

Developmental and Aging

Boosting prosocial career aspirations: Loving-kindness meditation relates to higher communal career goals in youth

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Wanting to help others and benefit society in one's future career are examples of communal career goals. Raising these goals in youth should increase interest in HEED-occupations (Healthcare, Early Education, Domestic, and the Domestic fields) which are strongly gender-skewed and face labor shortage. Research has yet to find ways to increase communal career goals. In this study, we test the novel hypothesis that after listening to a brief loving-kindness meditation, participants will rate stronger communal career goals, as compared to controls. In three experimental studies, volunteering high-school students (Study 1 and 3) and university students (Study 2) listened to a 12-min recording of the meditation with the explicit purpose of investigating its effect on stress. They thereafter filled out an apparently unrelated career goal survey. We compared the results with a control group that just rated the career goals (Studies 1–3) and a control group that listened to calm music before filling out the survey (Study 2 and 3). The results showed that the high-school students rated higher communal career goals after listening to the meditation, as compared to controls. We did not replicate the result in the sample of university students, which could relate to adults having less flexible career goals than youth, or to a ceiling effect in communal goals. This is the first study that has demonstrated a method with the potential of increasing communal career goals in youth. In addition to increasing interest in HEED, raising communal goals could benefit society, since they are intrinsically prosocial.

Key words: Communal career goals, loving-kindness, meditation, prosocial goals, communion, HEED.

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INTRODUCTION

Social psychological research on career considerations has focused on STEM-careers (Science, Technology, Engineering and Mathematics) and only very recently has attention been paid to so called HEED-careers (Healthcare, Early Education, Domestic, and the Domestic fields; Block, Croft & Schmader, 2018; Croft, Schmader & Block, 2015). One prototypical HEED-career is nursing; an occupation that currently faces labor shortage in most countries and where an aging world population calls for acute attention to recruitment strategies (Block *et al.*, 2018; Croft *et al.*, 2015; WHO, 2020). Previous research on HEED has focused on men's generally low interest in these strongly female-dominated careers, but young women are neither very interested in HEED-careers, which tend to be low in status (Block, 2015; Block *et al.*, 2018; Croft *et al.*, 2015; Diekman, Clark, Johnston, Brown & Steinberg, 2011; Tellhed, Bäckström & Björklund, 2017). Therefore, employers looking to recruit to the HEED-sector, should be concerned about future recruitment of all genders. Apart from raising the status of HEED, increasing interest in HEED should also be related to increasing communal career goals in the population (i.e., wanting to helping others, Block, 2015; Block *et al.*, 2018; Croft *et al.*, 2015; Diekman *et al.*, 2011; Tellhed *et al.*, 2017). In three experimental studies, we test how communal career goals may be increased in young men and women.

Agentic and communal career goals

According to the goal congruity perspective, the perceived goal affordances of different career roles, attracts or deters people's

interest for these careers (GCP; Diekman, Steinberg, Brown, Belanger & Clark, 2016). HEED-careers, such as nursing, are perceived to poorly fulfill “agentic” career goals, including acquiring status and financial rewards, but instead affording “communal” career goals, including the opportunity to help others and serve community (Block *et al.*, 2018; Diekman *et al.*, 2011; Diekman, Brown, Johnston & Clark, 2010; Tellhed *et al.*, 2017; Tellhed, Bäckström & Björklund, 2018). The dichotomy “agency versus communion” represents two fundamental dimensions in human psychology that encompass social cognition and behavior (Abele & Wojciszke, 2014; Bakan, 1966, Trapnell & Paulhus, 2012). They also overlap with the binary stereotyping of men as masculine (agentic) and women as feminine (communal), thus suggesting that HEED-careers may appear a better fit for women than for men (Bem, 1974; Croft *et al.*, 2015; Diekman *et al.*, 2016; Eagly, 1987; Fiske, Cuddy, Glick & Xu, 2002; Spence, Helmreich & Stapp, 1974). However, in contrast with gender stereotypes predicting gender differences in agency and communion, empirical studies typically only find gender differences in communal career goals (Diekman *et al.*, 2010, 2011, 2016; Tellhed *et al.*, 2018). Interestingly, meta-analyses have demonstrated that in the US, women have increasingly self-reported agentic personality traits in parallel with women's increased participation in the paid labor force and studies often show gender similarity in self-rated agency (Hyde, Bigler, Joel, Tate & van Anders, 2019; Twenge, 1997, 2001). Men's self-rated communion has not yet shown similar increases, which may reflect the lower standing of women and femininity (Cohen & Huffman, 2003; Croft *et al.*, 2015; Ridgeway, 2001; Donnelly & Twenge, 2017). Relatedly, in countries that merit communal values more strongly than the individualistic West, people tend to

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perceive communion as more masculine-stereotyped and thus better fitting for men (Cuddy *et al.*, 2015).

