Young People’s Coping Strategies Concerning Climate Change:
Relations to Perceived Communication with Parents and Friends and Pro-Environmental Behavior

This is an accepted version of an article published in Environment and Behavior
The final definitive version of this article has been published: Please refer to:


The published article can be found at:
https://journals.sagepub.com/doi/full/10.1177/0013916518763894

Abstract

Taking its departure in the transactional theory of coping and socialization theories this questionnaire study investigates how coping with climate change among late adolescents (N=705) relates to pro-environmental behavior and communication with significant others about societal problems. De-emphasizing the problem was negatively associated with pro-environmental behavior, while problem-focused and meaning-focused coping were positively associated with pro-environmental behavior. Two communication patterns with fathers, mothers, and friends were identified: One solution oriented and supportive and one dismissive and doom-and-gloom oriented. The positive patterns correlated positively with problem-focused and meaning-focused coping, whereas the negative patterns correlated positively with de-emphasizing. Communication with fathers was particularly important in explaining de-emphasizing and problem-focused coping. A SEM-analysis showed that coping mediates the effects of communication patterns on behavior, while problem-focused coping mediates the other coping strategies’ influence on behavior. The study demonstrates the importance of considering coping as a factor in the socialization of pro-environmental behavior.

Key words: climate change; pro-environmental behavior, coping, socialization, communication, youth
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One important group to include in the efforts to combat climate change is young people. Youth will be the ones handling the future negative consequences of this problem and are also consumers and citizens of today, representing a part of the climate-change problem through their lifestyles. Therefore, it is vital to understand how this group relates to climate change and to explore what factors could promote pro-environmental behavior. Research about young people, climate change, and environmental engagement is, however, relatively rare (see Corner et al., 2015). In this article we investigate if perceived communication patterns with parents and friends about societal and environmental problems influence how late adolescents cope with climate change, and if coping strategies mediate the relationships between communication styles and pro-environmental behavior. We combine two strands of research about factors motivating pro-environmental behaviors: research about how people cope with climate change (Homburg, Stolberg, & Wagner, 2007; Ojala, 2012a; Reser & Swim, 2011; Van Zomeren, Spears, & Leach, 2010) and studies about how young people are socialized into a pro-environmental lifestyle (Collado, Staats, & Sancho, 2017; Grønhøj, 2007; Grønhøj & Thøgersen, 2009, 2012; Leppänen, Haahle, Lensu, & Kuitunen, 2012; Meeusen, 2014).

Parents and friends are important socialization agents in the teenage years. This is true also concerning environmental values, attitudes, and behaviors (Collado et al., 2017; Grønhøj, 2007; Grønhøj & Thøgersen, 2009, 2012; Leppänen et al., 2012; Meeusen, 2014). However, the more specific ways in which these socialization agents influence young people’s pro-environmental behavior are currently not well understood. In the present study, we investigate the possible mediating role of coping strategies. More knowledge about these processes is
vital in order to promote communication that leads to pro-environmental action instead of feelings of helplessness and hopelessness around these issues.

**Young People and the Climate-Change Problem**

Young people in the Western world come in contact with climate change chiefly through media and school, but also through interaction with friends and family (Flöttum, Dahl, & Rivnes, 2016; Özdem, Dal, Öztürk, Sönmez, & Alper, 2014; Pettersson, 2014). These “meeting places” in which climate change becomes more concrete could be seen as “emotional hotspots” in which emotions are evoked. Research also confirms that learning about environmental problems stirs up emotions, such as worry and indignation (Beattie, Sale, & McGuire, 2011; El Zoghbi & El Ansari, 2014; Persson, Lundegård, & Wickman, 2011; Taber & Taylor, 2009). Other studies show that many young people are interested in and worry about global problems, including climate change, sometimes more so than do the older generations (Corner et al., 2015; Holden, 2006; Holden, Joldoshalieva, & Shamato, 2008; Nikolayenko, 2011). At the same time, the lifestyles of young people are not more sustainable than those of older generations (Bell, Toth, Little, & Smith, 2016; Gifford & Comeau, 2011; Mead et al., 2012; Meneses & Palacio, 2005; Wray-Lake, Flanagan, & Osgood, 2010). Thus, the gap between concern and worry, on the one hand, and pro-environmental behavior, on the other, seems to be great in this age-group (see Ojala, 2008).

What factors can explain this gap? One aspect could be that many young people seem to have a rather bleak view of the future on a global scale; they are pessimistic about the future prospects of environmental problems (Eckersley, 1999; Holden, 2006; Threadgold, 2012). This pessimism seems to increase from late childhood into late adolescence (Eckersley, 1999; Ojala, 2012b). Consequently, many seem to lack a sense of empowerment and agency regarding the climate threat (Ballantyne, Wibeck, & Neset, 2016; Hibberd & Nguyen, 2013; Özdem et al., 2014). How young people cope with worry and other negative emotions that are
evoked by climate change could be important to focus on in this context. Some coping strategies could enhance feelings of helplessness and hopelessness, whereas others could encourage pro-environmental behavior (Ojala, 2012a, 2013).

**The Transactional Theory of Coping and Meaning-Focused Coping**

The theoretical framework used in this study is the transactional model of coping (Folkman, 2008; Lazarus & Folkman, 1984). According to this theoretical framework, people use coping strategies to handle stress and negative emotions and their choice of such strategies will affect their behavior and psychological well-being. Besides micro-stressors in everyday life, societal threats and related feelings such as powerlessness and other-oriented worry can evoke coping responses (Lazarus & Folkman, 1984).

