studies might include or focus only on two age points during adolescence (e.g., 12 and 17 years [3]) or assess only the younger age brackets (e.g., 8 to 14yrs [4]; 12 to 16 years [16]; 9 to 14 years [12]). To achieve its aims, this study considered the entire age span from 14 years to the end of the 21st year, i.e., assessing 'true adolescents' (13-18 years) as well as the life period (19-21 years) that might be referred to as late adolescence, or very young or early adulthood.

As regards *coping*, to achieve the study aims, it was thought it advisable to measure preferences for a *variety* of coping strategies, and employ a measure that had been frequently used in the literature as well as validated for Italian participants. Coping strategies were thus assessed using the well-known questionnaire COPE [9], in its Italian version, named COPE-NVI, validated with a large samples of young adults [24]. The COPE measure, in its original form, or in shorter, revised and partial versions, has been employed in many studies, with participants of various nationalities [12,25,26] [27], making it more feasible to compare results across studies.

[1] *Partial results of the study were presented at the 10th International Conference on Education and New Learning Technologies, 2-4 July, 2018, Palma (Spain). A draft version of this manuscript was published in the conference proceedings. Link: - https://library.iated.org/view/ZAMMUNER2018COP*

The Italian COPE-NVI version assesses five main dimensions or types of strategies, each including two or more of the 15 coping strategies originally discussed by Carver et al. [9], as detailed in the following. *Seeking social support*, both for instrumental reasons (seeking advice, assistance, or information) and for emotional reasons (getting moral support), as in "I try to get advice from someone about what to do", and "I try to get emotional support from friends or relatives"; *Avoidance*, that includes denial (denying the presence of the stress), and behavioral and mental disengagement (i.e., reducing one's effort to deal with the stressor and distracting from thinking about the problem), as in "I say to myself 'This isn't real' ", "I try to loose myself for a while by drinking alcohol or taking drugs", and "I act as though it hasn't even happened"; *Problem-solving orientation*, that assesses active coping (i.e., taking steps to circumvent the stressor), planning (thinking about how to cope with the stressor), and suppression of competing activities (i.e., avoiding to be distracted by other things), as in "I put aside other activities in order to concentrate on this", and "I think hard about what steps to take"; *Positive attitude,* i.e., a positive reinterpretation of the event and its consequences, a dimension that includes positive reinterpretation and growth (i.e., construing a stressful event in positive terms), and restraint (i.e., waiting for an appropriate opportunity to occur), as in "I try to see it in a different light, to make it seem more positive" and "I hold off doing anything about it until the situation permits"; finally, *Transcending Orientation,* that includes turning to religion and humor, as in "I try to find comfort in my religion" and "I make fun of the situation". In this study, typical or dispositional ways of coping were assessed, i.e., adolescents were asked to report "what you generally do", "how you generally feel", though it was explicitly acknowledged in the instructions that they might react somewhat differently in this or that specific context or situation. As discussed above, some or many of these strategy types were examined in previous studies on coping and/or emotion regulation, with samples that included participants in the pre-adolescent, adolescent and young adulthood age-span, namely from about 11-12 years of age to about 23 years of age.

On the assumption that *well-being* is the result of a variety of factors, each uniquely contributing to experienced well-being level in terms of psychological and social functioning, the study deemed it necessary to assess subjective perceptions on several variables that the literature indicates as being related to well-being. To obtain reliable measures of well-being, the study thus employed a broad, extensive set of valid psycho-social health indicators (see also the Methodology section). More specifically the study assessed the following well-being factors.

Felt affect, i.e., subjective reports of felt positive and negative emotions, is perhaps the most crucial indicator of well-being, tested in almost any study of it, and in many studies of coping - e.g., [3,13,15,18]. On the basis of reported findings in the literature, we might for instance expect that successfully coping with a stressor, such as asking for, and obtaining, social support, will induce positive affect, whereas a coping failure, such as simply avoiding the problem at hand, will intensify negative affect or at the very least not help reduce its intensity. The literature moreover shows that frequent or prolonged negative affect (e.g., anger, anxiety, sadness), as well as maladaptive emotion regulation and coping strategies (such as suppression of negative feelings, rather than attempts at modifying those feelings, for instance by re-appraising the eliciting event, or attempting to solve the problem) may lead to depression or other psychological and behavioral problems – e.g., [12,14,15,16,18]. As a very large literature on emotion experiences shows - e.g., [2,13,14,15] - well-being is expected to be associated with a greater frequency of positive affect, and a lower frequency of negative affect.