Coherent with the goal congruity perspective (Diekmann *et al.*, 2016), there are gender differences in interest and choice of HEED-careers, which are partially mediated by gender differences in communal goal endorsement (Diekmann *et al.*, 2010, 2011; Tellhed *et al.*, 2018). However, as previously mentioned, neither young men nor young women are very interested in HEED-careers (Block *et al.*, 2018; Tellhed *et al.*, 2017). This is interesting in relation to a recent finding that showed that when made to choose, most 15-year-olds in Sweden prefer agentic goal fulfillment over communal goal fulfillment (Tellhed *et al.*, 2018). Relatedly, a study in the US showed that 12th graders have become increasingly materialistic (i.e., agentic) since the 1970s (Twenge & Kasser, 2013). Recently some have raised concerns that the focus on agency may be growing too strong in the West, and perhaps at the expense of communal values (Luo *et al.*, 2014; Konrath, O'Brien & Hsing, 2011; Twenge, 2009; Donnelly & Twenge, 2017; Twenge & Foster, 2008, 2010; Twenge, Konrath, Foster, Keith Campbell & Bushman, 2008).

It follows that if increased recruitment to HEED-careers is a priority, one potential solution is to increase agentic goal fulfillment (salaries and status). Another potential solution is increasing communal career goal endorsement in potential recruits (Block, 2015; Croft *et al.*, 2015). This latter possibility is challenging from a psychological standpoint, since there are no publications in the literature demonstrating how it can be done. The literature on psychological career interventions has focused on impacting factors relevant to STEM-careers, such as self-efficacy (Shoffner & Dockery, 2015) and more recently social belongingness (Master & Meltzoff, 2020). We find just one pioneering set of studies that has experimentally tried to increase communal career goals, but where the manipulations did not have the desired effects (Block, 2015). Recently Kahalon, Shnabel and Becker (2020) showed that men's communal goals marginally *decreased* when exposed to an agentic stereotype. Also, Uchronski *et al.* (2012) showed that asking participants to empathize with a person in a video led to increases in self-described communion, but they did not measure career goals.

We find no theoretical guidance as to how communal career goals may be raised in leading psychological career theory such as social cognitive career theory (Lent, Brown & Hackett, 1994), Eccles expectancy value theory (Eccles, 1994) or in the previously mentioned goal congruity perspective (Diekmann *et al.*, 2016). We therefore look to the prosocial intervention literature for inspiration into what methods may raise communal career goals. Communal career goals are intrinsically prosocial since they include wanting to help others and benefit society in one's future career. In the literature of prosocial interventions, we find that *meditation* may increase a multitude of prosocial factors, which makes meditation interesting to investigate also in relation to communal career goals.

The role of meditation for prosocial factors

Believed to have originated in Ancient India, meditation, mindfulness and yoga have become increasingly popular in Western countries in recent years (Clarke, Barnes, Black,

Stussman & Nahin, 2018). There is also a growing empirical literature investigating the psychological effects of these practices, which has mostly focused on their stress-reducing effects and related health-benefits (e.g., Daukantaitė *et al.*, 2018; Galante, Galante, Bekkers & Gallacher, 2014; Hofmann, Grossman & Hinton, 2011; Maddux, Daukantaitė & Tellhed, 2017; Pace, Negi, Adame *et al.*, 2009; Tellhed, Daukantaitė, Maddux, Svensson & Melander, 2019).

More relevant for this study is the finding that meditation practice may also have prosocial effects (see Galante *et al.*, 2014; Hofmann *et al.*, 2011, Luberto *et al.*, 2018, for reviews). Particularly a type of meditation called loving-kindness meditation and the related technique compassion meditation appear to have beneficial prosocial effects.

Loving-kindness meditation

Loving-kindness meditation was originally developed within Buddhism and aims to promote loving acceptance and kindness toward all beings (Galante *et al.*, 2014; Hofmann *et al.*, 2011; Salzberg, 1997). In the loving-kindness meditation practice, the meditators mindfully envision spreading feelings of caring and understanding to themselves and their loved ones, to strangers and to people they have interpersonal difficulties with (Galante *et al.*, 2014; Salzberg, 1997). A particular form of loving-kindness meditation is compassion meditation, which focuses on imagining compassion for the suffering (e.g., Galante *et al.*, 2014).

Research has investigated how loving-kindness meditation and the related technique compassion meditation relate to prosocial factors. This type of meditation has been shown to increase compassion (Galante *et al.*, 2014; Lutz, Brefczynski-Lewis, Johnstone & Davidson, 2008; Weng, Fox, Shackman *et al.*, 2013) and positive attitudes towards neutral strangers (Hutcherson, Seppala & Gross, 2008). It has also been shown to reduce implicit racial bias (Stell & Farsides, 2016) and increase prosocial behaviors such as helping strangers or making charitable donations (e.g., Ashar, Andrews-Hanna, Yarkoni *et al.*, 2016; Condon, Desbordes, Miller & DeSteno, 2013; Galante *et al.*, 2014; Iwamoto, Alexander, Torres, Irwin, Christakis & Nishi, 2020; Leiberg, Klimecki & Singer, 2011; Luberto *et al.*, 2018; Weng *et al.*, 2013). For example, Leiberg *et al.* (2011) showed that one day of loving-kindness meditation training made people behave more prosocially in a computer game, compared to controls. Condon *et al.* (2013) showed that people who had trained compassion meditation for 8 weeks were more likely to help an injured person in need of a seat, than a control group. Ashar *et al.* (2016) showed that 4 weeks of daily compassion meditation increased donations to the suffering.