The coping process consists of two appraisal dimensions: primary appraisal and secondary appraisal (Lazarus & Folkman, 1984). In primary appraisal, a person assesses whether a situation is a threat towards something the person values. If the situation is perceived as a threat or poses demands that exceed the resources of the person, negative emotions will be aroused. These emotions trigger a secondary appraisal process where the person tries to regulate these emotions and cope with the situation/stressor in different ways.

In the original transactional model of coping, the secondary appraisal process contains two main coping strategies: emotion-focused coping and problem-focused coping (Lazarus & Folkman, 1984). When using emotion-focused coping, rather than doing something about a problem, people try to get rid of negative feelings with the help of various more specific strategies such as distancing themselves from the emotions felt, or from the actual problem. Emotion-focused coping can also be future-oriented. For example, one can escape anticipated negative emotions by avoiding an emotion-provoking situation (see Cameron & Payne, 2011). When using problem-focused coping, people instead confront the problem/stressor at hand. They may, for example, read about what to do, make plans, and talk with others, or actually...
do something concrete about the problem. Indirectly, they thereby also dispel their negative emotions (Lazarus & Folkman, 1984).

Coping is, however, not only used to alleviate present or anticipated negative feelings; people can also cope in a meaning-focused way in order to promote positive feelings, such as hope (Folkman, 2008; Park & Folkman, 1997). For example, they may positively reappraise a situation, find meaning in a problematic situation, or turn to spiritual beliefs. Positive emotions generated by meaning-focused coping can co-exist with negative emotions and work as buffers, helping people confront the sources of their worry, thereby promoting problem-focused coping and active engagement. Accordingly, the use of meaning-focused coping can facilitate problem-focused coping and may be especially important when a threat cannot be reduced at once but nevertheless demands one’s active engagement. In contrast, the use of emotion-focused de-emphasizing strategies, such as dismissal or denial, would be expected to reduce the motivation to engage in problem-focused coping. Thus, different forms of coping are separate concepts, yet functionally related (see Folkman, 2009). That problem-focused coping may be influenced by other forms of coping and plays a mediating role in the relationships between these strategies and behavior has received little research attention. Yet, examining these presumptions is essential for understanding the relative significance of coping strategies in promoting, for example, everyday pro-environmental behavior.

**Empirical Studies about Coping with Climate Change and Pro-Environmental Behaviors**

In recent years researchers have argued that the manner in which people cope with the climate-change problem may be important for environmental engagement as well as for psychological well-being (Bloodhart, Swim, & Zawadzki, 2013; Homburg & Stolberg, 2006; Homburg et al., 2007; Reser & Swim, 2011; Swim et al., 2009). Still, empirical studies about
how various coping strategies relate to pro-environmental behavior are rare, particularly studies focusing on younger age-groups.

Studies on adults have concentrated mainly on different forms of problem-focused coping and emotion-focused coping. For example, Homburg and colleagues (2007) showed that problem-focused strategies were positively associated with pro-environmental behavior (see also Bloodhart et al., 2013; Homburg & Stolberg, 2006; Van Zomeren et al., 2010), while denial of guilt, an emotion-focused strategy, was negatively related to pro-environmental behavior. Relatedly, research focusing on the effectiveness of fear appeals shows that these will work better if people cope with fear in a solution-oriented way, for example, engaging in discussions or personal reflection about ways to fight the threat, a form of problem-focused coping (Howell, 2014).

Studies on children and adolescents are consistent with the above-mentioned findings in that pro-environmental behavior has been found to be positively related to problem-focused strategies and negatively related to strategies in which the climate problem is de-emphasized, which is a form of emotion-focused coping (Ojala, 2012a, 2013). In addition, qualitative studies have revealed that young people use meaning-focused strategies in which hope is evoked in regard to the climate threat (Ojala, 2012b; Pettersson, 2014). One important such strategy is positive reappraisal/cognitive restructuring. Here the climate problem is acknowledged but people have the ability to switch perspective and also see positive trends, for example, that knowledge about climate change has increased in recent years. Using meaning-focused coping, one may also put trust in different societal actors such as politicians and researchers, and rely on the ability of people to come together and fight the climate threat. This way of coping was quantified by Ojala in two studies (2012a, 2013), and she found that it was associated with both felt efficacy and pro-environmental behavior among children and adolescents. Thus, different ways of coping with climate change seem to be important for
whether people will behave pro-environmentally or not. However, how the different coping strategies are related to each other has not been in focus before in the context of coping with climate change.

**Socialization of Environmental Engagement**

An aspect that has been largely lacking in the studies reviewed above is that coping is influenced by social processes, for instance, by the manner in which people discuss societal and environmental problems with significant others (Folkman & Moskowitz, 2004). It is important to explore how these social processes operate in relation to young people’s coping with the climate-change threat in order to be able to promote constructive environmental engagement.

Parents play an important role regarding the transmission of environmental values to their children (Grønhøj, 2007; Grønhøj & Thøgersen, 2009, 2012; Leppänen et al., 2012; Meeusen, 2014). This includes influencing young people’s views on climate change (Ojala, 2013, 2015; Stevenson, Peterson, & Bondell, 2016). Although parents probably are the most important socialization agents, peers also seem to matter when it comes to engagement concerning environmental problems among adolescents (Collado et al., 2017; Ojala, 2013, 2015; Senbel, Ngo, & Blair, 2014; Stevenson et al., 2016). However, research exploring how different communication styles with parents and peers relate to young people’s coping strategies concerning climate change is to the best of our knowledge non-existent.