As social relationships are at the core of our life, i.e., we all need, and desire, to feel integrated in a net of subjectively meaningful relationships, *felt loneliness* is another very important indicator of well-being, as shown by many studies – [28] [29,30,31]. Loneliness has often been assessed as a cause (but also as the result) of psychological problems, such as depression [26] and addicted behaviors, including internet use and alcohol use [32,33,34]. Not surprisingly, the association of loneliness with coping strategies has been much studied, especially in relation to the strategy of seeking social and emotional support [28-33]. The extent to which an adolescent will feel lonely is likely to be related to the social support – from his/her family, or friends and peers - s/he has experienced when turning to others to obtain support. Indeed, a large longitudinal study [34] found that the

probability of feeling social and emotional loneliness in young adulthood is lesser if, as adolescents, people had a supportive family - as assessed by items such as 'I can rely on my family when I need help or advice' - that offered the sought help or advice. Past experience, in turn, is likely to influence whether or how often the adolescent will seek social support as a coping strategy. In this study both social and emotional loneliness were assessed, as they represent important and conceptually distinct dimensions of loneliness, referring to the different personal needs that different kinds of relationships might satisfy: emotional loneliness is related to the absence of desired intimate interpersonal relationships (with family members, friends, or peers), whereas social loneliness is associated with the absence of a personally relevant social network to which one can turn for support or advice – e.g., [29,35].

Well-being might furthermore be defined by how a person *perceives* her *psychological health*, that is, by what impressions she has about her psychological, social and physical functioning. Such perceptions might even be more important than actual health as objectively measured, as indicated especially by studies on old age people that show that an important predictor of depression, and even of mortality rates is, for instance, loneliness [29,36,37]. As depression – a mental health disorder - is an important predictor of a variety of behavioral, physical and psychological problems (e.g., alcohol abuse, hypertension, poor sleep, and frequent negative affect), very many studies, as we discussed also earlier on, have been conducted to develop models, and related measures, that try and assess depression, and its correlates, in specific segments of the population, such as the adolescent [28,3,11] and the old aged [37,38], as well the general population [39]. A measure that has been used in very many studies as a diagnostic criterion of current mental wellbeing (and therefore useful to assess likelihood of depressive symptoms) is the General Health Questionnaire (GHQ) [40], a 60-item test, focusing on breaks in normal functioning, extensively validated with adults in very many countries – e.g., [39]. Since its development, shorter, abridged forms have been developed, including the 12-item GHQ, a measure that has been used and validated both with adults and adolescents [39,41,42]. The 12-item GHQ was thus selected in the present study to assess current psychological health.

Finally, an important indicator of subjective well-being might be how people evaluate their lives, from an emotional and cognitive viewpoint, i.e., how happy and fulfilled they feel with it. Such judgement might focus on a short- or long-time period, and focus on a specific life domain, such as one's social network, one's work or school, one's financial situation, or may concern one's life as a whole. Much research has been carried out to assess subjective well-being, not only in terms of socio-demographic characteristics that correlate with it, but, following a greater recognition of the role played by people's goals, coping efforts, and dispositions, especially in the attempt to understand what processes underlie it [43]. Emotional responses – e.g., positive versus negative affect - typically constitute a component of subjective well-being, as much as cognitive evaluations [44]. In this study subjective well-being was measured by asking participants for a global judgement of the extent to which they are happy with their life, using the well known *Life satisfaction* scale [45], consisting of five items, a scale used with adolescents too – e.g., [46,47]. The items express global rather than specific subjective evaluations, allowing us to obtain a global judgement of life quality focusing on the cognitive component of subjective well-being.

Hypotheses: The main hypotheses of the study, based on the reviewed literature, were the following.

1. Coping preferences would be generally reflected in well-being levels. However, the association between well-being and coping strategies was expected to vary according to which *specific* strategy and which specific well-being aspect was considered. To exemplify, seeking social-support (and obtaining it) might be associated with greater positive affect, with lesser emotional and/or social loneliness, but not necessarily with a lesser frequency of negative affect nor with greater life satisfaction. Avoidance might imply feeling better, i.e., temporarily restoring positive affect, though it may not lessen intensity of negative affect. Being able to have a positive attitude, i.e., to reappraise the event, might be related to greater positive affect, and perhaps to greater life satisfaction. This complex-association hypothesis is in line with the results and interpretations offered especially in recent literature reviews [10,15] that show that different strategies have a different weight, and role, in explaining this or that psychological problem or

disorder. For instance, avoidance is significantly positively related to anxiety and depression, but not to substance use; re-appraisal typically has significant but small-size negative associations with anxiety and depression [15]. Moreover, a complex association of coping with well-being was expected because (a) strategies might differ in the extent to which they are perceived as adaptive, functional to cope with a specific situation given adolescents' goals either in general or in that specific context; for instance, turning to humor might better fit an adolescent's goals if s/he is concerned with her public image in that context, or in general; (b) in relation to a given stressor, adolescents might cope using more than one strategy, such as a problem-solving orientation coupled with humor or seeking social support.

2. Coping preferences would change with age, from early adolescence to late adolescence and young adulthood, becoming better suited to deal with challenges and problems. As mentioned earlier, we might expect that growing up implies being able to rely upon a greater variety of personal stress-and-coping experiences, including indirect ones such as those the adolescent might observe in peers and in adults, or even in movies, leading to a repertoire of strategies that are possibly well mastered - i.e., the adolescent knows by experience what strategy to use in a given situation to obtain a desired goal. However, it has to be acknowledged that personal characteristics, such as personality, predominant goals, or types of personal experiences related to his/her history [11,26,48,49], might confound age-related findings.