While it is well-established through reviews that loving-kindness meditation promotes prosocial behavior and compassion, less is known about the mechanism behind it. Hafenbrack, Cameron, Spreitzer, Zhang, Noval and Shaffakat (2020) suggest that increases in empathy and perspective-taking mediate compassionate responses following a brief meditational session. A meta-analysis confirms such findings, displaying increased empathy, compassion, and other-focused response following mindfulness training (Donald, Sahdra, Van Zanden *et al.*, 2019). Drawing on findings that loving-kindness meditation promotes

prosocial factors, we propose that it could increase communal career goals, since they are prosocial in character.

Potential societal benefits of raising communal career goals

Given the prosocial character of communal career goals, demonstrating how they may be raised may have other societal benefits, in addition to the previously mentioned possibility of raising the attractiveness of HEED-careers. Increases in motivation to help others could lead to a more compassionate and less violent society. It has also been pointed out that increasing men's communal values specifically could increase gender equity, such as in the division of emotional labor and child-care (European Commission, 2019; Erickson, 2005). Additionally, Bem (1974) suggested that being high on both agency and communion (i.e., androgyny), implies psychological flexibility and should relate to healthier psychological adjustment (for a recent review, see Martin, Cook & Andrews, 2017). There is support that both unmitigated agency (focus on the self to the exclusion of others) and unmitigated communion (i.e., over-involvement in others to the exclusion of the self) is related to poorer health (e.g., Helgeson & Fritz, 1999, 2000; Helgeson, Swanson, Ra, Randall & Zhao, 2015; Hirokawa & Dohi, 2007). Further, people with superior moral behavior appear to balance between communion and agency (Frimer, Walker, Dunlop, Lee & Riches, 2011).

In conclusion, there is much that speaks for attempting to increase communal career goals in youth and interestingly we have yet to learn how this can be done. This is the first study that tests if loving-kindness meditation can play a role in raising communal career goals such as the aim to help others and benefit society in one's future work life.

Aim and hypothesis

In three experimental studies, we test the hypothesis that participants who listen to a brief session of loving-kindness meditation will afterwards rate communal goals as more important for their future careers than controls.

Since agency and communion are complementary dimensions, we will also exploratory test for an (unexpected) effect of the meditation on agentic career goals. Further, we do not expect gender to moderate the effect loving-kindness meditation has on communal career goals. We will however report gender differences in agentic and communal career goals for an explorative purpose.

To reduce demand effects, (i.e., compliance with the perceived researcher objectives), we will frame the study as two separate studies, one studying the effect of meditation on stress, and one (seemingly free-standing study) that explores people's career goals. We will also compare the meditation group with both a passive control group (who do nothing), and in Studies 2 and 3 also with an active control group (that listens to calming music).

STUDY 1: METHOD

Participants and procedure

For the first study, we recruited 150 high school students from six school classes, residing in the south of Sweden (84 girls and 66

boys, the mean age was 16.83, $SD = 0.79$). We conducted power analyses for all three studies with the software G*Power using 0.25 as the effect size and the alpha level $p = <0.05$. The calculated power ($1 - \beta$) was set at 0.80. The total sample size required in Study 1 (that had two conditions) was ($n = 128$) which shows that Study 1 had adequate power.

We cluster-randomized the school classes to the meditation group ($n = 75$) versus the control group ($n = 75$). Since cluster-randomization has limitations, we tested the base-line characteristics between groups. A chi-square test for independence (with Yate's continuity correction) indicated no significant difference between the control group and the meditation group in gender distribution, $\chi^2(1, n = 150) = 0.027, p = 0.869$. Independent samples t -tests showed a small but significant difference in age, $t(147) = -2.528, p = 0.013, \eta^2 = 0.04$, where the participants in the control group ($M = 16.99, SD = 0.63$) were on average 4 months older than the experiment group ($M = 16.67, SD = 0.89$). When asked how often they practice meditation on a scale ranging from never (1) to daily (7), 65% of the participants indicated that they had never practiced, and the Median was 1 in both groups. Independent samples t -tests indicated no difference between groups in how much they generally like meditation on a scale ranging from dislike strongly (1) to strongly like (7), $t < 1, M$ all participants = 4.23, $SD = 1.39$.

Students in an introductory psychology class at a Swedish university collected the data as part of a class assignment, supervised by the main author of this article. That we collected the data within the boundaries of an introductory psychology course meant that we could only acquire data from a limited number of participants. For reason of power, we therefore did not include gender as a factor in the main analysis, that tested the effect of the experimental manipulation on communal career goals. We will however report gender differences in tables and in the exploratory results sections.

