Pro-Environmental Education in Tajikistan:
Peer-to-Peer Approach as Key to Unlock the Change

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Abstract

Nowadays, it is crucial to motivate human pro-environmental behaviour worldwide. Pro-environmental social identities can motivate people's pro-environmental action, but research on how to foster the creation of such pro-environmental social identities has almost entirely neglected Central Asian countries. This study tests whether peer-to-peer environmental education can help create a shared pro-environmental social identity that motivates pro-environmental behaviour among youth in Tajikistan. Ten interns from the University of Central Asia held environmental workshops for their high school pupil peers (*N*=298) from rural towns. As expected, climate change awareness and pro-environmental group norms among high school pupils increased significantly after the workshop. Peer trainers were generally perceived as identity leaders, and higher perceived identity leadership was correlated with an increase in youth identification, though unexpectedly not related to an increase in environmental group norms or climate change awareness. Although this study has limitations and further research is needed, it provides initial evidence of the effectiveness of peer-to-peer environmental education in raising awareness on environmental problems among youth in Central Asia, and, importantly, in fostering the creation of pro-environmental social identities, which could help mobilise Tajik youth as a group for pro-environmental action.

Keywords: peer-to-peer education, pro-environmental social identity, pro-environmental group norms, identity leadership.

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Numerous issues like global warming, pollution, water shortages and loss of biodiversity represent a major threat to environmental sustainability, which is a core challenge of our time (Steg et al., 2008). Human socio-economic activities are exceeding what our ecosystems can sustain at an exponentially increasing rate (Steffen et al., 2015), placing the root of environmental threats in anthropogenic causes (Swim et al., 2011). Changes in human behaviour are urgent to limit environmental degradation, but people have been slow to adapt accordingly (Zelenski et al., 2015). Hence, promoting pro-environmental behaviour, defined as behaviour with a reduced or positive impact on the availability of resources of the environment and/or the alteration of the structure and dynamics of ecosystems (Steg et al., 2008; Stern, 2000), is fundamental to mitigate environmental degradation.

When it comes to the promotion of pro-environmental behaviour, environmental education, intended as information provision with the scope of raising awareness on environmental issues, appears to be the most widely used intervention (Steg et al., 2019). However, awareness alone is not particularly effective (e.g., Schultz, 1998; Staats et al., 1996). The importance given to information provision places its roots in the knowledge-deficit model (Schultz, 2002), stating that people do not act pro-environmentally either for a lack of awareness about environmental problems, or of knowledge about the appropriate behaviour to adopt in their regard. Although research to date shows that awareness is indeed fundamental to stimulate change, in order to act pro-environmentally people need to be motivated as well (Steg et al., 2014). An element that plays a crucial role in motivating pro-environmental behaviour is identifying with a group that endorses pro-environmental norms, meaning rules guiding human

behaviour in a pro-environmental direction. Generally, people derive part of their self-concept, namely their social identity, from their knowledge of and emotional attachment to groups (Social Identity Theory; Tajfel & Turner, 1979). When a particular social identity is salient, group members are defined by their shared group membership and behave in line with the internalised group norms associated with this particular group membership (Self-Categorisation Theory; Turner et al., 1987). Thus, a pro-environmental social identity, meaning the identification with a group with pro-environmental norms, can motivate individuals to act pro-environmentally (Fielding et al., 2016; Fritsche et al., 2018). A crucial question that arises is how environmental education should be delivered in order to help shape a shared identity that motivates pro-environmental behaviour.

Pursuing the formation of pro-environmental social identities to motivate pro-environmental behaviour is becoming increasingly important worldwide, but most research has mainly focused on the Western world, almost completely neglecting the Global South. However, environmental behaviour, like every other human act, is influenced by cultural factors. For this reason, adopting a cross-cultural perspective is fundamental for environmental psychology to develop a corpus of knowledge representative of the diversity of humankind (Tam et al., 2020). Central Asian countries in particular have been sampled extremely rarely (Tam et al., 2020), although climate change has enormous significance for this region, already highly vulnerable to natural disasters such as droughts, floods, earthquakes, and mudslides (Bjerde, 2021). Considering that its social, cultural and economic reality is very different from the Western individualistic world, it is essential to study the most suitable approaches to foster the creation of strong pro-environmental social identities that can promote pro-environmental behaviour in this specific region. It is especially relevant to focus on how to engage young people in addressing

environmental problems, since future generations will be increasingly affected by climate change and will have to implement the most drastic behavioural changes (Sanson et al., 2019). Given that the process of internalisation of group identities has been shown to start from a very early age (Bennett, 2011; Bennett et al., 2011), fostering pro-environmental social identities among young people appears to be a promising approach to motivate youth's pro-environmental behaviour.

