Outcome expectancy: A key factor to understanding childhood exposure to nature and children's pro-environmental behavior

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1. Introduction

Human behavior is largely responsible for the environmental issues we face today (Cook et al., 2013), requiring a deeper understanding of the substance and etiology of pro-environmental behaviors (Gifford, 2011; Otto, Kaiser, & Arnold, 2014; Schultz & Kaiser, 2012). Pro-environmental behavior refers to actions that contribute to the sustainability of nature (Schultz & Kaiser, 2012). Given that children will be the ones grappling with future environmental challenges, and that most environmental education programs are organized for youngsters, a better understanding of the factors and processes leading children to behave in a more environmentally responsible manner is relevant both for scientific and practical reasons.

One of the most widely documented correlates of pro-environmental behavior is childhood experiences in natural environments (Chawla & Derr, 2012; Cheng & Monroe, 2012; Evans, Otto, & Kaiser, 2018). Several ideas have been offered to explain why experiences in nature at an early age could play a formative role in children's pro-environmental behaviors. These explanations include an increase in connectedness with nature (Cheng & Monroe, 2012; Otto & Pensini, 2017), enhanced appreciation of its beauty and other positive characteristics (Müller, Kals, & Pansa, 2009), which, in turn, promotes stronger place attachment (Hartig, Kaiser, & Bowler, 2001), enhanced opportunities for self-directed exploration and learning (Chawla & Derr, 2012), renewal of depleted attentional capabilities (i.e., psychological restoration) (Collado & Corraliza, 2015; Hartig, Mitchell, De Vries, & Frumkin, 2014), and the development of environmental ethics (Kahn, 2006). Nature experiences are also associated with more positive environmental attitudes (Evans, Brauchle, Haq, Stecker, Wong, & Shapiro, 2007; Hartig, Kaiser, & Strumse, 2007). These have been defined as "concern for the environment or caring about environmental issues" (Gifford & Sussman, 2012, p. 92)

and partially explain the relation between contact with nature and pro-environmental behavior (Cheng & Monroe, 2012; Collado, Staats, & Corraliza, 2013; Hartig et al., 2007; Wells & Lekies, 2006).

Despite the growing evidence supporting the link between contact with nature and environmental attitudes and behavior, the degree of association is variable, suggesting that other factors likely intercede with this relation. For example, Wells and Lekies (2006) found that the type of experiences in nature as a child was associated with adults' pro-environmental behaviors. Free play in nature (e.g., playing in the woods) had a stronger link to adult pro-environmental behavior relative to compulsory experiences in nature (e.g., planting trees). Similarly, children's previous frequency of contact with nature moderates the relation between their current contact with nature and pro-environmental attitudes and behavior, with current contact with nature being more strongly associated with pro-environmental attitudes/behaviors when children's frequency of past experiences in nature were low (Collado et al., 2015). Reasons for heterogeneity in the strength of the contact with nature–pro-environmental attitudes and behavior relations remain unclear. The primary aim of the present study is to examine the possible moderating role of outcome expectancy in the variability in the strength of the contact with nature–pro-environmental behavior relation.

Self-efficacy theory (Bandura, 1977) proposes that an individual's beliefs about his/her capabilities of performing a behavior (i.e., self-efficacy) and the expectation that an outcome will follow a given behavior (i.e., outcome expectancy) will affect the probability of the individual to engage in the behavior that leads to the goal. Self-efficacy (a construct similar to perceived behavioral control; Fishbein & Ajzen, 2010) has been shown to predict the performance of different behaviors as well as to moderate the relation between predictors of behavior and performance (Manstead, 2011).

Similarly, the capability of a behavior to accomplish a certain goal (i.e., outcome expectancy) affects individuals' behavioral performance (Bandura, 1977). Yet, compared to the extensive research work on how self-efficacy is related to pro-environmental behavior (e.g., Homburg & Stolberg, 2006; Jugert, Greenaway, Barth, Büchner, Eisentraut, & Fritsche, 2016; Tagkaloglou & Kasser, 2018), significantly less attention has been paid to outcome expectancy. To reiterate, self-efficacy means the extent to which the individual believes s/he is capable to perform a specific behavior-in the present case pro-ecological behaviors, such as recycling glass. Outcome expectancy refers to the belief that if one engages in the behavior (e.g. recycling), an outcome will follow such behavior (e.g., my recycling will help the earth). Note that although these two constructs are obviously related, as Bandura (1977) has shown through a decades long research program, they are not the same and each independently contributes to the probability of engaging in behavior.