To reduce the risk of demand effects, we presented the study as two separate student theses: one concerning the effect of meditation on stress and one concerning career considerations. At the end of the survey all participants were asked to guess the research hypothesis. No one guessed that the meditation was hypothesized to affect career goal ratings, which strengthens internal validity assumptions and reduces the risk of demand effects.

After collecting informed consent, we told the participants in the meditation condition that they would listen to a relaxing guided meditation, dimmed the lights in their classroom and played the meditation in speakers for 12 min. Afterwards, the participants filled out five questions about the meditation (the "meditation study") and next they filled out a separate survey with the career goal measures (the "career study"). The control group did not listen to any meditation and for the purpose of avoiding priming thoughts about meditation, they first filled out the career goal measures and then answered three questions about meditation. We lastly debriefed the participants of the deception (that the two studies were interrelated) and answered questions.

Ethical considerations

We followed the Swedish law on research on humans (SFS 2003:460). We thereby ensured anonymity by not collecting

any individuating information, informed that participation was voluntary and could be disengaged at any time without consequences. The Swedish law requires consent from legal guardians from children younger than 15. Since all participants in the three studies were older than 15, only their own consent was collected. Although we used a slight deception by not telling the participants beforehand that the two presented studies were interrelated, we judged this necessary to reduce demand effects. We informed the participants of the deception at the debriefing and no one expressed disapproval.

Instruments

The loving-kindness meditation and all measures were in Swedish. See Appendix A for a translation of the meditation to English.

Loving-kindness meditation. Blinded for review, a licensed clinical psychologist, experienced yoga instructor and published yoga researcher (Hylander *et al.*, 2017) recorded a 12-min loving-kindness meditation for the study (see Appendix A).

Career goal measures. We used the goal endorsement scale (Diekmann *et al.*, 2011) in translation to Swedish by Tellhed *et al.* (2018). It asks participants to rate the importance of 14 agentic (e.g., power, financial reward, recognition $\alpha = 0.86$) and 10 communal (e.g., helping others, serving the community, altruism, $\alpha = 0.88$) future career goals for themselves, on a scale from not important (1) to extremely important (7). The subscales did not significantly correlate, $r(148) = 0.133, p = 0.106$.

Meditation measures. We asked the meditation group to rate to what degree they felt they could focus on the meditation they had heard (not at all (1), very well (7)) and how much they liked it (dislike strongly (1), strongly like (7)). These questions were included to explore if the focus on and liking of the meditation related to higher communal goals for the listeners. We reasoned that the meditation would likely affect people stronger who paid strong attention to it and that people who disliked the meditation might reject listening to it. Cronbach's alpha for the two items were 0.79 and we call the scale "meditation focus."

We also asked how stressed the participants currently feel (not at all (1), very stressed (7)). This item was included to make it believable that the data collection consisted of two separate studies, one concerning the effect of meditation on stress and one concerning career goals. We will report the stress ratings for exploratory reasons, since much research has shown that meditation reduces stress (e.g., Hofmann *et al.*, 2011).

Results

Preliminary analyses. The preliminary analyses showed no serious assumptions violations. We used SPSS Statistics 27 for all analyses.

Hypothesis testing of the meditation's effect on communal career goals. An independent samples *t*-test showed a significant difference between conditions, $t(147) = 3.32, p = 0.001$, supporting the hypothesis that the meditation group reported higher communal career goals as compared to the control group.

The difference between means was medium-sized, $M^{diff} = 0.47, 95\% \text{ CI } [0.19, 0.74], \eta^2 = 0.07$. Results of the Pearson correlation showed a positive relationship between the perceived meditation focus and the level of communal goals that the meditation group reported, $r(74) = 0.36, p = 0.002$. See Table 1 for Descriptive statistics and Fig. 1 for Means across all three studies.

Exploratory analysis of agentic career goals and stress levels. We did not expect an effect of the manipulation on agentic goals and an independent samples *t*-test showed no such effect, $t < 1$. Although not the main focus of the study, the meditation group reported much lower stress levels as compared to the control group, $t(148) = -6.10, p < 0.001$. The magnitude of the mean difference between groups was large, $M^{diff} = -1.60, 95\% \text{ CI } [-2.12, -1.08], \eta^2 = 0.20$.

We lastly conducted a two-way between groups ANOVA that showed no significant interaction effect between gender and the experimental manipulation on communal career goals,

Table 1. Means and standard deviations for the measures across conditions in Study 1, Study 2 and Study 3

Variable	Meditation group		Passive control		Music group	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Study 1						
Communal goals*	5.42	0.91	4.96	0.81	Not applicable	
Agentic goals	5.02	0.86	5.09	0.61	Not applicable	
Stress**	2.93	1.44	4.53	1.76	Not applicable	
Meditation focus	4.37	1.27	Not applicable		Not applicable	
Study 2						
Communal goals	5.33	1.07	5.43	0.81	5.46	0.79
Agentic goals	4.54	0.21	4.56	0.13	4.65	0.72
Stress**	2.95	1.26	3.08	1.31	4.02	1.49
Relaxation focus	4.96	1.22	4.85	1.18	Not applicable	
Study 3						
Communal goals*	5.50	0.88	5.36	0.91	5.15	0.87
Agentic goals	5.16	0.73	4.92	0.95	4.99	0.89
Stress**	2.89	1.49	2.79	1.46	4.27	2.00
Relaxation focus	4.78	1.58	4.89	1.42	Not applicable	

Note: *Indicates a significant difference between conditions at $p < 0.05$, **Indicates a significant difference between conditions at $p < 0.001$.