**Social Influences on Coping**

Most studies on how young people’s coping is influenced by others have focused on parents. How parents react to their children’s negative emotions influences whether or not the children will be able to cope with negative emotions in a constructive way (Denham, Basset, & Wyatt, 2007; Eisenberg, Cumberland, & Spinrad, 1998; Gottman, Katz, & Hoven, 1996; McElwain, Halberstadt, & Volling, 2007). Also friends seem to influence how young people
deal with negative emotions, especially during adolescence (Miller-Slough & Dunsmore, 2016; Rose, 2002; Shin & Ryan, 2011).

Eisenberg et al. (1998) distinguish between positive and negative parental communication styles/patterns. If parents are aware of negative emotions, accept them and perceive them as opportunities to learn, help their children to put emotions into words and to problem-solve, this is associated with more constructive individual coping among their children. In contrast, if parents ignore, dismiss, or make fun of their children’s negative emotions, there is a risk that the children will cope with emotions in less constructive ways.

Only a few studies have specifically examined how significant others may influence the manner in which adolescents cope with climate change. In an ethnographic study in a community in Norway, Norgaard (2011) identified social norms regarding the proper ways of expressing emotions in relation to climate change. These norms put particular pressure on youth to remain “cool” and not communicate about this issue. Thus, they lived in a kind of social denial concerning climate change (see also Geiger & Swim, 2016). In addition, in a Swedish study, Ojala (2015) found that senior high school students’ perception of their teachers’ communication style regarding societal and environmental problems was related to the manner in which the students dealt with the issue of climate change. If they thought that their teachers were communicating in a solution-oriented way and respected their negative emotions, they were inclined to base their hope concerning climate change in sources that had a positive relation to pro-environmental behavior, whereas they based their hope in denial if they perceived their teachers as communicating in a gloom-and-doom way and not taking their negative emotions seriously.

In examining the potential role of family members, the influences from mother and father should be examined separately. Both have been found to play an important role in the socialization of coping, although sometimes to a different degree and in different ways (Brand
& Klimes-Dougan, 2010). Fathers could perhaps be especially important as regards coping with societal issues. Studies indicate that young people are more inclined to talk with fathers about these issues than with mothers (Hooghe & Boonen, 2015; Levinsen & Yndigegn, 2015).

**The Current Study**

The aim of this study was to examine how coping with climate change among Swedish adolescents relates to pro-environmental behavior, as well as to communication patterns with parents and friends about societal and environmental issues. Based on earlier studies (Bloodhart et al., 2013; Homburg et al., 2007; Ojala, 2012a; 2013, Van Zomeren et al., 2010), we hypothesized that problem-focused and meaning-focused coping would be positively correlated with pro-environmental behavior, and that de-emphasizing the threat would be negatively correlated with pro-environmental behavior. Furthermore, based on studies on younger children and socialization of coping concerning micro-problems (e.g., Eisenberg et al., 1998) and high school students’ concerns about climate change and perception of teachers’ communication about societal and environmental issues (Ojala, 2015), we hypothesized that negative communication patterns of a dismissive and doom-and-gloom style would be positively related to de-emphasizing strategies. Positive communication patterns of a solution-oriented and supportive style would, on the other hand, be positively related to problem-focused and meaning-focused strategies. We expected that both parents and friends might influence adolescents’ coping with climate change, and, without proposing any hypotheses, we examined the relative importance of communication with mothers, fathers, and friends in explaining the different coping strategies.

Finally, based on prior research suggesting links between communication styles and coping strategies, on the one hand, and coping strategies and behavior, on the other, we tested a conceptual model in which coping strategies were hypothesized to mediate the influence from communication with parents and friends on pro-environmental behavior. Consistent
with Folkman (2008, 2009), this model also took into consideration likely interrelationships among coping strategies, such that problem-focused coping was hypothesized to (at least partly) mediate the effects of meaning-focused coping and de-emphasizing strategies on pro-environmental behavior.

**Method**

**Participants and Procedure**

Senior high school students in 39 schools from the north to the south of Sweden answered an extensive online questionnaire about civic and environmental engagement at their school. In all, 708 students started to answer the questions included in the present study; however, as three of them answered only a very small part of the questions, they were removed from the study. The final sample consisted of 705 students (54% women). The mean age was 18 (SD = 0.61). Both vocational and college-preparatory classes were targeted. Still, the sample should be seen as a convenience sample. We came in contact with classes through a nationwide list containing email addresses to senior high school teachers and cannot say how many students chose not to start answering the questionnaire. Therefore, we cannot report an exact response rate. The collection of the data was conducted in accordance with the Swedish research council’s guidelines and the Swedish ethical review act. The participants answered the questionnaire anonymously, and they did not receive any incentive to take part in the study.

**Measures**

*Coping strategies* were assessed with a scale used in Ojala (2012a, 2013) with just a few minor changes. The adolescents received the following instruction: “When one hears about societal problems such as climate change, one can feel worried or upset. Below is a list and for every item we would like you to indicate how well it applies to what you do or think when you are reminded of climate change.” The response alternatives were: “not true at all = 1,” “not very true = 2,” “fairly true = 3,” “very true = 4,” “completely true = 5.””
focused coping – cognitive was measured by three items (α = .78). A sample item is: “I think about what I myself can do.” Emotion-focused coping – de-emphasizing the threat was captured by 7 items (α = .84) and a typical item is: “I think about that the problem is exaggerated.” Meaning-focused coping was assessed using six items that capture both the trust dimension and the positive re-appraisal dimension of this concept in relation to climate change (see Ojala, 2012a) (α = .77): An example of trust is: “I trust scientists to come up with a solution in the future.” An example of positive reappraisal is: “More and more people have started to take climate change seriously.” All scales had acceptable Cronbach’s alpha (> .70; Nunnally, 1978).