The role of outcome expectancy in the development of cognitive explanations of behavior has been studied in several behavioral domains. For instance, expectancy of positive outcomes increased engagement in peer aggression (Pornari & Wood, 2010) and elevated physical activity (Williams, Anderson, & Winett, 2005). Outcome expectancy was also positively associated with academic performance (Zimmerman, 2000) and actions associated with better health (Gao, Xiang, Lee, & Harrison, 2014). In addition to being instrumental in its influence on different behaviors, evidence shows that outcome expectancy can have a moderating effect between a predictor of behavior and actual engagement in the behavior (e.g., Steward, Wright, Hui, & Simmons, 2009). Thus, the effect of different predictors on performance can be strengthened or weakened by a person's beliefs of whether his/her actions can make a difference (Bandura, 1977, Manstead, 2011; Fishbein & Azjen, 2010). The outcomes of individual efforts in pro-

environmental behavior are small and difficult to discern (Gifford, 2011). Indeed, as several have noted this is one of the many characteristics of climate change that contribute to general public antipathy towards this problem. Hence, the belief that individual efforts will make a difference may be a relevant factor regulating people's pro-environmental actions. In other words, the relation between a specific predictor of behavior (e.g., behavioral intentions) and the performance of the behavior is strengthened when the individual believes that his/her actions will lead to the desired pro-environmental goal. Of particular interest to the current research, four studies with adults have found interactions between outcome expectancy and predictors of pro-environmental behavior. Landry, Gifford, Milfont, Weeks, and Arnocky (2018) concluded that people with low relative to high outcome expectancy had a weaker association between environmental concern and pro-environmental behavior. Similarly, Staats, Jansen, and Thøgersen (2011) found that outcome expectancy strengthened the relation between intention to use less pesticides and actual reductions in use. According to Harland, Staats, and Wilke (2007), the relation between pro-environmental behavioral intentions and performance was stronger for individuals high in outcome expectancy. The predictive role of environmental concern on knowledge about environmental issues and willingness to accept environmental protection regulations was moderated by outcome expectancy (Ellen, Weiner, & Coob-Walgren, 1991). The effect of environmental concern on perceived need for government involvement in environmental protection was stronger for individuals with low outcome expectancy.

These findings suggest that an individual's beliefs that his/her behavior will (or will not) lead to the desired outcome (i.e., outcome expectancy) is capable of moderating relations between predictors of ecological behavior and such behaviors. Building upon both the general outcome expectancy literature and specific findings on

outcome expectancy and pro-environmental behavior among adults, our first hypothesis (H1) is that contact with nature will be positively associated with pro-environmental behavior, and this association will be stronger for individuals who possess a strong sense of outcome expectancy.

Given that environmental attitudes mediate the association between contact with nature and pro-environmental behavior (Cheng & Monroe, 2012; Wells & Lekies, 2006), an additional objective of this study is to explore whether children's environmental attitudes could help explain the expected interaction between outcome expectancy and contact with nature on pro-environmental behavior (i.e., mediated moderation) (Hypothesis 2). Contact with nature enhances pro-environmental attitudes. As expressed above, the relation between experiences in nature and environmental attitudes varies with several factors including negative emotions accompanying nature experiences (Larson et al., 2011) and volitional compared to compulsory activities in natural environments (Collado et al., 2015). The conviction that individual efforts will make a difference may also affect the strength of the contact with nature-environmental attitudes relation. This, in turn, could help explain the expected moderating effect of outcome expectancy on the contact with nature-behavior relation (Figure 1A).

INSERT FIGURE 1 ABOUT HERE

2. Method

2.1. Participants

Four hundred and thirteen children participated in the study (M_{age} = 10.00, *SD*= 1.82; 53.2% female). Children were primarily from well-educated (72% of the parents were college graduates) and middle-income (68% of the family income between 25.000- 45.000 Euros/year) families.