3. Gender differences were expected, with girls and young women preferring more than boys and young men strategies that build on interpersonal relationships, such as seeking social support, and boys and young men preferring more than girls and young women strategies that build on power and agency, such as a problem-solving orientation [4,50]. Furthermore, if females focus more on the event, from a cognitive and emotional viewpoint, than males do, for instance by engaging more frequently in rumination, but also in re-appraisal, whereas males might suppress their emotional reactions to the event and react by means of 'distancing' themselves from it more than females do - as findings in the literature suggest [4,25,50] - we might expect gender differences to occur in the coping strategies of Avoidance, Transcendent orientation and Positive attitude too. Gender differences might be found to the extent that stereotypical gender norms and roles have been learned through socialization processes and have been internalized by the adolescent (the extent to which such gender stereotypes characterized the sample was not however directly assessed in this study).

2. METHODOLOGY

2.1 Participants and Procedure

Participants were 1060 (61,4 females) Italian students of senior high-school (attending various school types, mostly lyceums: 68.6%) and university (18 to 21 year-old) who answered a survey (that included other measures not considered in this study; e.g., [23]). The survey was in a pen-and-pencil format for the earlier-collected data (2010) with some of the adolescent groups, i.e., those who answered it in their school classrooms, and was in an online format for all university students and for the adolescent groups who were tested in a successive collection period (2011). The survey, in either format, was completed on average in about forty minutes. All participants were assured of the confidentiality of their answers. Participants were recruited through schools, thanks to school masters' and parents' agreement, and at university classes, as well as via a University of Padova site that included an online description of, and advertisement for, the mentioned research project on emotional competences, and an invitation to participate with instructions on how to do so. High-school participants were briefly presented the study during school time, in their classroom setting, and completed the survey, on a voluntary basis, either in their classroom at school (the pen-and-pencil version), or using school computers in their free time from school activities. All the participants who had completed the online survey were returned a short individual online report about how their results in various measures compared with the overall peer-sample means.

As regards more specific sample characteristics, of the 1060 participants, 64,2% were attending a senior high school, 30,6% attended the university; for 7,5% this info was missing. The age of senior high school students ranged from 14 to 21 years, with 14 yr.-old attending mostly grade 1 (68,9% of class 1 students), 15 yr.-old attending mostly grade 2 (62,0% of class 2

students), 16 yr.-old attending mostly grade 3 (72,9%), 17 and 18 yr.-old attending mostly grade 4 (respectively 59,3% and 29,3%) and finally grade 5 being attended by mostly 18 and 19 yr.-old (respectively 63% and 27,2%). The large age range (i.e., 18 to 21 years) that characterized the oldest students in the high-school sample motivated the inclusion in the study sample of young university students too (who had participated in the above-mentioned larger research project - e.g. [23]) provided their age was 21 years and 11 months at most - all participants had to report their age in years and months. The inclusion of young university students in the sample allowed to more adequately measure age-related coping preferences and well-being also in late adolescence and young adulthood.

To better analyze age-related differences in relation to sufficiently large samples for each age group, after a careful inspection of reported age in years and months, participants were classified into *five age groups* (see Table 1) on the basis of a re-coding of their reported age as follows: Early adolescence: 14 to 15,6 years (N=145; 11,5% of all males); two Middle adolescence groups: 15,7 to 17 years, and 17,1 to 18,6; Late adolescence: 18,7 to 20 years; Young adulthood: 20,1 to 22,0 years (i.e., including participants who at most were at the end of their 21st year).

2.2 Measures

To assess coping strategies on the one hand, and well-being on the other hand, the following measures were employed, all reliable ones, used in several studies in the literature, as mentioned above, including many studies with Italian young adults [20-23,29,51]. The reliability values obtained in this study for each employed measure are reported in Table 2. Other reliability and validity data obtained in previous studies, as well as details on aspects such as the factorial structure of each measure, are given in the references supplied for each measure below, and in those quoted in the previous Aims section that briefly discussed the rationale for selecting each measure.

Coping: Coping strategies were assessed with COPE (Coping Orientation to the Problems Experienced [9], using the Italian Version COPE-NIV [24] that represents an improvement of a previous Italian version). COPE-NIV is composed of 60 self-report items – to be answered using a 4-point scale ranging from 1, "I don't usually do it", to 4, "I do it almost always" - subdivided into five subscales that measure distinct, clearly focused aspects of coping: Seeking social-support, Avoidance, Problem-orientation (i.e. problem-solving), Positive-attitude, and Transcending Orientation (i.e.,Turning to religion and humor).

Psycho-social Well-being: Well-being is a complex construct, and as such it may be operationalized in a variety of ways that focus on different aspects of it, from presence or absence of psychological symptoms (such as distress or depression), to nature of experienced emotions (e.g., frequency of positive *versus* negative moods), to feelings of social integration, to subjective assessments of the quality of one's own life. The study assessed well-being with reference to four main aspects of well-being, measured by four self-report scales that included six subscales in total, i.e., six distinct psychological constructs. Participants' scores were averaged over each subscale - see [23].