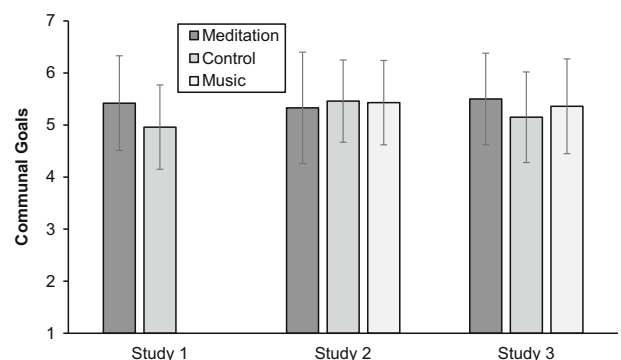


Fig. 1. Mean communal career goals across conditions over the three studies. Means significantly differ between the meditation group and the control group in Study 1 and Study 3, but not in Study 2. Standard deviations pictured as error bars.

$F(1, 145) = 1.425, p = 0.235, \eta^2 = 0.01$. Independent samples t -tests showed that women had marginally significant higher communal career goals than men in the control group, $t(73) = -1.681, p = 0.09$, but there was no gender difference in the meditation group, $t < 1$. Men had higher agentic career goals than women both in the control group, $t(73) = 2.95, p = 0.004$, and in the meditation group, $t(72) = 3.53, p = 0.001$. Table 2 shows Descriptive statistics of gender differences in goals.

Discussion

The results supported the hypothesis that after listening to a brief session of loving-kindness meditation, high-school students reported moderately higher communal career goals as compared to a control group. The stronger their self-reported focus was on the meditation, the higher they rated communal career goals.

This is the first study that has shown that communal career goals can be experimentally manipulated. The results are promising but needs replication. One strength of the study design was that it attempted to reduce the risk of demand effects by falsely presenting it as two separate studies: one that concerned the effect of meditation on stress, and one that concerned career goals. No participant guessed that the studies were interrelated.

The meditation was presented as aiming to reduce stress, and the meditation group reported much lower stress as compared to controls, which replicates previous research (e.g., Hofmann *et al.*, 2011). For power reasons we did not include gender as a factor in the main analysis of the experimental effect since we did not expect gender to moderate the effect of the meditation on communal career goals. An exploratory analysis did not show an interaction effect of gender and condition on communal goals. The meditation was unrelated to agentic career goals, which unexpectedly boys reported higher than girls. Previous research with randomly selected youth in Sweden found no gender difference in agentic career goals (Tellhed *et al.*, 2018).

STUDY 2: METHOD

Study 2 replicated and expanded Study 1. We again presented the data collection as concerning two separate student assignments: one concerning the effect of meditation on stress and one concerning career goals. To further test for potential expectation effects, we

designed an *active* control group that was added to the passive control group used in Study 1. Participants in the active control group listened to calm instrumental music, with no loving-kindness message, that should not increase communal career goals, but which may reduce stress as compared to the passive control group.

In Study 2, we tested the intervention in a sample of adult university students. Since adults may be more set in their career goals as compared to high school students, we expected smaller effects of the meditation on communal career goals in the adult sample. Younger people are usually more susceptible to career interventions (e.g., Shoffner & Dockery, 2015; Unrau, Rueda, Son, Polanin, Lundeen & Muraszewski, 2018).

We recruited 125 university students at the social sciences faculty campus at two different universities in the south of Sweden (78 women and 46 men, 1 other gender, Mean age = 24.56, $SD = 5.05$). The data was again collected by students in an introductory psychology course as part of an assignment, which limited the recruitment of participants. The power analysis (see Study 1 for details) showed that the required sample size for this study that had three conditions was ($n = 159$). This means that the design was underpowered to test the hypothesis and the results therefore need to be interpreted with caution. For reasons of power and the skewed gender proportions in the participant sample, we will not include gender as a factor in the main analysis of the experimental effect on communal career goals. Gender differences are presented in Table 2.