Reported pro-environmental behavior was measured with 10 items taken from Ojala (2012a, 2013). The items contained both everyday behavior (e.g. how often one is: “choosing ecological products”) and communicating the need to do something about the environment to other people (e.g., how often one is: “trying to influence one’s parents to care more for the environment”). Cronbach’s alpha was .85, which is an acceptable level (Nunnally, 1978).

The communication scale was developed for the present study and was inspired by a scale created by Fabes, Eisenberg, and Bernzweig (1990), who examined parental communication with and reaction to younger children’s negative emotions. We adapted the Fabes et al. scale to fit adolescents and communication about negative emotions in relation to societal issues. We also used insights gained from a study on senior high school students about perceived teacher reactions to negative emotions concerning societal and environmental problems (Ojala, 2015). The scale does not focus on communication about climate change directly since a pilot study showed that this would be too narrow a focus, since many people do not talk that much about climate change (see also Leombruni, 2015). Instead, the scale items concern communication about societal and environmental problems in general. Since the focus is on how significant others are seen as reacting to negative emotions concerning these problems,
not their reactions to the problems themselves, this was deemed as an acceptable approach. This scale was presented in the beginning of a larger on-line questionnaire containing diverse questions about values and attitudes towards societal issues, while the questions concerning climate change and pro-environmental behavior were presented later on in the questionnaire.

First, we asked if the respondent in question had or did not have regular contact with his/her mother/stepmother/female guardian and father/stepfather/male guardian. Only those who had regular contact with their mother/father were then presented with the questions concerning communication with her/him. The items measuring communication with the mother, father, and friends were measured in three separate blocks. The stem question of the communication scale was: “If I would like to talk about negative emotions in relation to societal issues, my mother/father/friend would…” This was followed by items measuring positive communication and negative communication in a random order. The response alternatives (1-5) were the same as in the coping scale.

Six items were used to measure positive communication with mother/father/friends, that is, a solution-oriented and supportive style. Statements included problem-focused communication (helping the respondent to problem-solve) and emotion-coaching communication (taking seriously and supporting the child emotionally), two themes present in the Fabes et al. (1990) scale. The included items are presented in Table 1.

Seven items were used to measure negative communication with mother/father/friends. They included statements about dampening negative emotions and not respecting the respondent’s negative emotions, two themes found in Fabes et al.,1990, and communicating in a gloom-and-doom way about societal problems, a theme taken from Ojala (2015b). The items are presented in Table 1.

**Statistical Analyses**

Principal factor analysis (PFA) was performed to examine whether the items of the newly
constructed communication scale loaded as predicted onto two underlying communication styles, one positive and one negative. Kaiser-Meyer-Olkin test for sampling adequacy (KMO; Kaiser, 1974) was used to examine how suited the data were for factor analysis and to assess if any of the items should be excluded before performing the factor analysis due to multicollinearity. As the predicted communication styles could be expected to be negatively correlated, PFA was performed with oblique oblimin rotation.

Pearson correlations were computed to examine associations between the main study variables. The relative importance of communication patterns with mother, father, and friends in explaining the three examined coping strategies was explored in two-step sequential regression analyses, controlling for gender in the first step as prior research has identified gender differences in coping among children (Eschenbeck, Kohlman, & Lohaus, 2007). In the second step, those communication variables that were significantly related to the examined coping strategy in the bivariate analyses were included as its predictor.

Mediation hypotheses were tested with structural equation modeling (SEM) using AMOS in SPSS23. The model tested holds that the style of communication (positive/negative) has consequences for the manner in which adolescents cope with environmental problems. Pro-environmental behavior is thought to be influenced by style of communication, either directly or indirectly via the mediating influence of coping strategies. Three coping strategies are believed to influence pro-environmental behavior: de-emphasizing, meaning-focused coping, and problem-focused coping. The strategies are thought to be distinct, but interrelated in the sense that de-emphasizing and meaning-focused coping are believed to influence the use of problem-focused coping. Thus, the model tested includes direct paths (a) from communication styles to coping strategies and pro-environmental behavior, (b) from coping strategies to pro-environmental behavior, and (c) from meaning-focused and de-emphasizing to problem-focused coping. Indirect effects include effects of communication style on pro-environmental
behavior mediated by coping, and effects of meaning-focused and de-emphasizing on pro-environmental behavior mediated by problem-focused coping. Overall model fit was determined using Chi-square statistic, its degree of freedom and \( p \) value, the Comparative fit index (CFI), Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA). CFI and TLI values > .90, and RMSEA values \( \leq .05 \), with the lower interval close to 0, and the upper interval less than .08, indicate an acceptable model fit (Kline, 2005). The significance of the direct, indirect, and total effects in the model was tested using bootstrapping in AMOS (Arbuckle, 2014). Bootstrapping is a non-parametric method that provides a confidence interval for the statistic of interest by generating a set of samples with replacement from the observed distribution. From each of these samples the statistic is computed and a sampling distribution is empirically generated. If the confidence interval does not include zero, the statistic of interest is significant (Preacher & Hayes, 2004). Because bootstrapping in AMOS does not permit missing observations, these were imputed before the analysis, using regression imputation in AMOS (Arbucle, 2014).

Results

Factor Structure of the Communication Scale

The data were found to be suitable for performing factor analysis and no item was dropped (KMO: mother = .86; father = .86; friends = .87). Using Kaiser’s eigenvalue criterion (Kaiser, 1960) yielded the two anticipated factors. For communication with mothers the solution accounted for 47% of the total variance; for fathers the solution accounted for 53%; and for friends the solution accounted for 50% of the total variance. The factor loadings were satisfactory, .50 or greater, and in one case .40 or greater. No noteworthy cross-loadings (.30 or above) were identified. Thus one scale about solution-oriented and supportive communication and another about dismissive and doom-and-gloom communication were
created for each significant other (mother, father, friends). Cronbach alphas for positive communication were .84 for mothers, .87 for fathers, and .86 for friends, and for negative communication .85 for mothers, .87 for fathers, and .85 for friends. Hence, all communication scales had acceptable Cronbach alphas (Nunnally, 1978).