Table 1. Frequency of males and females in 5 age groups, defined by years and months

Age group in years and months		% M	% F	N Total	% Total
	Years, months				
1	14,0 -15,6	11,5	15,1	145	13,7
2	15,7 -17,0	13,0	14,7	149	14,1
3	17,1 -18,6	32,5	20,4	266	25,1
4	18,7 - 20,0	21,0	20,0	216	20,4
5	20,1 - 22,0	22,0	29,8	284	26,8
Total		409	651	1060	100

Table 2. Alpha scores and mean ratings on coping and well-being measures

	N	Standardized cronbach alpha	Maximum score	Mean	*sd*
C-Avoidance	950	,866	4,00	1,61	0,43
C-Social support	951	,894	4,00	2,63	0,64
C-Positive Attitude	949	,777	5,17	2,51	0,49
C-Problem Orientation	949	,863	4,00	2,60	0,55
C-Transcendent Orientation	948	,793	3,75	1,70	0,57
GHQ_Psychological Health	1010	,859	5,00	3,08	0,95
Life satisfaction	1038	,847	5,00	2,67	1,08
A-Positive emotions	1058	,765	5,00	3,25	0,96
A-Negative emotions	1058	,768	5,00	2,26	0,87
L-Social support	1039	,898	5,00	3,55	1,22
L-Emotional	1039	,841	5,00	1,53	1,15\

Legend: Subscales: C: Coping; A: Affect; L: Loneliness

Affect, that is, the nature and quality of emotion experiences, was investigated with the Positive and Negative Affect scale - PNA [44,51] - a bi-dimensional measure, i.e., it assesses positive and negative affect as distinct dimensions. Participants reported the frequency with which, *in the last 15 days*, they felt each of 14 positive and negative emotions, such as joy, pride, sadness, anger. Response options were on a 6-point scale, from "never" to "very often".

Loneliness was measured with an 11-item scale [52,29] assessing perception of two dimensions of loneliness, i.e., *Emotional* and *Social loneliness,* as in *"* I experience a general sense of emptiness", and "And I can call on my friends whenever I need them", answered on a 6-point scale, from "false of myself" to "true of myself". Given that the 5 items assessing Social loneliness are phrased positively, as in the quoted example and in "There are enough people that I feel close to", *scores actually indicate perception of social support,* i.e., lack of social loneliness. Both scale dimensions correlate well with another, much used measure of 'general' loneliness, i.e., the UCLA [29].

Psychological health was measured by the *General health questionnaire* (GHQ) using the 12-item version GHQ-12, that evaluated participants' subjective perception of their health. The scale [40,42,51,53] assesses participants' inability to carry out normal daily activities, to cope with everyday problems, and measures general dysphoria, anxiety and depression. It does so by asking whether the person has experienced certain symptoms or behaviors recently – as in "Have you been feeling reasonably happy?" or "Have you felt you could not overcome your difficulties?". In this study responses were given on a 6-point scale, "from not at all" to "much", and participants were asked to think how they felt in *the last 15 days.* To make the reading of results more immediate, i.e., congruent with the term 'health', in this study item responses were reversed *when the item expressed a negative state* - as in 'I continually felt under pressure' (rather than reversing the items expressing a positive state, as is typically done - e.g., [42]). Therefore, in the results here reported obtained mean *low* scores in the scale indicate low health and high scores denote good health.

Life satisfaction was assessed using the very well-known 5-item Life Satisfaction scale - LSS [45,46,47,51] with 6-point options ranging from "false of myself" to "true of myself". Items include "My life conditions are excellent" and "In most ways my life is close to my ideal".

2.3 Statistical Analyses

Descriptive and reliability analyses were performed for all subscales for the total sample, and for gender and age sub-samples. Gender and age differences in using coping strategies were tested by means of MANOVAs and ANOVAs. Zero-order and partial correlations, controlling for either gender or age, explored the relationships between coping and well-being variables - positive and negative felt affect, life satisfaction, emotional and social loneliness, and psychological health. Expected relationships among the tested variables were finally assessed in linear regression analyses, with each well-being outcome as a dependent variable in turn, controlling for gender and age effects, with gender and age categories entered

in the first step of the regression, and coping strategies added in the second step.

3. RESULTS AND DISCUSSION

The following sections report the main results[2] that were obtained in the various analysis types that were performed on participants' ratings of the mentioned variables.

3.1 Adolescents' and Young Adults' Coping and Well-being: An Overall View

Mean ratings obtained by the sample are reported in Table 2, together with Cronbach alpha values for each measure. The results showed that the employed measures are valid ones, i.e., obtained Alpha values were in the range of .77-.90. Participants' ratings on the tested measures indicated that the sample is overall a healthy one, in terms both of coping preferences and well-being indicators. The results in fact showed that adolescents reported using the healthier strategies of seeking Social support, adopting a Problem Orientation and employing a Positive attitude more often than the less functional strategies of Avoidance and turning to a Transcending Orientation, i.e., to religion or humor. As regards well-being, participants similarly reported a relatively high level of perceiving that social support is available to them (i.e., not suffering from social loneliness), relatively frequent positive emotions (e.g., joy, pride, affection), and a sufficient to medium level of psychological health - as measured by the GHQ-12. Coherently with the just reported wellbeing-indicators results, negative emotion feelings (e.g., sadness, anger, shame, stress), as well as emotional loneliness, were reported somewhat infrequently.