2.2. Procedure

Data were collected in four public primary schools in Madrid. Parents of children in fourth, fifth and sixth grade received an informed consent letter from the school. They were asked to report their educational level, their family socioeconomic status and their children's contact with nature. Seventy-two percent of the parents authorized their children to participate, six percent did not authorize them and the rest did not reply. Child assent was also obtained. Questionnaires were completed individually at school with assurance of child anonymity.

2.3. Measures

Data were collected via an Internet-based survey at school with a well-validated game-format instrument developed for children as young as six years (Evans et al., 2007). Items registering children's contact with nature (CN), environmental attitudes (EA), pro-environmental behavior (EB) and outcome expectancy appeared on the computer screen together with moveable animated cartoons indicating the direction and intensity of children's responses. For CN and EB, participants indicated how frequently they performed a series of actions.

For EA and outcome expectancy, children had to indicate whether they agreed or disagreed with each sentence by clicking either the "agree" [green balloon] or "disagree" [red balloon] button. Once the participant clicked on his/her selected option, the [red/green] balloon expanded and two more options appeared: "a lot" (written in a bigger font) or "a little" (written in a smaller font) thus yielding a scale ranging from 1 = disagree-a lot; 2 = disagree-a little; 3= agree- a little to 4 = agree- a lot. For further details, see Evans et al. (2007).

2.3.1. Contact with nature

Children's CN was scored using four items used in prior work (Collado et al., 2015; Gotch & Hall, 2004; Larson, Green, & Castleberry, 2011). Participants were

asked “How frequently in the past 12 months have you spent time in natural places such as the country side, the beach, the mountains, etc?”; “2) “how frequently in the past 12 months have you visited places such as zoos or aquariums”; and asked to indicate: never (1), between 1 and 5 times (2), between 6 and 10 times (3), and more than 10 times (4). They were also asked 3) “Do you play in natural places after school time?” and 4) “Do you play in natural places during the weekends?” Response format was 1 (never), 2 (sometimes), 3 (most of the times) and 4 (always). Internal consistency herein was good ($\alpha = .79$), and comparable to prior work (Collado et al., 2015).

Because children’s independent mobility depends on parental permission, parents were asked about their children’s CN as a partial check on the validity of the child report data. The same items used for the children were attached to the parents’ consent letter, but referring to their child. For instance: “My child plays in natural places after school time”. Internal consistency was good ($\alpha = .75$). The correlation between parental responses and those of their children was $r = .65$, $p < .001$. In order to minimize response bias in this cross sectional study, parental responses were used in the subsequent analyses as a measure of children’s CN[1].

2.3.2. Environmental attitudes

We assessed EA with the New Environmental Paradigm (NEP). It is the most widely-used instrument measuring people’s EA (Dunlap & Van Liere, 1978; Dunlap, Van Liere, Mertig, & Jones, 2000; Hawcroft & Milfont, 2010). Previous studies have shown that the NEP is positively correlated with EB (Collado et al., 2013; Olli, Grendstad, & Wollebaek, 2001) and that children’s scores on the NEP increase after exposure to nature (Evans et al., 2007; Manoli, Johnson, & Dunlap, 2007). The NEP, adapted for use with children by Evans et al. (2007), was employed to measure

[1] The mediated moderation model (Figure 1A) was checked using children’s self-reported contact with nature as the independent variable instead of parental reports. The relations between the variables remained similar.

children's EA. It consists of eleven items (e.g., "Animals and people should be treated equally") registering whether the respondent considers human impact on nature and opinions about limits to growth. Internal consistency in the current sample was $\alpha = 0.82$.

2.3.3. Environmental Behavior

Children's self-reported EB was registered by 19 items related to daily conservation habits, such as recycling paper, glass or plastic, reusing paper and saving water (see Appendix A). For instance: "I recycle glass". The response format was: never (1), sometimes (3), most of the times (3), or always (4). This measure is based on the General Environmental Behavior (GEB) scale (Kaiser, 1998; Kaiser & Wilson, 2004) and its adaptation for children (Collado, Evans, & Sorrel, 2017; Evans et al., 2007).The internal consistency of the current sample was $\alpha = 0.80$. See Evans et al. (2007) for additional data on the reliability and validity of the child NEP and EB scales, respectively.