 Associations between Coping and Pro-Environmental Behavior and Communication

Table 2 shows Pearson correlations between the main study variables. Our hypotheses were supported. Both problem-focused coping and meaning-focused coping had significant positive relations with pro-environmental behavior, the first correlation was strong and the second weak (see Cohen, 1988). The relation between pro-environmental behavior and de-emphasizing was significantly negative and of medium strength. Hence, the more problem-focused and meaning-focused coping the young use the more probable it is that they behave in a pro-environmental manner, while the opposite is true for young people who use de-emphasizing strategies to a high degree.

In Table 2 we can also see the results of Pearson correlation analyses regarding communication patterns with mother, father, and friends, on the one hand, and the emotion-focused coping strategy of de-emphasizing the climate threat, on the other. As expected the negative communication patterns in all cases had a significant positive relation to de-emphasizing the threat, in all cases of a medium strength (Cohen, 1988). There were no significant relations to problem-focused and meaning-focused coping. Thus, the more the young perceive that they communicate in a negative manner about societal problems with their father, mother, and friends, the more they are inclined to cope with climate change in an emotion-focused way. We can also see that the positive communication patterns with mother, father, and friends had significant positive relations, ranging from weak to medium strength, to problem- and meaning-focused coping. There were no significant relations to emotion-focused coping in the form of de-emphasizing the threat. Thus, if the young perceive that
those close to them communicate about societal problems in a positive manner with them, it is more probable that they use problem-focused and meaning-focused strategies to deal with climate change.

**The Relative Importance of Communication with Mother, Father, and Friends in Explaining Coping**

We thereafter performed sequential regression analyses in order to investigate the relative importance of communication patterns with mother, father, and friends in explaining the three coping strategies. In Table 3 we can see that gender was a significant predictor of de-emphasizing strategies in the first step of the model, an influence that remained significant when the other variables were inserted in the second step of the model. The adolescent boys were more inclined than the adolescent girls to use this coping strategy. The most important predictor was negative communication with fathers, followed by negative communication with friends and then by gender. Negative communication with mothers was not a unique significant predictor. This model explains 21% of the variance in this form of emotion-focused coping, $F(4, 609) = 41.32; p < .001$.

Table 4 shows that gender was also a significant predictor of problem-focused coping, and again the effect remained when the other variables were entered into the model. However, this time the adolescent girls were more inclined than the adolescent boys to use this coping strategy to deal with climate change. Positive communication with fathers was the most potent predictor followed by gender and positive communication with friends. Again, communication with mothers had no unique significant effect. This model explains 20% of the variance in problem-focused coping, $F(4, 614) = 37.35; p < .001$.

Finally, gender had no effect on meaning-focused coping, meaning that the adolescent boys and the adolescent girls use this coping strategy in about the same degree (see Table 5). The most important predictor of this coping strategy was positive communication with
mother, closely followed by positive communication about societal problems with friends and father, which were also unique predictors. This model explains 12% of the variance in meaning-focused coping, $F(4, 606) = 21.53; p < .001$.

**Structural Equation Modeling (SEM) of Relations between Communication Patterns, Coping, and Pro-Environmental Behavior**

We performed the SEM-analysis with latent variables. Positive communication and negative communication as latent variables were indicated by their average scores in the three relational contexts measured (mother, father, friends). Relational contexts were allowed to share unique error variance across communication style (positive/negative). Problem-focused coping was represented as a latent variable by the three items of the problem-focused coping scale. For each of the remaining three variables (de-emphasizing, meaning-focused coping, pro-environmental behavior), we randomly assigned their respective items into three parcels that were used as indicators of latent variables in the SEM. Parcelling was used to avoid letting potential interrelations between individual items affect the fit indices of the tested model, which is basically a model of relations between latent variables (Little, Cunningham, Shahar, & Widaman, 2002). Missing data for indicator variables ranged from 4.8 to 13.0%. Overall, data were missing completely at random, Little’s MCAR test: $\chi^2 = 425.07, df = 381, p = .059$.

We conducted the SEM-analysis in three steps. In the first step, we tested the model’s overall fit to the data by using a full information maximum likelihood-based (FIML) statistical method that maximizes the statistical power of the study by using all available information. The result of this analysis indicated that the model provided an acceptable fit to the data (Hu & Bentler, 1999, Kline, 2005): $\chi^2(118) = 456.43, p < .001; CFI = 0.933; TLI = 0.902; RMSEA = .064$ (confidence interval: .058 – .070). Figure 1 presents standardized regression scores for the modeled paths. Significant paths ($p < .05$) are indicated by solid lines and include a positive effect of positive communication on meaning-focused coping and
problem-focused coping; a positive effect of negative communication on de-emphasizing and problem-focused coping; a negative effect of de-emphasizing on problem-focused coping and pro-environmental behavior; a positive effect of meaning-focused coping on problem-focused coping; and, a positive effect of problem-focused coping on pro-environmental behavior.