Table 3 reports the degree of association (Pearson's *r*) of the coping strategies with each other (5 top rows), and the association of coping with the well-being indicators (6 bottom rows). The correlation values between the five coping show that coping strategies are all significantly and positively associated with each other, but the strongest associations are between Avoidance and Transcending Orientation on the one hand, a result that seems to confirm that turning to religion and humor is not likely to be a form of adaptive coping, and between Problem Orientation and both Positive attitude and Social support on the other hand. These results seem to indicate that coping patterns form coherent patterns.

As regards to what extent coping is associated with well-being, the obtained association values reported in Table 3 overall indicated that coping strategies are reflected in well-being indicators, as hypothesized. The strongest observed relationships were the following. Avoidance was negatively associated with GHQ-Psychological Health, and was positively related with Negative emotions and Emotional Loneliness, confirming that it is a form of maladaptive coping, as suggested by most earlier-quoted studies. Problem Orientation, instead, was positively associated with all positive indicators of well-being, whereas it was not associated at all with the negative indicators, i.e., Negative emotions and Emotional Loneliness, a result that seems to underlie that hedonically positive and negative feelings are quite distinct dimensions that might be unrelated to each other, do not exclude each other. A similar pattern of associations characterized seeking Social support, significantly associated with all wellbeing indicators, but especially with the *absence of feelings of social loneliness*, i.e., the subjective perception of not suffering from loneliness from a social viewpoint, the L-Social support indicator. Finally, both the Transcendent Orientation and the Positive Attitude strategies were significantly and positively related to the positive indicators of wellbeing, but had low association values. The hypothesis that association between preference for coping strategies and well-being indicators tends to vary according to which coping strategy we consider and which well-being indicator was thus overall supported.

3.2 Coping and Well-being as a Function of Age and Sex

To test whether coping and wellbeing differed in males and females at different ages, that is, whether there were differences associated with age and sex groups, two MANOVAs were performed respectively on Coping and on Wellbeing, with Age (5 age groups) and Sex as between-subject variables, and respectively Coping (5 strategies), and Well-being (6 measures) as within-subject factors. The

[2] *The probability level P of results is reported using superscripts, as follows: P: [a] = 0,001, [b] =0,01, [c] =0,05.*

obtained results were later further analyzed in two sets of ANOVAs.

Coping: The MANOVA results showed a significant multivariate effect for Coping (F 703,82[a], df 4, 935), as well as for the interactions Coping by Age (F 3,34[a], df 16, 3752), Coping by Sex (F 4,23[a], df 4, 935), and Coping by Age by Sex (F 4,24[a], df 4, 935). No between-subject main effects were significant. The strong multivariate effect of Coping is of course related to the mean ratings obtained for each coping strategy (see Table 2), that showed, as previously reported, that Avoidance and Transcendent Orientation were used by the sample significantly less frequently than the other three coping strategies.

In the results obtained in a series of ANOVAs on coping strategies, with Age (5 age groups) as between-subject variable, and Sex as a covariate, a few group differences emerged. Specifically, Age was significant for three out of five coping strategies, namely, Avoidance (F 3,21[b], df 4, 942), Problem Orientation (F 4,41[c], df 4, 942), and Transcendent Orientation (F 5,15[a], df 1, 942). Inspection of mean ratings in relation to Age showed that: males' greater use of Avoidance (the significant interaction Coping by Age by Sex) occurred especially from 17 years onward; preference for Problem Orientation was lowest at 17-18,6 years of age, and highest in the oldest age group, i.e., the young adults; preference for Transcendent Orientation was instead highest in the youngest age group, and lowest in the young adults. Overall the results support the hypothesis that coping preferences tend to change as the adolescent grows.

As regards sex differences in coping, ANOVA results showed that Sex was significant for Avoidance (F 11,44[a], df 1, 942), higher in males than females, and for seeking Social support (F 7,85[b], df 1, 942), higher in females. Thus the results overall confirmed the hypothesis that males and females might differ in their coping preferences.

Well-being: The MANOVA results on Well-being (6 measures) as a multivariate within-subject factor, and Age (5 age groups) and Sex as between-subject variables, showed a significant multivariate effect for Wellbeing (F 236,05[a], df 5, 994), as well as for the Well-being by Age multivariate interaction (F 2,61[a], df 20, 3988). Sex obtained a marginally significant effect only (F 2,99, *P* = ,08, df 1, 998), with males overall reporting higher well-being ratings than females. Finally, a significant between-subject effect was obtained for the Age by Sex interaction (F 3,07[b], df 4, 998). As it was the case for Coping results, the significant large multivariate effect for well-being was due to, and already evident in, the mean ratings obtained for each well-being indicator (Table 2): as we saw earlier, Negative emotions and Emotional loneliness, two indicators of *ill-being,* were in fact reported by the sample significantly less frequently than all remaining and positive well-being measures. Inspection of mean ratings in relation to the Age by Sex interaction showed that sex differences were significantly larger only in the 15,6-17,0 age bracket in comparison to all other age groups, with boys reporting higher scores than girls. In other words, the marginally significant multivariate Sex effect, with males characterized by higher well-being ratings than females, was actually due to this specific age group.