The current research focuses on environmental education as a means to develop a shared pro-environmental identity in order to motivate pro-environmental behaviour among youth in the Central Asian country of Tajikistan. To our knowledge, this is the first psychological research on the promotion of pro-environmental behaviour on a Tajik sample. Central Asian countries are characterised by a predominantly collectivistic culture (Hofstede, 2014), in which people typically have more consideration for group norms and collaboration within the in-group. For this reason, we propose that peer-to-peer environmental education, meaning young people collaborating with other young people to teach them about environmental issues and the need to act upon them, can be effective in mobilising Tajik youth as a group for pro-environmental action. We assume that peer-to-peer environmental workshops can raise awareness on environmental problems and help create a shared pro-environmental social identity with strong pro-environmental norms that motivates pro-environmental behaviour.

Relevance of Pro-Environmental Social Identity for Pro-Environmental Action

Research, mostly in Western countries, shows that a pro-environmental social identity can motivate individuals to act pro-environmentally (Fielding et al., 2016; Fritsche et al., 2018). The stronger the group identification is (defined as the "positive emotional valuation of the relationship between self and in-group"; Postmes et al., 2012, p. 599), the greater the will to act

according to the group norms will be. Group norms are "rules and standards that are understood by members of a group, and that guide and/or constrain human behaviour without the force of laws" (Cialdini et al., 1998, p. 152). Group norms can be distinguished into two kinds: a) injunctive norms, which refer to the behaviour commonly approved, or disapproved of and b) descriptive norms, which refer to the behaviour shown by most group members (Cialdini et al., 1998). It follows from the foregoing that identification with a group that endorses pro-environmental norms can motivate pro-environmental behaviour.

The few studies conducted in Eastern countries on the importance of social identification processes in shaping behaviour confirm similarities, rather than differences, to the ones conducted in Western countries (van Dick et al., 2016). For example, a meta-analysis in the organisational sector by Lee at al. (2015) found positive relations between identification with the organisation and actions beyond one's own formal job description. This means that people who strongly identify with their organisation are more willing to help it achieve its goal because there is a close match between the organisational goal and their own (Lee et al., 2015). Importantly, the influence of such identification was found to be even stronger in collectivistic societies than in individualistic ones (Lee et al., 2015). Therefore, we assume that the more Tajik youth identify as youth, and the more they regard youth as a group that endorses pro-environmental norms, the more likely they are to act pro-environmentally. Hence, fostering the formation of pro-environmental social identities in young Tajikistani could play a crucial role in promoting pro-environmental behaviour.

The Process of Social Identities Formation

The process of social identity formation in individualistic cultures does not necessarily directly translate to collectivistic ones. In order to explain social identity

formation processes in Western countries, Social Identity Theory (Turner et al., 1987) is often applied. This theory is primarily inter-group focused, rather than focusing on intra-group relations, and it identifies inter-group comparison as a key source of in-group identification (Yuki, 2003). However, this theoretical approach may not work in every cultural context. As a matter of fact, in a collectivistic society, in-group identification is largely based on the promotion of collaborative behaviours and maintenance of relational harmony within in-groups (Yuki, 2003). For instance, social identification processes in the collectivistic Japanese society were found to focus more on intra-group relationships and less on inter-group comparisons (Yuki, 2003). Hence, the defining characteristics of a group in a collectivistic society is the interdependence among group members who collaborate for the achievement of a common goal. For this reason, promoting collaboration towards a common objective among group members appears to be a promising approach to create strong social identities in collectivistic contexts.

Peer leaders, meaning leaders emerging from one's own group, have been shown to be particularly effective in fostering group collaboration towards a shared goal (Steffens et al., 2014). Moreover, it has been found that in Western societies individuals belonging to one's own group are particularly effective in fostering the specific formation of pro-environmental social identities (both in content and strength) (Abrahamse et al., 2013; Jans, 2021). For this reason, we hypothesise that peer-to-peer environmental education, in which young people collaborate with other young people to teach them about environmental issues and the need to act upon them, would not only raise awareness about environmental problems, but also enhance the strength of pro-environmental social identification with youth and pro-environmental group norms among Tajik youth (Hypothesis 1).

Social Identity Approach to Leadership

We hypothesise that, among youth, peer leaders will not only be successful in raising awareness about environmental issues, but also strengthen pro-environmental social identification with youth and pro-environmental norms by fostering collaboration within the group (Hypothesis 1). However, not all peer leaders are effective to the same degree, their effectiveness depends on the extent to which they are seen as representative of the group. We propose that peer trainers are particularly effective in shaping strong social identities when they are perceived as identity leaders, since identity leaders have been found to be more effective in fostering collaboration within groups (Steffens et al., 2014). According to the Social Identity Approach to Leadership (Steffens et al., 2014), leadership is a process that depends on leaders' capacities to represent, advance, create, and embed a sense of social identity for the group members. Therefore, an identity leader is a person who a) represents the unique qualities that define the group and the group membership (identity prototypicality); b) advances and promotes the core interests of the group (identity advancement); c) brings group members together by creating a shared sense of "we" and "us" within the group and defining the boundaries and content of the identity (identity entrepreneurship); d) develops structures, events and activities that give weight to the group's existence and allow group members to live out their membership (identity impresarioship).