2.3.4. Outcome expectancy

As far as we know, there are no validated environmental outcome expectancy instruments for children. We assessed outcome expectancy by four items that were as specific as possible and that could be easily understood by children. These were: "When I walk or cycle instead of travelling by car, I help to protect the animals and plants"; "When I switch off the light when leaving a room, I help to make animals and plants that live in the wild happy"; "When turning off the tap while brushing my teeth, I help to protect the places in nature where plants and animals live"; "When I recycle, I help to protect plants and animals that live in the wild". Internal consistency was acceptable ($\alpha = 0.70$).

We conducted extensive pilot testing with a different sample of 60 children to validate the outcome expectancy measure. Forty-two children filled in the

200 questionnaire. Then, they were divided into groups of five or six and asked about each
201 question, probing comprehension. Some amendments were done at this point (e.g., the
202 word environment was substituted by plants and animals, as it seemed easier to
203 understand by children).

204 Next, the scale was administered to a different sample of 39 children. Each child
205 was then randomly asked about two of the items to check comprehension. The
206 researcher repeated the child's answer and then asked questions such as "Can you tell
207 me why you said that?; Do you think turning off the tap while brushing your teeth helps
208 protect plants and animals?" "Why would this help?". Two trained researchers who had
209 not seen children's scaled answers reported what they thought the child had checked off
210 on the actual scale. The items had 95% consistency between the child's scaled answer
211 and the open-ended probes.

212 In addition, we sent a questionnaire to the parents of the 39 children as an
213 additional check of children's understanding of the questions. Twenty-two
214 questionnaires were returned. Parents were asked questions such as "Do you think that
215 when your child turns off tap while brushing his/her teeth s/he believes this behavior
216 helps protect animals and plants? Parents could respond Yes or No and rate their answer
217 confidence. Overall, parents believed their children can link their actions to the
218 protection of plants and animals, as 72% marked "yes" for the four items and, of these,
219 61% of them indicated they were very confident in their response.

220 **3. Results**

221 Descriptive statistics and correlations among the variables are provided in Table
222 1. As expected, all variables were positively correlated with one another.

223 INSERT TABLE 1 ABOUT HERE

Our next step was to check the hypothesized CN*outcome expectancy interaction (H1) by conducting a two-step regression analysis on EB. On step 1, we entered CN and outcome expectancy. On step 2, we entered the CN*outcome expectancy interaction term. More CN was associated with more EB (β = .59, p < .001) but this association was moderated by outcome expectancy (β = -.13, p < .001). The interactive model explained 25% of the variance of children's EB. To follow up on this significant interaction, we conducted floodlight analyses (Joireman & Liu, 2014; Landry et al., 2018; Spiller, Fitzsimons, Lynch, & McClelland, 2013). Deconstruction of the interaction showed that the relation between CN and EB was significant for those with expectancy scores less than or equal to 3.70. In other words, CN seems to have a stronger effect on EB for children with low outcome expectancy than for those with high outcome expectancy (Figure 2). Note this is the opposite interactive pattern than expected in Hypothesis 1.

INSERT FIGURE 2 ABOUT HERE

We next explored whether EA could explain the interactive effect of CN and outcome expectancy on EB (Hypothesis 2, Figure 1B). This mediated moderation was analyzed with PROCESS program (Model 8) to estimate the confidence interval for the indirect effect. The direct effect of CN on EB became non significant (β = .10, p = .11) as did the interaction effect between CN and outcome expectancy (β = -.02, p = .25) on EB with the inclusion of EA in the model. There is a direct effect of the interaction term on EA (β = -.15, p < .001), and a direct main effect of EA on EB (β =.45, p < .001). The CI for the indirect effect of CN*outcome expectancy on EB via EA was [.02, .05], suggesting that the interactive effect of CN and outcome expectancy on children's EB is mediated by EA. The model explained 44.52% of EB variance.

Last, we examined whether the above results could be influenced by SES. We reran all of the above models with the addition of household income and parental education. There were no changes in the outcomes (see Supplementary material).