The results obtained in the performed ANOVAs, with Age (5 age groups) as between-subject variable, and Sex as a covariate, showed a few significant age differences in well-being. Specifically, Age was significant for the following indicators: GHQ-Psychological health (F 9,20[a], df 4, 1002), lowest in the three 'middle' age groups, i.e., from 15,7 to 20 years; similarly to GHQ-Psychological health, Life satisfaction (F 3,29[c], df 4, 1002) was highest in the two extreme age groups, i.e., at 14-15,06 and 20-21 years; finally, L-Social support (F 3,11[b], df 4, 1002) increased from 14 years to 18,06, then dropped somewhat at 18,7-20, to increase again in the oldest group.

Do coping preferences predict well-being? : As earlier stated, relationships among the tested variables were assessed in linear regression analyses, with each well-being outcome as a dependent variable in turn, controlling for gender and age effects, entering gender and age categories in the first step of the regression, and adding coping strategies in the second step. The main results - Standardized Beta coefficients, and explained variance (R^2) - of the final linear regression models (all significant at *P* = .000) of coping strategies in relation to well-being variables are reported in Table 4.

The results showed that Sex and Age are quite irrelevant in well-being prediction - the exception being a weak role of sex in explaining Life

Table 3. Correlations of coping and well-being measures (controlling for age)

	1. C	2. C	3. C	4. C	5. C
1. C-Avoidance	1	,503[a]	,292[a]	,115[a]	,203[a]
2. C-Transcendent Orient.	,503[a]	1	,296[a]	,212[a]	,206[a]
3. C-Positive Attitude	,292[a]	,296[a]	1	,613[a]	,352[a]
4. C-Problem Orient.	,115[a]	,212[a]	,613[a]	1	,402[a]
5. C-Social support	,203[a]	,206[a]	,352[a]	,402[a]	1
6. GHQ-Psychol. Health	-,189[a]	,034	,084[a]	,142[a]	-,041
7. Life satisfaction	-,076[b]	,108[a]	,154[a]	,215[a]	,141[a]
8. L-Social support	-,029	,100[a]	,171[a]	,171[a]	,369[a]
9. A-Positive emotions	-,040	,112[a]	,123[a]	,172[a]	,149[a]
10. A-Negative emotions	,131[a]	-,008	-,039	-,015	,113[a]
11. L-Emotional	,168[a]	-,007	-,002	-,024	-,085[a]

Legend. P: [a] = 0,01, [b] =0,05.

Due to missing values, N varied across measures: COPING N= 948 to 950; WELLBEING N= 1009 to 1058

Table 4. Final linear regression models of coping strategies. Standardized beta coefficients, and explained variance (R^2) in relation to well-being variables

	GHQ psych. health	Positive affect	Life satisfact.	L-Social support	L-Emot. lonelin.	Negative affect
	B	B	B	B	B	B
Sex[a]	-.02	.03	-.07[c]	-.05	.04	.02
Age[b]	.03	.01	-.02	-.03	.03	.05
C-Avoidance	-.28[a]	-.15[a]	-.21[a]	-.18[a]	.26[a]	.19[a]
C-Social support	-.09[b]	.10[b]	.08[c]	.37[a]	-.12[b]	.13[a]
C-Positive Attitude	.07	.03	.05	.08[c]	-.02	-.11[b]
C-Problem Orientation	.14[a]	.10[c]	.14[a]	-.03	.03	-.00
C-Transcendent Orient.	.14[a]	.14[a]	.14[a]	.09[b]	-.11[b]	-.09[b]
R^2	,091	.059	.085	.162	.056	.046

Legend : P: [a] = 0,001, [b] =0,01, [c] =0,05 .

[a] Gender categories were: (1) male; (2) female; [b] Age categories were 5, from (1) 14-15,6 years to (5) 20-22 years (see Table 1).

satisfaction. As regards the coping strategies, the results indicated that Avoidance, Transcendent Orientation, seeking Social support, and Problem Orientation were, in decreasing order of importance considering their Beta weights in relation to each well-being indicator, quite crucial in predicting well-being. Somewhat surprisingly, Problem Orientation was not one of the strategies most strongly predictive of well-being. The Positive attitude strategy was generally irrelevant, with the exception of its small role (in term of its Beta weight) in protecting from feeling Negative emotions, and in not feeling Socially alone.

Perhaps of greater importance, the results showed that preferences for this or that specific coping strategies explained this or that well-being indicator more than it explained other well-being aspects, as it was hypothesized, and conversely showed that each well-being aspect is explained to a greater or lesser extent by preferences for coping strategies. Notably, the results showed a very important role of coping strategies in the perception of Social loneliness (16% variance explained), especially in terms of employing the active seeking-Social-support strategy, in the perception of one's own Psychological Health (9% variance explained), with Avoidance as the most important (negative) predictor, and Problem orientation and Transcendent Orientation as less important positive predictors; finally, Life satisfaction (9% variance explained) again predicted first of all (negatively) by avoidance, and by Problem orientation and Transcendent Orientation. Preferences for coping strategies, though significant predictors, do not overall contribute much to explaining Positive affect, Negative affect and Emotional loneliness (about 5% variance explained) - although specific coping strategies are important predictors of these well-being aspects.