We randomized the participants to the loving-kindness meditation group ($n = 40$), the music group ($n = 40$) and the control group ($n = 45$) and the data collection took part in groups in three dimly lit classrooms on campus. To investigate the effectiveness of the randomization, we checked the base-line characteristics between the groups. A chi-square test for independence indicated no significant difference between the three groups in gender distribution, $\chi^2(2, n = 124) = 3.984, p = 0.136$. A one-way between groups ANOVA (Welch's adjusted F ratio, since the assumption of homogeneity of variance was not met) did however show that the control group were somewhat younger ($M = 23.07, SD = 3.19$) than the meditation group ($M = 25.05, SD = 3.57$) and the music group ($M = 25.75, SD = 7.22$), Welch's $F(2, 73.25) = 4.74, p = 0.012$. There was no reported difference between groups in how frequently the participants practiced specific relaxation techniques, on a scale ranging from

Table 2. Means and standard deviations (M, SD) for men's and women's communal and agentic career goals across conditions in Study 1, Study 2, and Study 3

Variable	Meditation group		Passive controls		Music group	
	Men	Women	Men	Women	Men	Women
Study 1						
Communal goals	5.44, 1.02	5.41, 0.81	4.78, 0.93	5.09, 0.69	Not applicable	
Agentic goals	5.32, 0.57	4.92, 0.58	5.32, 0.57	4.92, 0.58	Not applicable	
Study 2						
Communal goals	4.81, 1.13	5.68, 0.89	5.21, 0.95	5.55, 0.71	5.36, 0.89	5.49, 0.75
Agentic goals	4.43, 0.65	4.61, 0.81	4.35, 0.72	4.76, 0.70	4.64, 0.97	4.49, 0.67
Study 3						
Communal goals	5.24, 0.87	5.67, 0.83	5.02, 1.01	5.29, 0.70	4.99, 0.93	5.64, 0.79
Agentic goals	5.28, 0.75	5.08, 0.71	5.26, 0.76	4.74, 0.93	5.00, 1.07	4.85, 0.86

never (1) to daily (7), $F < 1$. The mean for all participants was 3.09, $SD = 1.82$.

We again asked the participants to guess the hypothesis. Six participants saw through the deception that we collected data for two separate studies and correctly guessed that the alleged two studies were interrelated. Excluding these participants from the data analysis did not significantly affect the results, so we included them for the final data analysis presented here. No one expressed disapproval of the deception in the debriefing.

In the added active control group, the participants listened to calm, instrumental music (YellowBrickCinema-Relaxing Music, 2015) for the same amount of time as the meditation group listened to the meditation (12 min), before filling in the surveys. We expected the relaxing music to reduce stress, but not affect communal career goals, since it did not include a loving-kindness message.

Like in Study 1, we played the meditation and music for the participants in candle lit rooms, but this time on campus. All measures were identical to Study 1 with the exception that we exchanged the word “meditation” to “relaxation exercise” (e.g., could you focus on the relaxation), to also fit the added music condition. Cronbach’s alpha was 0.70 for the relaxation focus scale (focus and liking), 0.84 for the communal career goal subscale and 0.83 for the agentic career goal subscale. The career goal subscales did not significantly correlate, $r(120) = 0.17$, $p = 0.061$.

Results

Preliminary analyses. Preliminary testing showed no serious assumptions violations.

Testing of the meditation’s effect on career goals and stress. We conducted three one-way ANOVAs to test for effects of the experimental manipulation on communal career goals, agentic career goals and on stress levels respectively. See Table 1 for Descriptive statistics. Contrary to the hypothesis, there was no difference between the groups on communal career goals, $F < 1$. The results of the Pearson correlation showed a significant positive relationship between the relaxation focus and communal career goals in the meditation group, $r(40) = 0.42$, $p < 0.01$, but not in the music group, $r(40) = 0.22$, $p = 0.17$.

There was no difference in agentic career goals between conditions, $F < 1$. There was a moderately sized difference between conditions in self-reported stress levels, $F(2, 120) = 8.02$, $p = 0.001$, $\eta^2 = 0.12$. Post hoc comparisons using the Tukey HSD test showed that the control group reported significantly higher stress levels as compared to both the meditation group, $M^{\text{diff}} = 1.07$, 95% CI [0.37, 1.77], $p = 0.001$, and the music group, $M^{\text{diff}} = 0.95$, 95% CI [0.25, 1.65], $p = 0.005$. There was no difference in stress levels between the meditation group and the music group, $M^{\text{diff}} = -0.125$, 95% CI [-0.85, 0.60], $p = 0.911$.

We exploratorily conducted a two-way between groups ANOVA that showed no significant interaction effect between gender and the experimental manipulation on communal career goals, $F(2, 117) = 1.841$, $p = 0.163$, $\eta^2 = 0.03$. Overall, women reported higher communal career goals than men, $t(121) = -2.69$,

$p = 0.008$, and there was no gender difference in agentic career goals, $t(120) = -1.035$, $p = 0.303$. Descriptive statistics are displayed in Table 2.

Discussion

For the second study, we replicated the previous study’s design but with somewhat older participants (university students). We also expanded the design by including an active control group that listened to relaxing instrumental music, lacking a loving-kindness message.