4. Discussion

There is growing recognition of the relevance that childhood contact with nature has for the development of pro-environmental attitudes and behaviors (Chawla & Derr, 2012; Evans, Otto, & Kaiser, 2018; Whitburn, Linklater, & Milfont, 2018). More specifically, direct experience in nature increase people's frequency of conducting environmentally friendly actions (Evans et al., 2018; Chawla & Derr, 2012; Hinds & Sparks, 2008), and this effect is partially mediated by increased environmental attitudes (Cheng & Monroe, 2012; Collado et al., 2013; Wells & Lekies, 2006).

Despite the accumulated evidence on the positive link between contact with nature and pro-environmental behaviors, the strength of this relation varies according to individual factors, such as previous experiences in nature (Collado et al., 2015) and type of nature exposure (compulsory vs free play) (Wells & Lekies, 2006). However, potential individual factors moderating the contact with nature-pro-environmental behavior relation have received little systematic attention. To fill this gap in the literature, we focus on outcome expectancy as one individual factor that may affect the strength of the contact with nature-pro-environmental behavior relation. Previous research with adults has found a moderating effect of outcome expectancy on the relation between individual predictors of pro-environmental behavior and pro-environmental behavior (e.g., Landry et al., 2018, Staats et al., 2011). This is in line with research in other behavioral domains (e.g., Steward et al., 2009; Williams et al., 2005), as well as with the propositions of social cognitive theorists (e.g., Witte & Allen, 2000). Building upon this prior work and theorizing, we examined whether children's

outcome expectancy would increase the strength of the relation between contact with nature (as a predictor of pro-environmental behavior) and pro-environmental behavior (H1) and explored whether this effect would be explained by environmental attitudes (H2).

In line with previous studies (Chawla & Derr, 2012; Cheng & Monroe, 2012; Collado et al., 2015; Evans et al., 2007; 2018), exposure to nature was positively associated with pro-ecological behaviors among children. This association was moderated by children's beliefs of whether their actions can contribute to protecting the environment (i.e., outcome expectancy) but, contrary to what we expected (H1), the moderating effect was negative. We can only speculate why this counterintuitive effect may have occurred. One possible reason for the interaction pattern found in Figure 2 may be that when children already have a strong conviction that they are capable of positively influencing environmental quality, factors such as more frequent or intensive experiences in nature may be relatively superfluous given their already high degree of outcome expectancy. This interpretation of the moderating pattern uncovered herein is similar to one study on environmental outcome expectancy in adults. Ellen et al. (1991) found that for individuals who reported high outcome expectancy, the effect of environmental concern on demands for more government environmental regulation was weaker than for those who did not think their actions could make a difference. Another possible explanation for our findings is that children with higher environmental outcome expectancy also have stronger pro-environmental attitudes. Collado and colleagues (2015) found that contact with nature had a weaker association with pro-environmental behavior for those children with stronger pro-environmental attitudes.

The present results and several others document that early childhood experiences in nature predict more pro-ecological behaviors both in childhood (Cheng & Monroe,

2012) and later in adulthood (Evans et al., 2018; Hinds & Sparks, 2008; Ward Thompson, Aspinall, & Montarzino, 2008). Nonetheless, as indicated earlier, the strength of these associations is heterogeneous suggesting the operation of one or more moderating factors. For the first time, we have empirically demonstrated that outcome expectancy may alter the strength of the connection between childhood experiences in nature and the development of pro-ecological behaviors.

In order to explore potential underlying reasons for the interaction of contact with nature and outcome expectancy on children's pro-environmental behavior, a mediated moderator analysis was conducted with environmental attitudes as a possible mediator. In line with H2, we found that the interactive effect of contact with nature and outcome expectancy was mediated by environmental attitudes. In other words, the moderation effect appears to be produced through environmental attitudes. Contact with nature is more strongly related to environmental attitudes for children whose outcome expectancy is low. Environmental attitudes, in turn, were positively associated with children's self-reported pro-environmental behavior. These results indicate that the relation between contact with nature and environmental attitudes/behavior is stronger for children low in outcome expectancy. It is noteworthy that this mediated moderation model accounts for a greater proportion of pro-environmental behavior variance (>40%) than most child pro-environmental behavior studies (Cheng & Monroe, 2012; Collado et al., 2015; Evans et al., 2018).