This leadership framework was primarily adopted in Western organisational contexts (see for example Haslam et al., 2017), but it offers interesting perspectives for formation of pro-environmental social identities. Applying this model to other contexts, for instance to the field of environmental education, would extend the literature and provide insights on the role that these dynamics play in different situations. Moreover, in our research this model would offer an

innovative perspective on the functioning of identity leadership in the cultural context of

Tajikistan. Given the particular effectiveness of identity leaders in fostering the creation of

strong social identities, we hypothesise that the more the peer trainer is perceived as an identity

leader, the more the workshops will be effective in enhancing environmental awareness, strength

of identification with youth and pro-environmental norms (Hypothesis 2).

Current Research

The current research has been conducted as part of The World Bank's project Climate

and Environment (CLIENT), which is a five-year programme with the objective of strengthening

the capacity of Central Asian countries to achieve sustainable and resilient economic growth.

One pillar of the CLIENT project is related to communication for climate awareness. The aim of

the communication plan is to provide a roadmap that encourages environmental problem

awareness and catalyse action for sustainable and resilient economic growth.

Specifically, this project has been conducted by the consultancy team AnchorEd on

behalf of The World Bank with the goal of informing a sample of rural communities in

Tajikistan about pollution, climate change and resilient landscapes. To achieve its objectives, the

project aims to raise environmental awareness amongst youth and engagement in early-stage

entrepreneurship activation. Native-born Tajik students of the University of Central Asia

delivered workshops on environmental issues to high school students coming from rural towns.

Pre- and post-quantitative measures among high school pupils were taken and a post-qualitative

questionnaire was administered.

Given the crucial role of collaboration towards a common goal in order to build strong

social identities in collectivistic cultures and the particular effectiveness of identity leaders in

fostering such collaboration and therefore the formation of social identities, we hypothesise that:

1) Taking part in the peer-to-peer environmental workshop will increase a) awareness about environmental problems, b) social identification with youth and c) pro-environmental group norms.

2) The more the peer trainer is perceived as an identity leader, the more the workshop will be effective in enhancing a) environmental awareness, b) identification with youth and c) pro-environmental norms.

Method

Procedure

The University of Central Asia recruited ten students from environmental/climate science tracks to take part in the project as interns, who received monetary compensation of an unknown amount from the university. University interns attended an introductory week of formation delivered by AnchorEd. During this introductory week they were instructed about the aim of the project, the logistics and what was expected from them. Moreover, they designed the flow of the environmental workshop for high school pupils with the support of their local supervisors and the AnchorEd team. After completing the formation, the university interns together with their local supervisors proceeded to recruit the sample of high school pupils to attend the environmental workshop. By being in contact with school directors, they were able to reach the high school pupils' families, to ask for personal and parental consent.

Environmental workshops were delivered once on twelve sites, namely eight rural villages, two Khorog schools and two summer camps. High school pupils participated in a pre/post workshop quantitative survey, assessing demographics, climate change awareness, social identification with youth, group norms and identity leadership. Post qualitative data were also collected to dive deeper into the aforementioned constructs. High school pupils

received a certificate of attendance and a backpack.

Intervention

The intervention used in our project was a peer-to-peer environmental workshop, meaning that it was designed and delivered by young students to fellow young students. The workshop communicated the severity of climate change problems and the urgency to act upon them. The workshop was designed according to the BUILD approach. This method was developed by the African Leadership Academy (2019) to help people understand the fundamentals of entrepreneurial leadership and the need to create innovations that address the root cause of problems. The BUILD model is broken into the following five stages: 1) Believe: Developing the belief that one has the power to change the world around oneself; 2) Understand: Developing empathy and understanding of the problems and the community one intends to serve with an entrepreneurial venture; 3) Invent: Invent a wide range of possible solutions, prototype and test the ideas; 4) Listen: Listening to feedback from potential customers and other stakeholders; 5) Deliver: Delivering solutions for the problem. Due to time constraints, related primarily to travel time and the prioritisation of climate change awareness-building, the focus of the current intervention was on the Believe, Understand and Invent stages.