4. CONCLUSION

The reported study aimed to assess adolescents' usage and preference for various coping strategies, and to obtain a better understanding of whether coping preferences are associated with psycho-social well-being, as measured by a broad, extensive set of psychosocial health indicators. The results that were reported in the previous sections on the whole supported the study hypotheses.

To briefly summarize the study results, the sample of adolescents overall was characterized by adaptive, functional coping preferences (as measured by the frequency with which a given strategy is employed) more than by dysfunctional ones. That is, adolescents on average reported using the healthier strategies of seeking Social support, adopting a Problem Orientation and employing a Positive attitude more often than the strategies of Avoidance and turning to a Transcending Orientation, i.e., to religion or humor (Table 2). As regards well-being, adolescents reported infrequently suffering from social loneliness, and reported relatively frequent positive emotions and a medium level of psychological health. Coherently with these wellbeing-indicators results, they reported somewhat infrequent feelings of negative emotions (e.g., sadness, anger) and emotional loneliness (Table 2). Thus, the tested adolescent and young-adult sample is overall a healthy one, in terms both of coping preferences and well-being indicators.

An important study hypothesis was that *coping preferences change with time*. That is, it was expected that preferences would become better suited, from early adolescence to late adolescence and young adulthood, to deal with challenges and problems the person faces - e.g., Avoidance was expected to decrease with age, Problem Orientation to increase. The age factor was indeed significant for three out of five coping strategies, namely, Avoidance, Problem Orientation and Transcendent Orientation. However, the picture that emerged as regards age differences in coping preferences is complex: age-related preference trends were typically not-linear ones, and varied according to which specific strategy was considered. The results in fact showed that Avoidance (characterizing males more than females) actually increased from 17 years of age, and at older ages; preference for Problem Orientation was lowest in the middle-adolescence group (17-18,6 years of age), whereas its peak was highest in the oldest age group, i.e., the young adults; the preference for Transcendent Orientation was *vice versa* highest in the youngest age group (14-15,6 years), and lowest in the young adults. In sum, the results overall support the hypothesis that coping preferences *do change* as adolescents grow. However, observed changes did *not* follow, as expected, a *linear* trend as a function of an increase in age, with older participants preferring functional, adaptive coping strategies and abandoning the dysfunctional ones - as indicated by the co-occurrent preference in late adolescence and young adulthood for Problem Orientation on the one hand, a functional strategy, and Avoidance (sometimes coupled with Transcendent Orientation) on the other hand - both dysfunctional reactions. The results also indicate that older adolescents and young adults, who have at their disposal a good repertoire of coping strategies, still face much uncertainty in how to best cope.

The obtained results seem also to suggest that age-related changes in coping might be best understood considering on the one hand the *specific context* (situation, problem) an adolescent faces and has to respond to, and on the other hand the *repertoire of coping strategies* he/she can rely on at a given moment in his/her developmental history - thus including his/her experience with (and thus knowledge of) the outcome(s) that the usage of a given strategy had in the past. To illustrate, an adolescent faced with problem *Px* might use strategy A at time *t1* in his/her development, because that is a well-mastered strategy, but maybe use strategy B at time *t2* because meanwhile his/her mastery of alternative coping experiences has grown. Or, the adolescent might use *both* strategies A and B faced with problem *Py* at time *t1*, provided he/she already masters such strategies and his/her experience with them is positive. In other words the results suggest, I believe, that to really understand coping preferences in relation to development we need to rely on more complex hypotheses, i.e., on hypotheses that take into account both the *context* of strategy-use, and the *personal developmental history,* using appropriate methods. Indeed, a limit of this study (and of many similar ones in the literature) is that strategy use is assessed in a vacuum, rather than in real contexts, or, to the very least, in relation to specified contexts – as happens with studies that use a scenario method, such as [50]

- and relying on self-reports. In sum, future studies are likely to better assess and understand age trends if strategy knowledge and use are measured in more ecologically valid manners.

As regards *well-being,* the results showed that, as mentioned above, the tested sample overall reported feeling well, as assessed by various indicators - affect, loneliness, psychological health, life satisfaction; Negative affect and Emotional loneliness, two indicators of *ill-being,* were reported significantly less frequently than the positive well-being measures (Table 2). The analyses of variance results showed a few significant age differences in well-being. Specifically, Psychological health (the GHQ-12 indicator) and Life satisfaction were lowest in the three 'middle' age-groups, i.e., from 15,7 to 20 years, whereas L-Social support increased from the youngest age (14 to 15,6 years) to late middle adolescence (up to 18,06 years), to decrease somewhat at 18,7-20 years, and to increase again in the oldest group. The analyses of variance results also showed that males overall reported higher well-being ratings than females, but the sex difference was significantly larger only in the 15,6-17,0 age bracket in comparison to all other age groups, i.e., it was actually due to this specific age group. In sum, well-being levels significantly varied according to age for three of the six well-being indicators, whereas sex in general did not really differentiate the reported well-being.

These results overall seem to indicate that the middle-adolescence period is the most problematic one in terms of how adolescents feel.

As regards the *relationship between well-being and coping preferences*, the correlational data, as well as the regression analyses results (Tables 3 and 4), showed that coping preferences are, overall, related to the well-being levels adolescents experience, thus supporting the main hypothesis that coping preferences are reflected in young people' well-being.