Our findings have potentially important implications for the design of environmental education programs. First, in light of the positive link between contact with nature and pro-environmental behavior found in this study as well as in previous ones (e.g., Chawla & Derr, 2012; Evans et al., 2018), we encourage environmental educators to organize their programs outside in nature. This way children can benefit

from the formal instruction of the program as well as from the direct experience of nature. Second, given our results and others with adults (Ellen et al., 1991; Harland et al., 2007; Lam, 2006; Lam & Chen, 2006; Staats et al., 2011) on the saliency of outcome expectancy for conducting pro-environmental behavior, environmental educators should consider ways to enhance children's outcome expectancy for protecting the environment. The severity of environmental problems can be overwhelming, especially for children (Gifford, 2011; Sobel, 1996). Highlighting the seriousness of environmental issues such as Global Climate Change might generate the perception that nothing one person can do would matter (Evans, 2018; Gifford, 2011). Considering that children's abstract thinking is still developing (Dumontheil, 2014; Piaget, 1962), issues such as climate change or the extinction of species might be difficult to link to specific individual actions. Given that outcome expectancy contributes to children's pro-environmental behaviors, educators could emphasize how performing small tasks locally is related to specific outcomes, both locally and globally. For instance, children could be taught not only about how to recycle, which is related to individual beliefs about one's capabilities to perform a target behavior of interest (i.e., self-efficacy), but also about what the results of recycling are, such as how many trees are being saved by the amount of paper a child can recycle in a year. Feedback about the patterns needed to accomplish given outcomes can be more influential in regulating people's actions than reinforcement itself (Bandura, 1977). Furthermore, our findings point out that frequent experiences in nature are especially relevant for children low in outcome expectancy. In order to overcome children's feelings that their actions have no repercussions for the health of the environment, initiatives that encourage children's contact with nature should be promoted.

Some limitations should be considered when interpreting the findings. First, our study is cross-sectional and results should not be interpreted causally. Other currently unspecified factors could also be associated with the outcome expectancy by contact with nature interaction on pro-environmental behaviors. For instance, how much and in what manner children's parents engage with nature might also prove impactful. It may also be that other factors included in Bandura's theory (1977), such as self-efficacy, play a role in the contact with nature by outcome expectancy relation. Future studies should look at the joint roles of self-efficacy and outcome expectancy in regulating children's pro-environmental behavior, as well as the mechanisms influencing both constructs. Nevertheless, the fact that we found an interaction effect indicates that our model is less subject to threats to internal validity than prior work on the direct link between contact with nature and pro-environmental behavior. Any alternative causal explanation for our results would have to explain the interaction as well as the main effects. The plausibility of such alternative explanations is much lower (Cook & Campbell, 1979). It is also worth noting that response bias was minimized in the present study by using parental reports of their children's frequency of contact with nature and that the addition of parental education of household income as statistical controls did not change any of the findings. The best way to address the internal validity weakness of our study would be to conduct a true experiment with manipulation of exposure to nature and of outcome expectancy.

A second limitation concerns the fact that we assessed self-reported rather than actual pro-environmental behavior. It should also be noticed that some of the behaviors included in the pro-environmental behavior scale (e.g., I separate waste) are likely to be dependent on parental decisions. Future studies could consider the effect of parental descriptive and injunctive norms on children's pro-environmental behavior, especially

for those behaviors in which parents are usually more involved (e.g., means of transport to school). The veracity of children's responses should also be evaluated by, for instance, asking parents about the frequency of their children's pro-environmental actions or by direct observation.

4.1. Conclusion

The present study extends knowledge about factors and processes linked to children's pro-environmental behavior. We show outcome expectancy moderates the well-documented link between children's exposure to natural environments and more ecologically responsible behavior. Experiences in nature, while important, seem to matter less for a child who already has a well developed sense of outcome expectancy for environmental challenges. This highlights the necessity of considering outcome expectancy when trying to explain differences in the benefits of exposure to nature for people's engagement in pro-environmental behaviors. Our results also suggest the practical importance of providing feedback about how individual actions help to achieve local and global environmental goals. We encourage social scientists studying ecological behavior to not only examine its correlates but to probe deeper into the psychological processes underlying the etiology of pro-environmental behavior.