Peer trainers began the workshop motivating participants and encouraging them in their ability to change their communities and the world around them. Next, the Climate Change Mini-Lesson to enhance participants' understanding of climate change was delivered. The lesson provided high school pupils with fundamental, basic knowledge of the climate crisis and the resulting environmental degradation, with an emphasis on the regional ecosystem and its role in the local context. Two examples of topics discussed were the environmental impact of

littering and the meat industry. To inspire high school pupils and illustrate the capacity of young

people to affect a change, a case study was discussed. Specifically, it was described how a young

Tajik climate activist founded a Green Society Club at the university to raise awareness of

environmental issues and encourage participation in sustainable environmental practices both on

campus and in the city of Khorog. Lastly, a brainstorming session among high school pupils

regarding possible solutions to climate change problems was conducted in order to foster

collaboration within the group. Due to time constraints, the two summer camp workshop sessions

were limited to the climate change lesson and the brainstorming session was not completed. All

workshops and their accompanying powerpoint deck were presented in the Tajik language.

Participants

A sample of 298 high school pupils (55.5% females, 44.4% males) from rural towns of

Tajikistan was recruited. Ages were clustered in <12, between 13 and 16, and >16 in order to

guarantee anonymity of participants. Most students (90.5%) were aged above 13 years old.

According to the native supervisors from the University of Central Asia, car ownership

represented a good predictor for socio-economic status of participants; 43.5% of families owned

a car and were therefore categorised as high socio-economic status, while 56.5% did not and

were categorised as low socio-economic status. The sample description can be found in Table 1.

Table 1

Sample Description

	Age <12	Age 13/16	Age >16	Men	Women	Car	No car	N
Total	9.5%	63.5%	27%	44.5%	55.5%	43.5%	56.5%	298

Measurements

Quantitative Survey[1]

All items, apart from identity leadership ones, were administered pre/post intervention and were measured on a 7-point Likert Scale (1=Strongly disagree; 7=Strongly agree). In order to design a questionnaire accessible to our young sample, we limited the number of items to a maximum of 15. All questions were provided in English and then translated into Tajik by the interns and professors. For the complete surveys, see Appendix A. Descriptive statistics for all items can be found in Table 2.

Climate Change Awareness. [2] Climate change awareness was measured by two items which were considered separately in the analysis. The item "Humans, through their activities, are damaging the environment" assessed anthropogenic climate change, namely the awareness that the environmental crisis is due to human actions. The item "I am worried for the health of our planet" addressed climate change concern, namely the grade of concern elicited from climate change. The two items did not highly correlate (r =.191).

Social Identification With Youth. The Single-Item Measure of Social Identification by Postmes et al. (2012) was administered, since it was shown to have a good validity and reliability. The item was: "I identify with young people".

Injunctive Group Norms. Injunctive norms were assessed with the single item: "Respecting the environment is important to young people".

Descriptive Group Norms. Descriptive norms were assessed with the single item: "The

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[1] Two pre/post items on perceived entrepreneurial skills were also administered because developing young entrepreneurs was a crucial focus of The World Bank's project. However, since the focus of the Master Thesis project is more related to studying how the peer-to-peer approach could impact social identification dynamics, the two items are not considered in the analysis.

[2] Initially, five items were intended to assess climate change awareness. However, the scale was not reliable for post measures (ɑ= .31). Therefore, only the two most theoretically relevant items were considered in the analysis.

majority of other young people's behaviour respects the environment".

Identity Leadership. The Identity Leadership Inventory–Short Form (Steffens et al., 2014) was administered as a post measure to high school pupils. Three items assessing identity prototypicality, identity advancement and identity entrepreneurship were included (e.g., "This leader is a model member of the young people group"). The item addressing identity impresarioship was removed before the questionnaire administration because it was judged as too complicated for high school pupils to comprehend in terms of phrasing.

Qualitative Survey[3]

Post qualitative questions were asked to dive deeper into the constructs. For the complete surveys, see Appendix A. Specifically, we assessed the grade of enjoyment, usefulness of the programme and the perceived importance of having a peer leader delivering the workshop.

Table 2

Descriptive Statistics for all measures for High School Pupils

	M (Pre)	SD (Pre)	M (Post)	SD (Post)	ɑ
Anthropogenic climate change	5.67	1.89	6.14	1.61	-
Climate change concern	5.57	1.63	6.21	1.34	-
Social identification with youth	6.30	1.28	6.50	1.18	-
Injunctive norms	6.40	1.15	6.70	0.94	-
Descriptive norms	5.50	1.67	5.80	1.50	-
Identity leadership	-	-	6.50	0.74	.68

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[3] Two questions on the desire to become a future entrepreneur and on feedback for future projects were also asked, but not considered in the analysis, due to the reasons outlined in footnote 1.