We expected both the meditation group and the group that listened to music to rate reduced stress levels as compared to passive controls, but we expected only higher communal career goals in the meditation group. Stress levels were moderately lower in both the loving-kindness meditation group and the music group as compared to the passive control group. However, contrary to the hypothesis, there was no difference in communal career goals between conditions. Like in Study 1, there was a positive relationship between the participants’ focus on the loving-kindness meditation and their communal career goals, but the participants’ focus on music was unrelated to communal career goal ratings.

One possible explanation of why the relationship between loving-kindness meditation and communal career goals was not replicated in this study is the difference in participant age between the two studies. Intervention studies tend to find larger effects in younger participant samples (e.g., Shoffner & Dockery, 2015; Unrau *et al.*, 2018). It is likely that adult university students have developed more fixed career goals, as compared to high school students, whom in turn are more impressionable to influence. In Study 3, we will therefore replicate the design with younger participants.

Lastly, like in most studies on career goals, there was a gender difference in communal, but not agentic career goals in this sample (Diekmann *et al.*, 2010, 2011; Tellhed *et al.*, 2018).

STUDY 3: METHOD

Study 3 replicated Study 2, but now with younger participants (like in Study 1), who may have more flexible career-goals as compared to adults. We also further strengthened the control of the methodological design in Study 3 by digitalizing the experiment (in Qualtrics) and used earphones for the manipulation. This allowed for individual randomization of participants in identical settings.

Psychology students (coauthors of this article and supervised by the main author) collected the data as material for their unpublished bachelor thesis. High-school students ($n = 296$) from five schools in the south of Sweden accepted to participate. During the data collection, 46 participants chose to withdraw their participation, leaving 250 for the analysis (141 women, 108 men and 1 other gender, mean age was 17.27, $SD = 0.89$). The power analysis (see Study 1 for details) showed that the required sample size was ($n = 159$) which means that Study 3 had adequate power.

The design was identical to Study 2, with the exception that we now programmed the experimental manipulation and encoded the surveys in the electronic survey tool “Qualtrics.” The participants

were randomized to the meditation group, $n = 76$, the music group, $n = 81$, and the control group, $n = 93$. To check for equivalence between conditions following the attrition, we tested the base line characteristics. A chi-square test for independence indicated no significant difference between the conditions in gender distribution, $\chi^2(2, n = 249) = 0.896, p = 0.639$. A one-way between groups ANOVA showed no difference between groups in age, $F < 1$. When asked how often they practice meditation on a scale ranging from never (1) to daily (7), 63% of the participants indicated that they had never practiced, and the Median was 1 in all three conditions.

During the data collection, all participants sat at individual computers with headphones in a dimly lit classroom. The study material was identical to Study 2 except that we (like in Study 1) asked the participants whether they practice “meditation” rather than “a specific technique meant for relaxation” (like in Study 2). Cronbach’s alpha was 0.79 for the relaxation focus scale, 0.84 for the communal career goal subscale and 0.87 for the agentic career goal subscale. The career goal subscales significantly correlated, $r(234) = 0.27, p < 0.001$.

Last in the survey, we again asked participants to guess the hypothesis to control for potential demand effects. No one saw through the deception that the alleged two separate studies (testing the effect of relaxation on stress versus investigating career goals) were interrelated which strengthens internal validity assumptions.

Results

The preliminary analyses showed no serious assumptions violations. See Table 1 for Descriptive statistics for all measures.

Hypothesis testing of the effect of meditation on communal career goals. A one-way ANOVA showed a small significant difference across conditions in communal career goals, $F(2, 241) = 3.34, p = 0.037, \eta^2 = 0.03$. Post hoc comparisons using the Tukey HSD test showed that the meditation group rated significantly higher communal career goals as compared to the control group, $M^{\text{diff}} = .35, 95\% \text{ CI } [0.03, 0.68], p = 0.031$, which supported the hypothesis and replicated Study 1. No other comparisons were significant (see Table 1). Like in Study 2, the results of the Pearson correlation showed a significant positive relationship between the relaxation focus and communal career goals in the meditation group, $r(76) = 0.30, p < 0.01$, but not in the music group, $r(77) = -0.02, p = 0.87$.

Exploratory analysis. A one-way ANOVA showed a large difference between conditions in self-reported stress levels, $F(2, 245) = 20.88, p < 0.001, \eta^2 = 0.15$. Like in Study 2, post hoc comparisons using the Tukey HSD test showed that the control group reported significantly higher stress levels as compared to both the music group, $M^{\text{diff}} = 1.49, 95\% \text{ CI } [0.88, 2.09], p < 0.001$, and the meditation group, $M^{\text{diff}} = 1.38, 95\% \text{ CI } [0.76, 1.99], p < 0.001$. There was no difference between the meditation group and the music group in self-reported stress, $M^{\text{diff}} = 0.11, p = 0.917$.