In the second step, we tested our mediation hypotheses. Specifically, we examined the significance of the direct, indirect, and total effects in the model using bootstrapping. We based the bootstrapping on 5,000 resamples and report bias-corrected 95% confidence intervals (CI95) and statistical significance for the estimated effects (see Table 6). As can be seen in Table 6, there were significant total effects of both types of communication patterns on pro-environmental behavior that was mediated by coping. Positive communication patterns had a positive indirect effect on pro-environmental behavior mediated by problem-focused coping, as well as a positive indirect effect on problem-focused coping mediated by meaning-focused coping. In contrast, negative communication patterns had negative indirect effects on problem-focused coping and pro-environmental behavior that was mediated by de-emphasizing. Finally, as expected, problem-focused coping had a significant direct effect on pro-environmental behavior and mediated the effect of meaning-focused coping on pro-environmental behavior.

Because the analyses done in Step 1 and 2 were programmed to use all available information in the data file, they include even participants with a substantial amount of missing data. In the third step, we therefore examined the robustness of the findings by using more stringent inclusion criteria. We repeated the data imputation and bootstrapping analyses done in Step 2, this time including only those participants (n = 620) who had provided questionnaire scores on more than 50% of the indicator variables. The result confirmed that the model tested provided an acceptable fit to the data: $\chi^2(118) = 449.67, p < .001; \text{CFI} = 0.936; \text{TLI} = 0.917; \text{RMSEA} = 0.067$ (confidence interval: .061 – .074). In addition, the
direction and significance of all effects displayed in Figure 1 were confirmed as were the
significance of the effects shown in Table 6, with the exception of the total effect of negative
communication on pro-environmental behavior, which was now only marginally significant ($p$
= .076).

**Discussion**

Research has shown that how people cope with climate change is important for whether
or not they are going to behave pro-environmentally (Homburg et al., 2007; Ojala, 2012a,
2013, Van Zomeren et al., 2010). This study supports the results that problem-focused coping
– that is, searching for information and making plans about what an individual can do about
climate change – and meaning-focused coping – that is, having the ability to switch
perspectives and see both negative and positive trends and putting trust in other societal actors
– are positively related to pro-environmental behavior. In addition, a form of emotion-focused
coping, de-emphasizing the climate threat, was negatively related to engagement. A new
finding for this study was that problem-focused coping mediated the influence of the two
other coping strategies on pro-environmental behavior. Hence, this study indicates that how
young people actively deal with the climate threat is vital for engagement and suggests that
coping strategies ought to be taken into account as moderators in future studies that focus on
the influence of, for instance, media, schooling, the distant character of climate change, and
fear appeals on climate-change engagement (see also Brügger, Dessai, Devine-Wright,
Morton, & Pidgeon, 2015).

The study also has implications for research about the socialization of environmental
engagement (Collado et al., 2017; Grønhøj, 2007; Grønhøj & Thøgersen, 2009, 2012;
Leppänen et al., 2012; Meeusen, 2014). A novel finding was that perceived communication
with parents and friends about societal problems in general and emotional reactions to these
were associated with different coping strategies regarding climate change. On the one hand,
we found that the more the young perceived their parents and friends as communicating in a positive, solution-oriented, and respectful manner, the more inclined they were to cope in a meaning-focused and problem-focused way. On the other hand, the more the young perceived those close to them as communicating in a negative manner, neglecting or dampening negative emotional reaction as well as reacting in a gloom-and-doom way, the more likely they were to use emotion-focused strategies. These results are in line with studies on younger children and coping with more mundane everyday problems indicating that how parents and friends react to young people’s concerns influences how the young cope with emotions at an individual level (Eisenberg et al., 1998; Gottman et al., 1996; McElwain et al., 2007; Miller-Slough & Dunsmore, 2016; Shin & Ryan, 2011). We also found that coping mediated the influence of communication on young people’s pro-environmental engagement. These results are in accordance with theories and studies in the field of moral development in which important others influence young people’s pro-social engagement by how they react to their moral emotions, which then influences how young people cope with these emotions and subsequently their helping behavior (Eisenberg, 2000). Thus, the present study indicates that one way that parents and friends socialize environmental engagement, besides influencing environmental values, is to influence coping strategies, which in their turn are associated with pro-environmental behavior or not.

The results concerning problem-focused coping as a mediator for the other coping strategies are novel for this study, but are indicated both by coping theories (Folkman, 2008, 2009; Lazarus & Folkman, 1984) and by a study on how adolescents cope with climate change (Ojala, 2013). In the study about climate change, a hierarchical regression analysis was performed that showed that the relation between meaning-focused coping and environmental engagement disappeared, and the influence from emotion-focused coping
lessened when problem-focused coping was inserted in a last step in the model. No real mediation analyses were performed, however.

That strategies to de-emphasize the climate threat were negatively related to problem-focused coping and to pro-environmental behavior is perhaps not surprising. Climate change is one of the most serious environmental problems and if it is not seen as a threat people will hardly feel motivated to search for solutions to this problem and act. Another, theoretically more intriguing, possible explanation is that de-emphasizing is used to dispel negative emotions. Earlier research has shown that these strategies are negatively related to climate-change worry and general negative affect (Homburg et al., 2007; Ojala, 2013). In addition, Jylhä (2016) found that denying the climate problem, a concept closely related to de-emphasizing the threat, was associated with a tendency to avoid negative emotions in general. Since worry/anxiety about societal issues has been found to focus people’s attention on threats and motivate them to search for solutions (Marcus, 2002), this could perhaps explain why emotion-focused coping in the form of de-emphasizing the threat is negatively related to problem-focused coping. Meaning-focused coping, on the other hand, has been theorized to help people bear worry in relation to problems that are hard to dispel directly but that still demand one’s engagement, thereby promoting problem-focused coping (Folkman, 2008). However, these explanations are just theoretical speculations, and in order to test them empirically, worry should be included in future studies.