Analysis Plan

Quantitative data were firstly prepared and ordered in the database. The dataset was scanned for impossible data (e.g., scores that are out of the answer range) and pre- and post-measures were paired. Pairing pre/post measures was challenging because multiple participants misunderstood the code creation rules, or had unclear handwriting. However, all codes were eventually paired and no answer was excluded from the analysis (even though 19 high school pupils only answered the pre-measurement, while 13 only the post-measurement). Frequencies were then studied for all items. Then, factor analysis and reliability analysis for climate change awareness and identity leadership were conducted. To test Hypothesis 1, a paired sample t-test was run. To test Hypothesis 2, differences between high school pupils' pre- and post-scores were correlated with mean scores on identity leadership. Qualitative data were coded and analysed with the recourse to percentages. Answers were then considered as added information to have a deeper understanding of the findings coming from quantitative data.

Results

Quantitative Data Analysis

Workshop Effectiveness on Climate Change Awareness, Social Identification With Youth and Pro-environmental Group Norms

In Hypothesis 1, we proposed that collaborative environmental workshops held by a peer leader would enhance awareness about environmental problems, social identification with youth and pro-environmental norms. To test the hypothesis, a paired sample t-test was run. In other words, differences between the pre- and post-score of the measure for anthropogenic climate change, climate change concern, social identification with youth, injunctive group norms and

descriptive group norms were compared. Given the multiple analyses involved in the study, Bonferroni-corrected alpha levels of .01 were used to ensure an overall alpha of .05. As expected, high school pupils scored significantly higher on anthropogenic climate change, climate change concern, injunctive and descriptive norms after the workshop, compared to before, supporting Hypothesis 1. Social identification with youth did not differ significantly. However, both pre- and post-measurements scores were very high (see Table 2). Results are reported in Table 3.

Correlation Between Difference Scores and Identity Leadership

In Hypothesis 2, we proposed that the more the leader is perceived as an identity leader, the more the workshop would be effective in enhancing environmental awareness, identification with youth and pro-environmental group norms. To test the hypothesis, we ran a correlational analysis

Table 3

Results Paired Sample t-test

	M	95% CI	t	df	Sig. (2-tailed)
Anthr. climate change pre – Anthr. climate change post	-.49	-.73; -.25	-4.04	265	<.001*
Climate change concern pre – Climate change concern post	-.63	-.83; -.42	-5.93	260	<.001*
Social identification pre – Social identification post	-.10	-.28; .07	-1.16	263	.246
Injunctive norms pre – Injunctive norms post	-.24	-.39; -.08	-2.95	261	.003*
Descriptive norms pre – Descriptive norm post	-.35	-.59; -.12	-2.99	236	.003*

between pre/post differences of anthropogenic climate change, climate change concern, social identification with youth, injunctive group norms and descriptive group norms of high school pupils with identity leadership mean scores. The only significant correlation found was between the difference scores in social identification and identity leadership mean scores. This finding suggests that the more high school pupils perceive their trainer as an identity leader, the more identification with youth will grow after the workshop. No correlation with identity leadership mean score was found with the differences scores of any other studied construct, not further supporting Hypothesis 2. Results are reported in Table 4.

Table 4

Table of Correlations

Variable	1	2	3	4	5	6
1. ΔAnthr. climate change	-					
2. ΔClimate change concern	.12	-				
3. ΔSocial identification	.09	-.01	-			
4. ΔInjunctive norms	.15*	-.01	.24	-		
5. ΔDescriptive norms	.03	.04	-.02	.11	-	
6. *M* Identity leadership	.12	.07	.18**	.05	.07	-

Note. * Correlation is significant at .05 level (2-tailed)

** Correlation is significant at .01 level (2-tailed)

Qualitative Data Analysis

In order to have a better understanding of our findings, qualitative data was analysed. Answers were narrowed down to "Yes", "No", "Maybe", coded and then analysed through the recourse to percentages.

Enjoyment of the Programme

Overall, students perceived a very positive impact of the workshop. Almost all participants expressed their appreciation for the programme (99.3%).

Climate Change Awareness

The workshop was rated as useful to learn new information about climate change by 99.5% of the participants, supporting findings coming from quantitative data analysis. Participants reported that the workshop helped them in learning new, interesting information and in realising the importance and urgency of climate change (e.g., "In the past, I had no idea about the climate change topic and today I have learned a lot of information about it"). Students referred to concrete examples of new information they learned, like the consequences of using high amounts of plastic, littering and pollution in general. Answers showed that participants acquired a future-oriented perspective on climate change problems, being aware that its effects will be experienced in the long-term and will have different impacts across the globe. Lastly, workshops increased the sense of responsibility for climate change, its causes and consequences in high school pupils (e.g., "Starting from today we have to pay more attention to our environment"). They became aware of how human activities are destroying the planet and how we are therefore responsible for finding solutions (e.g., "I realised that we should not pollute the environment", or "Climate change is closely linked to people's attitudes"). Some people

reported the desire to act immediately in their daily life and to share their knowledge with friends and family.