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555 Appendix A

556 **Children's pro-environmental behaviours scale** (adapted from the Children's
557 Ecological Behaviors Scale; Evans et al., 2007). Response format: never (1), sometimes
558 (2), most of the times (3), always (4).

559

560 1. After one day of use, my sweaters or pants go into the laundry.
561 2. As the last person to leave the room, I switch off the lights.
562 3. I leave electrically powered appliances (TV, stereo, printer) on standby (standby
563 means background power is on so it turns on without warming up).
564 4. I ride a bicycle, take public transportation or walk to school.
565 5. If I am offered a plastic bag in a store, I take it. (*Reverse*)
566 6. I reuse the shopping bags.
567 7. I recycle used paper.
568 8. I keep gift wrapping paper for reuse.
569 9. For making notes, drawing, etc., I take paper that is already used on one side.
570 10. I put empty batteries in the garbage. (*Reverse*)
571 11. I turn off the water when I brush my teeth.
572 12. I read books, publications, and other materials about environmental problems.
573 13. I stand in front of the refrigerator with the door open trying to decide what I
574 want to eat. (*Reverse*)
575 14. I learn about environmental issues in the media (newspapers, magazines, TV, the
576 Internet).
577 15. After a picnic, I leave the place as clean as it was before.
578 16. I recycle glass bottles.