In the present study, we also explored the relative importance of communicating with fathers, mothers, and friends in explaining the different coping strategies, and although communicating with all three groups had significant relation to coping in bivariate analyses, we found that the influence of fathers was the most important as regards problem-focused and emotion-focused coping, but also had a unique significant effect as regards meaning-focused coping. Fathers have been somewhat neglected in earlier research about the socialization of
emotion regulation, but in recent years they have been included in studies and have indeed been found to influence their children’s coping (Brand & Klimes-Dougan, 2010). Some studies also indicate that adolescents actually discuss societal problems more with fathers than with mothers, findings that may explain our results (Hooghe & Boonen, 2015; Levinsen & Yndigegn, 2015). Hence, one could claim that fathers are especially vital to target in, for instance, information campaigns aimed at promoting constructive communication between parents and their children when it comes to societal and environmental issues.

Although gender differences were not the main focus of this study, it is still interesting to notice that the adolescent boys were more inclined to use emotion-focused coping, while the adolescent girls used problem-focused coping to a higher degree. These differences could be due both to gender differences in environmental interest (Bengtsson, Söderström, & Terjestam, 2016; Torbjörnsson, Karlberg, & Molin, 2011; Zelezny, Chua, & Aldrich, 2000) and to the fact that boys and girls cope in different ways in general (Eschenbeck et al., 2007). Women/girls are more environmentally interested, while men/boys use emotion-focused coping to a larger extent than girls. In a study by Ojala (2015) a gender difference concerning hope based on denial of the climate threat was found and was statistically explained by the fact that the adolescent boys to a higher degree than the adolescent girls felt that their teachers did not take their emotions concerning societal and environmental issues seriously. The conclusion drawn from this result was that teachers need to reflect on if they treat boys differently than girls when it comes to these issues, something that perhaps also could be important for parents to consider.

The study has some limitations that need to be elaborated on. Although the results are in line with theories and earlier studies in adjacent research areas, the present study is cross-sectional in character and hence the direction of the influence regarding correlations between variables cannot be determined in a strict empirical sense. It would therefore be interesting to
conducted longitudinal studies in the future. Also, the correlations were for the most part of medium strength; only one was strong. Furthermore, the measures about how the young communicate with mothers, fathers, and friends were solely about how the young perceive the quality of these communication patterns. Although young people’s subjective perception of important others’ reactions is an important basis for how they will act, functioning as a form of descriptive social norms (see Collado et al., 2017; Bundick & Tirri, 2014), it would nevertheless be valuable to include parents’ and friends’ views in future research. Finally, the results of this study are based on a convenience sample of Swedish adolescents. In order to be able to generalize the results in a broader way, it is important to use random sampling in future studies and to include young people from different countries.

A main strength of this study is that the combined theoretical focus on coping and socialization renders it a unique contribution to the literature on young people and pro-environmental behavior. It is also one of few studies that emphasize the importance of meaning-focused coping, that is, trust in other actors and positive reappraisal, in explaining problem-focused coping and pro-environmental actions. Although the influence from peers becomes more important in adolescence, this study shows that parents still matter in regard to influencing coping with climate change among their teenage children and indirectly also pro-environmental behavior. Thus, the results in this study have practical implications for parents who wish to promote active coping with climate change and environmental engagement among their children. The manner in which one reacts to and talks about negative emotions in relation to societal problems seems to matter. In future studies, it would be interesting to study these discussions in vivo and explore whether children also influence their parents’ and friends’ communication patterns. Earlier research about environmental socialization in general has shown that this is a bi-directional process to a certain extent (Grønhøj, 2007). Finally, a take-home message is that young people do not make meaning regarding climate
change only as individuals but also as members of different groups, such as peer groups and family. Hence, information campaigns should not only be focused on individuals but also on families and other social networks that young people belong to, making them aware of different ways that one can communicate about societal issues and their implications for coping and pro-environmental engagement.
References


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Geiger, N., & Swim, J. K. (2016). Climate of silence: Pluralistic ignorance as a barrier to
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Figure caption

*Figure 1. Structural model with standardized estimates of relations between communication patterns, coping strategies, and pro-environmental behavior. Solid lines represent significant paths and dotted lines represent hypothesized but nonsignificant paths. The dotted double-headed arrow indicates a nonsignificant correlation between the latent variables. All the model-estimated loadings for the indicators in the measurement model were significant. Latent communication variables were indicated by aggregated scale scores for mother, father, and friend. The other latent variables were indicated by parcels of scale items (SI), or individual scale items measuring the construct.

* \( p < .05; ** p < .001 \)

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\(^1\) At all times, the arithmetic mean of the items in the scales for every person was used to create aggregated measures.

\(^\text{ii}\) According to Cohen (1988) the strength of a significant correlation can be judged according to the following criteria: \( r = .1 \) weak correlation, \( r = .3 \) of medium strength and \( r = .5 \) strong correlation.
Table 1

*Items in the communication scales*

<table>
<thead>
<tr>
<th>Positive communication with mother/father/friends</th>
<th>Negative communication with mother/father/friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take me seriously but try to get me to turn my perspective around and also look at the problem and the future hopefully</td>
<td>Say there’s no point in bothering about it since we humans are powerless and can’t do anything anyway</td>
</tr>
<tr>
<td>Try to get me to think about what I can do personally to make myself more active regarding the problem</td>
<td>Talk on and on about how awful and hopeless everything is in society</td>
</tr>
<tr>
<td>Encourage me to tell more about why I feel the way I do</td>
<td>Not take me seriously</td>
</tr>
<tr>
<td>Focus on positive things that are done to address the problem, such as political or scientific progress</td>
<td>Tell me to do something else instead of thinking about the problem</td>
</tr>
<tr>
<td>Give me advice about what I can do personally to help alleviate the problem</td>
<td>Tell me not to think about the problem so much or to think about something else</td>
</tr>
<tr>
<td>Listen to me and take my feelings seriously</td>
<td>Think I’m being silly</td>
</tr>
<tr>
<td></td>
<td>I would never talk to mother/father/friends about how I feel about societal problems</td>
</tr>
</tbody>
</table>
Table 2