Perceived Importance of the Peer Leader Element

The majority of high school pupils rated having a peer leader as a positive experience (84.6%). Only 2.7% rated it as negative and would have preferred an older teacher, while 10.9% expressed indifference with regard to the age of the facilitator. Participants who rated the peer leader as positive reported more confidence and openness in expressing oneself because they felt more understood (e.g., "Young people would understand us better"). Moreover, it was reported that young facilitators were more able to explain things clearly and straightforwardly (e.g., ""Explanations were clearer and I felt more comfortable. Adults have older views").

Discussion

In the current research, we proposed that peer-to-peer environmental education, meaning young people teaching other young people in a collaborative manner about environmental issues and the need to act upon them, would be an effective intervention in mobilising Tajik youth as a group for pro-environmental actions. Specifically, we expected that peer-to-peer environmental workshops would not only raise awareness of environmental problems, but also help create a shared pro-environmental social identity (stronger identification with youth and stronger pro-environmental youth group norms) (Hypothesis 1). Moreover, we expected that the more the peer trainer was perceived as an identity leader (e.g., as prototypical for the group, as promoting the core interests of the group and as creating a shared sense of "we"), the higher the effectiveness of the workshop would be (Hypothesis 2).

Firstly, we found a significant increase in high school pupils' awareness of climate change and in both injunctive and descriptive pro-environmental group norms from before to

after the workshop, in support of Hypothesis 1. No significant difference in the strength of identification with youth was found. However, identification with youth was extremely high both before and after the workshop. This means that high school pupils strongly identified with a group that was perceived as more pro-environmental after the workshop compared to before.

Secondly, a significant correlation between perceived identity leadership and the strength of social identification with youth was found, meaning that the more people perceived the trainer as an identity leader, the more identification with the group itself grew in strength, supporting Hypothesis 2. No significant correlation was found between perceived identity leadership and the awareness of climate change or with injunctive and descriptive pro-environmental group norms, not further supporting Hypothesis 2. Generally, identity leadership scores were extremely high, suggesting that identity leadership could indeed provide one valuable explanation for the effectiveness of peer-to-peer environmental education.

Lastly, qualitative data supported the findings coming from quantitative data. High school pupils reported to feel more aware and responsible about environmental problems, saying that they would take immediate action for the planet. Moreover, high school pupils reported to be very satisfied with peer trainers, because of their capacity to explain in a clearer and more straightforward way compared to adults.

These findings have important theoretical implications.

Theoretical Implications

Generally, previous research showed the relevance of being both knowledgeable of environmental issues and motivated by feeling part of a group that endorses pro-environmental norms in engaging in pro-environmental behaviour (Vicente-Molina et al., 2013; Steg et al., 2014; Fielding et al., 2016; Fritsche et al., 2018). However, to our knowledge, no research ever

proposed an educational approach addressed to enhancing both knowledge and motivation at once. Hence, our findings extend previous literature by indicating that a peer-to-peer approach to environmental education is effective in both raising environmental knowledge and pro-environmental social identities, possibly representing a successful approach to motivate pro-environmental behaviour.

Moreover, our research provides innovative insights by applying the identity leadership framework to an environmental context. Previous studies showed the effectiveness of identity leaders in creating strong social identities (Steffens et al., 2014), but the large majority of research adopting identity leadership was conducted in organisational contexts with the scope of developing effective leadership programs (see for example Haslam et al., 2017). To our knowledge this study is pioneering in applying the identity leadership framework to an environmental context. Our results offer promising insights by showing that identity leadership can be effective in environmental contexts as a means to create environmental social identities.

Relevance of Peer-to-Peer Education for Pro-Environmental Social Identities in Collectivistic Societies

Our study brings interesting theoretical and practical insights on how to promote pro-environmental behaviour in Central Asia, a region that has been extremely rarely sampled in research to date on the topic (Tam et al., 2020). Previous findings already showed the importance of peer influence in shaping green behaviour among youth in collectivistic societies (Lee, 2009). Our study introduces new insights to the literature by indicating that peer influence can go beyond the mere impact on the behaviour of other young people at an individual level. Indeed, our results show that, when collaboration within the in-group happens, peer leaders can activate social change on a larger scale by fostering the creation of new pro-environmental social

identities. Therefore, our research corroborates previous findings according to which intra-group relationships and collaboration among peers are generally a key element for the formation of social identities in collectivistic cultures (Yuki, 2003). Moreover, it extends previous findings by showing that this mechanism of the creation of social identities holds for the creation of pro-environmental social identities as well. It follows that through peer-to-peer collaborative education, young people can positively impact the pro-environmental norms of other young people as a group and foster the formation of pro-environmental social identities that will in turn encourage pro-environmental behaviour.