17. How often do you throw stuff on the ground when you don't see any trash cans? (*Reverse*)

18. I place plastic waste in the recycling bin.

19. I separate waste.

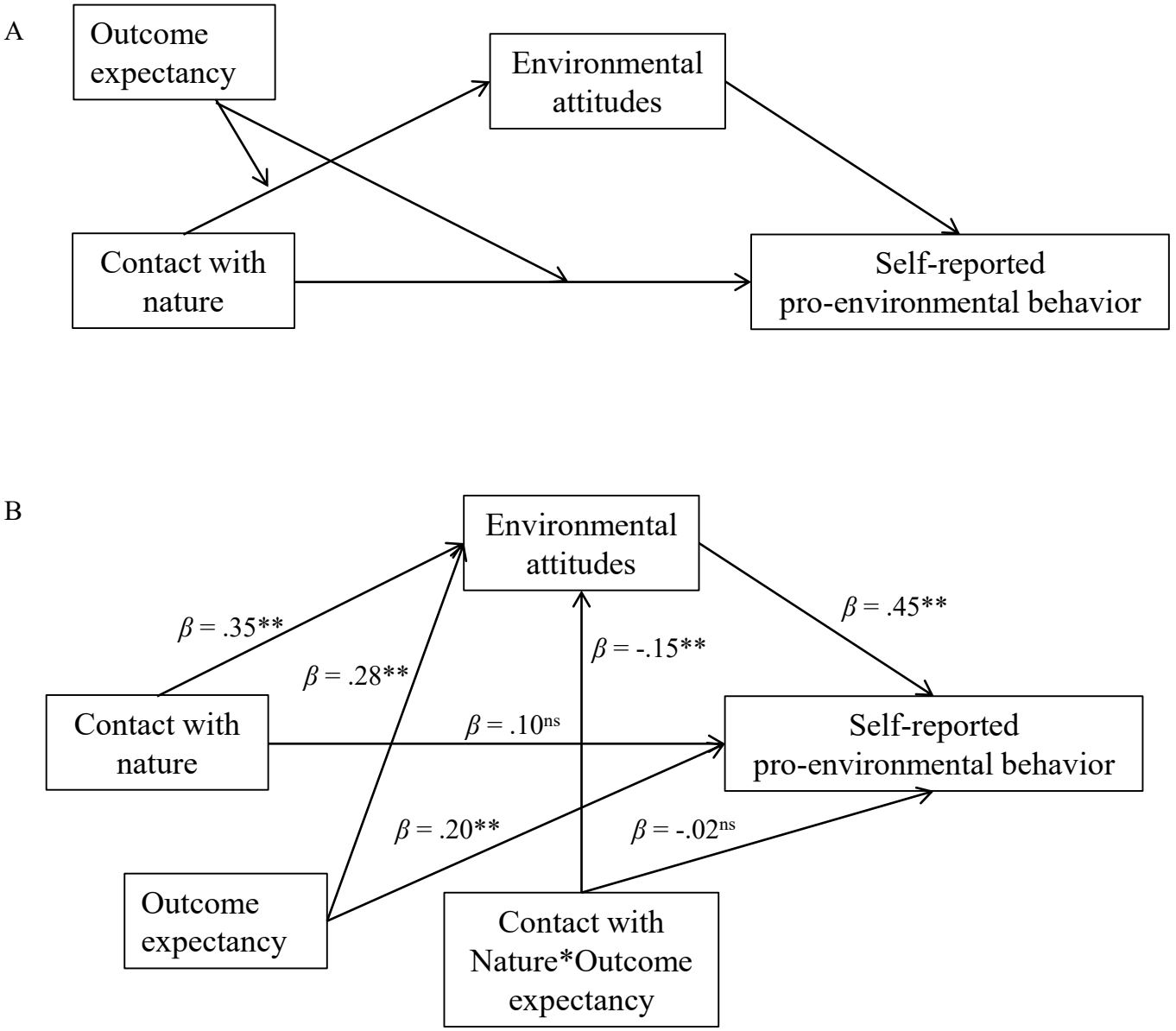

Figure 1. Hypothesized relation between the variables (A) and statistical diagram with regression weights for the moderated mediation model (B). $^{**}p < .01$, ns = non significant

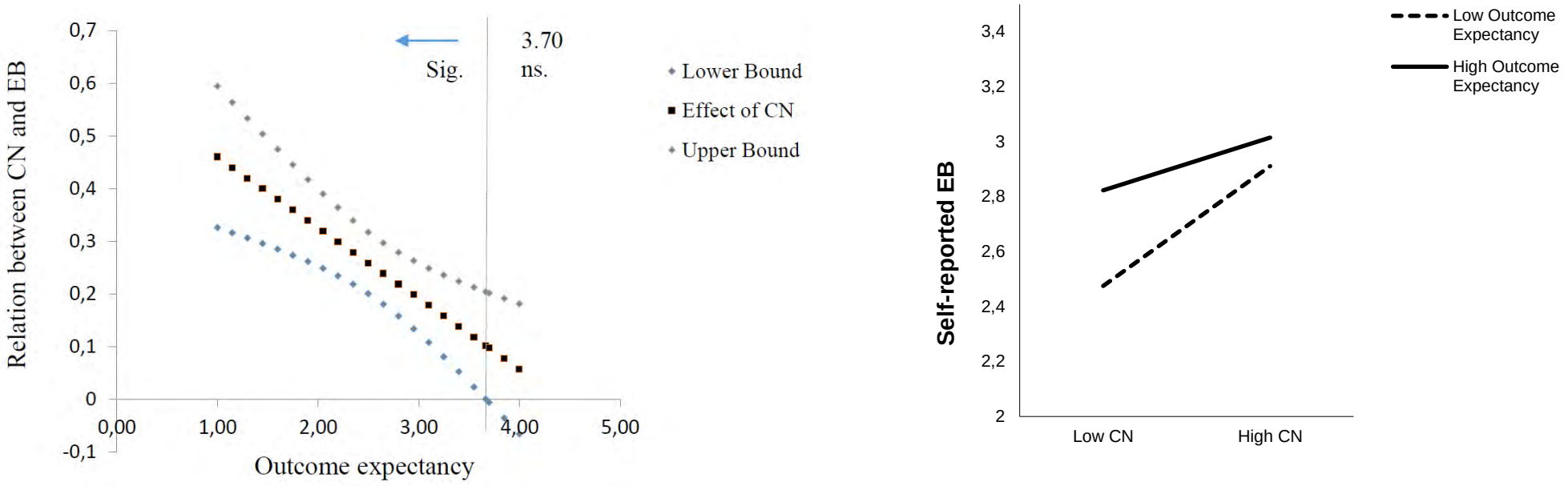

Figure 2. Johnson-Neyman confidence limits (left) and standarized moderation effect of Outcome Expectancy scores on the relation between frequency of contact with nature and self-reported pro-environmental behavior and (right). CN = Contact with nature; EB = pro-environmental behavior.