*Pearson correlation coefficients between the variables in the study*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pos. com - mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Pos. com - father</td>
<td>.71***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Pos. com - friend</td>
<td>.49***</td>
<td>.59***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Neg. com - mother</td>
<td>-.09*</td>
<td>.01</td>
<td>.08*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Neg. com - father</td>
<td>-.00</td>
<td>-.10**</td>
<td>.09*</td>
<td>.74***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Neg. com - friend</td>
<td>.08*</td>
<td>.09*</td>
<td>.08*</td>
<td>.54***</td>
<td>.62***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. De-emphasizing</td>
<td>-.04</td>
<td>-.08</td>
<td>-.06</td>
<td>.34***</td>
<td>.42***</td>
<td>.38***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Problem-focused</td>
<td>.25***</td>
<td>.35***</td>
<td>.34***</td>
<td>.05</td>
<td>-.01</td>
<td>-.04</td>
<td>-.15***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Meaning-focused</td>
<td>.30***</td>
<td>.31***</td>
<td>.28***</td>
<td>-.01</td>
<td>.04</td>
<td>.01</td>
<td>.21***</td>
<td>.28***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Pro-enviro behavior</td>
<td>.20***</td>
<td>.27***</td>
<td>.24***</td>
<td>-.06</td>
<td>-.09*</td>
<td>-.12**</td>
<td>-.30***</td>
<td>.59***</td>
<td>.21***</td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>3.2</td>
<td>3.1</td>
<td>3.0</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
<td>2.3</td>
<td>2.8</td>
<td>3.2</td>
<td>3.1</td>
</tr>
<tr>
<td><em>SD</em></td>
<td>.82</td>
<td>.87</td>
<td>.85</td>
<td>.76</td>
<td>.80</td>
<td>.79</td>
<td>.78</td>
<td>.91</td>
<td>.70</td>
<td>.79</td>
</tr>
</tbody>
</table>

*p*<.05; **p*<.01; ***p*<.001
### Table 3

*Sequential regression analysis – de-emphasizing the climate-change threat (emotion-focused coping)*

<table>
<thead>
<tr>
<th>De-emphasizing the threat – emotion-focused coping</th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Gender</td>
<td>.15***</td>
<td>.12***</td>
</tr>
<tr>
<td>Neg communication mother</td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td>Neg communication father</td>
<td></td>
<td>.29***</td>
</tr>
<tr>
<td>Neg communication friends</td>
<td></td>
<td>.18**</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.02***</td>
<td>.21***</td>
</tr>
</tbody>
</table>

*Note.* Gender is coded 0 = girl and 1 = boy. $\beta$ = standardized betas

**$p<.01$; ***$p<.001$
Table 4

*Sequential regression analysis – problem-focused coping*

<table>
<thead>
<tr>
<th>Problem-focused coping</th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Gender</td>
<td>-.27***</td>
<td>-.21***</td>
</tr>
<tr>
<td>Pos communication mother</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>Pos communication father</td>
<td>.24***</td>
<td></td>
</tr>
<tr>
<td>Pos communication friend</td>
<td>.18***</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>.07***</td>
<td>.20***</td>
</tr>
</tbody>
</table>

*Note. Gender is coded 0= girl and 1= boy. $\beta$ = standardized betas*

***$p$<.001
Table 5

*Sequential regression analysis – meaning-focused coping*

<table>
<thead>
<tr>
<th>Meaning-focused coping</th>
<th>Step 1 β</th>
<th>Step 2 β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.04</td>
<td>.01</td>
</tr>
<tr>
<td>Pos communication mother</td>
<td>.15**</td>
<td></td>
</tr>
<tr>
<td>Pos communication father</td>
<td>.13*</td>
<td></td>
</tr>
<tr>
<td>Pos communication friend</td>
<td>.13**</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.00</td>
<td>.12***</td>
</tr>
</tbody>
</table>

*Note. Gender is coded 0= girl and 1= boy. β = standardized betas

*p<.05; **p<.01; ***p<.001*
Table 6

Confidence intervals (CI95%) and Statistical Significance for Standardized Estimates of Total Effects, Direct Effects, and Indirect Effects

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Predicted variables</th>
<th>Total effects</th>
<th>Direct effects</th>
<th>Indirect effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meaning-focused</td>
<td>De- emphasising</td>
<td>Problem-focused</td>
<td>Pro-enviro.</td>
</tr>
<tr>
<td>Positive communication</td>
<td>.32&gt;β&lt;.52***</td>
<td>-.17&gt;β&lt;.04</td>
<td>.38&gt;β&lt;.55***</td>
<td>.25&gt;β&lt;.43***</td>
</tr>
<tr>
<td>Negative communication</td>
<td>-.03&gt;β&lt;.13</td>
<td>.45&gt;β&lt;.61***</td>
<td>-.12&gt;β&lt;.05</td>
<td>-.17&gt;β&lt;.02*</td>
</tr>
<tr>
<td>Meaning-focused</td>
<td>.18&gt;β&lt;.42***</td>
<td></td>
<td>.12&gt;β&lt;.36***</td>
<td></td>
</tr>
<tr>
<td>De-emphasizing</td>
<td>-.49&gt;β&lt;.18***</td>
<td>-.60&gt;β&lt;-.32***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem-focused</td>
<td>.58&gt;β&lt;.81***</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* *p < .05; **p < .01; ***p < .001