Previous findings highlighted the role of members of one's own group in fostering the creation of pro-environmental social identities in the Western world (Abrahamse et al., 2015). We extended these findings not only showing that these mechanisms can hold in collectivistic cultures as well, but further suggesting that not all peer leaders may be effective in the same way. Indeed, our study found that the effectiveness of peer leaders could depend on how much they are perceived as identity leaders, meaning to which degree they are recognised as representative of the group itself. The application of the identity leadership framework to our sample is particularly innovative because it extends the literature by showing that identity leaders can be effective in fostering the creation of social identities not only in Western individualistic societies (Steffens et al., 2014), but also in Eastern collectivistic countries.

Relevance of Peer-to-Peer Education for Pro-Environmental Social Identities Among Youth

The sample of our study is relevant for the young age of the participants. Pre-existing evidence already showed that children start a process of internalisation of social identities from a very early age (Bennett, 2011; Bennett et al., 2011), but our study extends these findings by shedding light on the fact that the process of social identity creation in youth can go through

collaboration and interaction within the in-group. It is interesting that very similar results have

been found by Jans et al. (2022) on a sample of German high school pupils in the context of

cooking a vegan meal, suggesting a cross-cultural root of these dynamics. Specifically, they

found that children shaped their own social identities through interactions with their peers, and

that these identities increased their personal motivations to engage in pro-vegan dietary

behaviours, similarly to what happens among adults. Our study indicates that young people are

comparable to adults even in respect to identity leadership mechanisms. Previous research

suggested the effectiveness of identity leadership to catalyse social identity formation processes

among adults (Steffens et al., 2014). Our results extend these findings by showing that these

mechanisms could hold among young people as well, since the more the trainer is perceived as

an identity leader, the more identification with youth will grow after the workshop.

Limitations and Further Research

Our study carried some limitations that may be addressed in future research. Firstly, we

did not have a control group and for this reason we cannot exclude that some other factors

influenced youth in Tajikistan during the time frame in which we held the intervention. Although

the workshops were held on different days (decreasing the likelihood of an external factor

influencing the results), to avoid any noise, similar future studies should include a control group.

Moreover, it would be relevant to assign participants to various intervention conditions to isolate

the effects of the different stages of the workshop. For example, workshops should be delivered

both with and without the case study in order to assess whether the peer leader's effectiveness is

independent of it. Secondly, no long-term effects were monitored, meaning that it is not known

how long the observed effects would persist. Future research should address this issue by taking

multiple measurements over time. Thirdly, we had very limited time to develop the surveys, due

to the tight timeline of the collaboration between different parties (The World Bank, UCA and

AnchorEd). For this reason, we could not test for reliability and validity of the questionnaires in

this unique sample before officially administering the questionnaires. As a result, some items

needed to be removed before the analyses, as reliability was an issue. Lastly, even though

multiple opinions from university interns and their local supervisors were considered during the

translation, to make sure that language was age and culturally fitting, some cultural and linguistic

barriers could have still caused misinterpretations. Therefore, for future research we would

recommend validating the survey for this unique sample, since comprehension issues might have

hindered our results. For example, this could represent a possible explanation for the lack of a

significant correlation between the increase in both climate change awareness and pro-

environmental norms, and identity leadership.

Future studies could address further issues. To begin with, the choice of the reference

group "youth" for the operationalisation of the items could influence the results. Although the

reference group is very broad, we found that identification with the group was high and that there

was support for our theorising. However, effects might be stronger if identification with a

narrower and more salient group is targeted, for example with the pupils from school or Tajik

youth. The impact of social identity formation in different groups is an interesting avenue for

future research. Secondly, our results showed that in Eastern collectivistic countries

environmental workshops held by a peer trainer perceived as an identity leader result in an

increased pro-environmental perception of the in-group. Evidence of social identity formation

processes derived from the interaction with peers in Western countries (for example Abrahamse

et al. 2013; Steffens et al., 2014; Jans, 2021; Jans et al., 2022) suggests that such an approach

could be extended to other cultural contexts as well. Therefore, future research should consider samples coming from different cultures to generalise our findings on a cross-cultural level.