The correlational results about the extent to which coping strategies are associated with well-being indicators on the whole confirmed the nature - adaptive *vs.* maladaptive - of the measured coping strategies, as detailed in the following. Avoidance, negatively associated with Psychological Health, and positively related with Negative affect and Emotional Loneliness, is clearly a form of maladaptive coping, as suggested by most earlier-quoted studies too. Problem Orientation, as well as seeking Social support, instead, are adaptive, functional strategies, as confirmed by their observed positive associations with all positive well-being indicators. Finally, both Transcendent Orientation and Positive Attitude were found to be adaptive strategies since they were positively related to positive indicators of wellbeing, although with low association values.

The regression analyses results, mostly confirming correlational data, indicated that Avoidance, Transcendent Orientation, seeking Social support, and Problem Orientation, in decreasing order of importance considering their Beta weights in relation to each well-being indicator, were quite crucial in predicting well-being. The Positive attitude strategy was generally irrelevant, with the exception of its small role (in term of its Beta weight) in protecting from feeling Negative emotions, and in not feeling Socially alone.

More specifically, the regression analyses results showed that coping preferences are *differentially* associated with well-being. That is, each specific coping strategy is significantly associated especially with a specific aspect of well-being, and/or its predictor weight varies across well-being aspects. Regression results showed in fact that Avoidance, as a negative predictor, and seeking Social support and Problem Orientation as positive predictors, significantly associated with, and predicted, most or all well-being indicators - somewhat surprisingly, Problem Orientation was however *not* one of the strategies most strongly predictive of well-being. *Vice versa*, the Transcendent Orientation, and more so the Positive Attitude, were strategies that, as mentioned, seemed generally of lesser importance, or had an important role for a specific well-being aspect only – Transcendent Orientation was relevant for all well-being predictors but with a lesser weight than other coping strategies had; Positive attitude had its strongest role in 'protecting' adolescents from feeling Negative emotions. The results overall thus showed that preferences for coping strategies do influence various well-being aspects, such as their very important role in participants' perception of Social loneliness, Social support and Psychological health, but also showed that coping preferences are important in explaining some well-being indicators more than others -

witness the strong influence of the active seeking-Social-support strategy in the perception of one's own Social support, or the strong association of Avoidance with the perception of one's own Psychological Health, Life satisfaction, and Emotional loneliness. The main study hypothesis, i.e., that the association between preference for coping strategies and well-being indicators tends to vary according to which coping strategy and which well-being indicator we consider, was thus overall supported.

It should finally be recalled that sex and age per se were found to be irrelevant predictors of well-being. Results showed in fact only a weak role of sex in explaining the Life satisfaction well-being indicator, with males showing a somewhat greater propensity to convey a 'happy and healthy' self-image than females, in line with prescribed, gendered norms on 'how to be' if you are a male. The earlier reported sex differences on coping preferences can be interpreted as referring to gendered ways on how to deal with problems, so that girls and women focus more than boys and men on strategies that build on interpersonal relationships, whereas boys and men, if the event questions their capacity for power and agency, as is typically the case when a stressor is met, tend more than girls and women to 'leave the field'. Note however that the sexes did not differ in their preferences for the strategies of Problem orientation, Positive attitude, and Transcending Orientation. In other words, we might say that males and females do not differ much in their coping preferences (and therefore do not differ much in their well-being), but, *if they do differ,* they do so according to gendered (stereotypical) norms on how boys and girls, men and women, ought to face life adverse events. An obvious limit of this study is that it did not explicitly assess the extent to which participants had internalized stereotypical gender roles, i.e., the extent to which they endorse stereotypical gender norms on how to cope with stressors, how to react emotionally to them. Further studies are thus needed to try and address in greater depth gender issues in relation to coping, again possibly relying on methods (e.g., use of gendered and ungendered scenarios) that would allow for such greater understanding.

Likewise, the results only in part confirmed the *implications* of the age-difference hypothesis, namely that, with better coping strategies associated with an increase in age, we would also observe an increase in wellbeing. The trend that seemed to emerge was on the contrary u-shaped, as it was found when examining results on the coping strategy preferences: the very young and the oldest seemed to fare better than those who are 'right into the adolescence period'**.** A clear limit of the study, in relation to age, is its cross-sectional design. Longitudinal studies certainly can offer much clearer data on how coping preferences develop in time. The results of the present study also suggest that future studies ought to sample the entire adolescence period, including in their sample, and focusing more, on adolescents from 16 to 18 years of age in comparison to the younger and the older groups, since the study showed that this age span might be the most 'difficult' one within adolescence.

In conclusion, the study allowed us to obtain data that can further inform our understanding of coping in adolescents and its relationship with well-being, as was its aim - including satisfying the need to collect data on a variety of national groups, thus taking into account potential differences due to the specific culture in which the adolescent grows.

On the other hand, the complex picture that emerged from most study results highlights new and old questions about measurement issues, adequacy of the theoretical models and hypotheses, and about age and gender differences and 'effects' on coping that future studies need to address more in depth and with more refined methods, including more ecologically valid and longitudinal ones.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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