Concluding Remarks

Nowadays, it is extremely urgent to motivate human pro-environmental behaviour worldwide. Pro-environmental social identities have been largely shown to be a key motivator of people's pro-environmental action, but research to date on how to foster the creation of such strong pro-environmental social identities has hardly ever addressed Central Asian countries, despite their vulnerability to climate disasters. Our results find that a peer-to-peer approach to environmental education of youth in the Central Asian country of Tajikistan could not only raise individual awareness about environmental issues, but also enhance pro-environmental norms among youth. Moreover, perceiving the peer trainer as an identity leader seems to increase social identification with youth itself. Therefore, according to our findings, peer trainers who are perceived as identity leaders have the potential to foster the creation of pro-environmental social identities among youth in Central Asia, which could in turn motivate pro-environmental behaviour. Our sample was very specific, but previous findings suggest that this mechanism could hold in other cultural contexts as well. In conclusion, supporting and promoting peer-to-peer education could represent a powerful key to mobilise youth from Tajikistan, and probably not only, as a group for pro-environmental action.

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Appendix

Appendix A - surveys

Quantitative questionnaire

[Note: Where possible, these surveys will be administered electronically. Otherwise, they will be administered on paper]

1. Pre-Measurement

Section 1

First, let's create your personal code. Your code will be made up by 1) the number of the month you were born in (July= 07; December= 12); 2) the initial of your name and surname (John White= JW); 3) the number of the day you were born on (e.g., 03, 06, 13)

Which is your hometown? _____

How old are you?
 ☐ 12 or younger
 ☐ Between 13 and 16
 ☐ 16 or older

What is your gender?
 ☐ Male
 ☐ Female
 ☐ Other
 ☐ Prefer not to say

Does your family have a car?
 ☐ Yes
 ☐ No

Section 2

For the next 10 questions, choose an option from 1 to 7 (1=Strongly disagree; 2= Disagree; 3=Slightly disagree; 4=Neutral; 5=Slightly agree; 6= Agree; 7=Strongly agree). You can circle or make a cross on the chosen number.

Humans, through their activities, are damaging the environment.……………….1 2 3 4 5 6 7
I am worried for the health of our planet………...…………………….……....1 2 3 4 5 6 7
Eating meat has a high environmental impact………….…………….……...…1 2 3 4 5 6 7
Many animals are suffering because of climate change…………..…………..……1 2 3 4 5 6 7
Littering pollutes our planet……………….……………………..……..…1 2 3 4 5 6 7
In my future, I would like to be an entrepreneur……….…..………………......1 2 3 4 5 6 7
I have high entrepreneurial skills…………..….……………….……....1 2 3 4 5 6 7
I identify with "young people"………….…….……………………….......1 2 3 4 5 6 7
Respecting the environment is important to young people…………..………....1 2 3 4 5 6 7
The majority of other young people's behaviour respects the environment.……...1 2 3 4 5 6 7

2. Post-measurement

Section 1

Which was your personal code? :)
Your code will be made up by 1) the number of the month you were born in (July= 07;
December= 12); 2) the initial of your name and surname (John White= JW); 3) the number of the
day you were born on (e.g., 03, 06, 13)

Section 2

For the next 10 questions, choose an option from 1 to 7 (1=Strongly disagree; 2= Disagree;
3=Slightly disagree; 4=Neutral; 5=Slightly agree; 6= Agree; 7=Strongly agree). You can circle
or make a cross on the chosen number.

Humans, through their activities, are damaging the environment.………..……….1 2 3 4 5 6 7
I am worried for the health of our planet…………..………………………..1 2 3 4 5 6 7
Eating meat has a high environmental impact………….…………………..1 2 3 4 5 6 7
Many animals are suffering because of climate change…………..…………....1 2 3 4 5 6 7
Littering pollutes our planet………………….……………………..1 2 3 4 5 6 7
In my future, I would like to be an entrepreneur……….…..………………..1 2 3 4 5 6 7
I have high entrepreneurial skills…………..….……………………..1 2 3 4 5 6 7
I identify with "young people"………….…….……………………..1 2 3 4 5 6 7
Respecting the environment is important to young people…………..…………1 2 3 4 5 6 7
The majority of other young people's behaviour respects the environment……....1 2 3 4 5 6 7

Section 3

Rate this scale from 1 to 7 referring to the person who held the lesson
(1=Strongly disagree; 2= Disagree; 3=Slightly disagree; 4=Neutral; 5=Slightly agree; 6=
Agree; 7=Strongly agree)

This leader was a good example of the kind of people that are members of the group of young people………..……………………………………………...…………………1 2 3 4 5 6 7
This leader acts for promoting the interests of young people group….…………….1 2 3 4 5 6 7
This leader creates a sense of cohesion within the young people group………........1 2 3 4 5 6 7

Qualitative questionnaire

Did you enjoy the workshop program?
What is your opinion about climate change? Do you think the workshop helped you learn new information about it?
Would you like to be an entrepreneur in the future? Why or why not?
The facilitator of your workshop was a young student like you. Do you think this was something positive or negative? Would you prefer an adult teacher?
How much would you recommend to take part in the project from 1 to 10? Do you have any recommendations to improve the program to make it better for other young students like you?