We did not expect gender to moderate the effect the meditation was predicted to have on communal career goals. However, we exploratorily tested for the interaction of gender and condition in

a two-way ANOVA and the interaction effect was not significant, $F(2, 237) = 1.016, p = 0.363, \eta^2 = 0.009$. Like in Study 1 and 2, the experimental manipulation did not affect agentic career goals, $F(2, 238) = 1.63, p = 0.197$. t -tests for independent groups showed that women rated higher communal career goals than men in the meditation group, $t(73) = 2.12, p = 0.04$, and in the music group, $t(76) = 3.31, p = 0.001$, but there was no gender difference in the control group, $t(73) = 2.12, p = 0.04$. Men rated higher agentic career goals than women in the control group, $t(88) = -2.89, p = 0.005$, but there was no gender difference in the music group, $t < 1$, or in the meditation group $t(72) = -1.180, p = 0.242$. See Table 2 for Descriptive statistics.

Discussion

The results showed that high-school students that listened to loving-kindness meditation reported higher communal career goals, as compared to the (passive) control group. This supported the hypothesis and replicated Study 1. Although both the meditation group and the music group rated lower stress as compared to the passive control group, only the loving-kindness meditation related to lower communal career goals.

Like in the two previous studies, there was a positive relationship between the participants’ focus on the loving-kindness meditation and their communal career goals, while music focus was unrelated to communal career goal ratings. No participants realized that the meditation was meant to boost communal career goals. This reduces the risk of it being a demand effect, where participants comply to perceived researcher objectives. Lastly, like in the previous studies, agentic career goals did not differ across conditions.

GENERAL DISCUSSION

Meditating youths rated higher communal career goals

In three experimental studies, we tested the hypothesis that after listening to a brief session of loving-kindness meditation people would rate communal career goals as more important for their future careers, as compared to controls. The results supported the hypothesis in two samples of high school students in Sweden. After 12 min of meditation, the participants rated communal career goals (e.g., wanting to help others in their future careers), as more important as compared to a control group that did not meditate. The results also showed that a stronger perceived focus on the meditation related to rating stronger communal career goals.

To minimize demand effects, where participants comply with what they think a study aims for, we told the participants that we collected data for two separate studies, one concerning the effect of meditation on stress, and one concerning career goals. None of the high school students uncovered this deception, which we believe strengthens the interpretation that it was the meditation that affected their communal career goals ratings. We also included an active control group, where the participants listened to relaxing music in an identical setting to the meditation group. The music group did not differ from the passive control group in communal career goal ratings and there was no relationship between their focus on the music and their communal career goal

ratings. In combination, we believe this strengthens a conclusion that it was the prosocial message in the meditation that boosted communal career goals, and not for example the relaxing effect that both meditation and calm music can help create. In all three studies, we found that both the meditation and the calm music reduced self-rated stress levels to similar degrees as compared to the passive controls. This result corroborates previous research that often finds no difference in reductions in stress-related health measures between meditation groups and active controls (see Galante *et al.*, 2014 for a meta-analysis).

To our knowledge, these are the first studies that have demonstrated a method with the potential of increasing communal career goals in youth. The results fit with previous findings where loving-kindness meditation (or the related compassion meditation) has the power to increase other prosocial psychological factors (Ashar *et al.*, 2016; Condon *et al.*, 2013; Galante *et al.*, 2014; Hutcherson *et al.*, 2008; Leiberg *et al.*, 2011; Luberto *et al.*, 2018; Lutz *et al.*, 2008; Stell & Farsides, 2016; Weng *et al.*, 2013).

No effect on communal career goals in a sample of adults

Although the meditating high school students rated stronger communal career goals as compared to controls in two of the experimental studies, we did not replicate the effect in a sample of adult university students. This finding fits with the psychological intervention literature that tends to find younger individuals more susceptible to career-related experimental manipulations as compared to even slightly older individuals (e.g., Shoffner & Dockery, 2015; Unrau *et al.*, 2018). Since this study tested for future career goals, it is plausible that adults enrolled in a university education have relatively set career goals that may be more resistant to change, as compared to high school students', who in turn may be more open to influence. Interestingly, this could perhaps explain why previous experimental research has not raised communal career goals (Block, 2015), since this research has employed university students as participants.

The lack of an effect on communal goal ratings in the adult sample in this study could also potentially be the result of a ceiling effect. The adults rated communal career goals very highly, and much higher as compared to their ratings of agentic career goals. This could relate to us recruiting the adult participants at the social science faculty campus. Social science students may have unusually high communal values as compared to the general population.

Alternatively, the lack of a result could be related to Study 2 being underpowered (due to practical limitations). We therefore recommend replicating the study design with a larger and more representative sample of adult participants. We also recommend specifically testing age as a moderator for the impact of the meditation on communal career goals, by comparing its effect on adults versus on high-school students in the same study.

Agentic career goals

In addition to communal career goals, we also measured agentic career goals (e.g., wanting status) in this study, since communion

and agency are understood as two fundamental psychological dimensions that often complement each other, also in career research (Abele & Wojciszke, 2014; Bakan, 1966; Diekmann *et al.*, 2016). Since agency is not the opposite of communion (Abele & Wojciszke, 2014), we did not expect loving-kindness meditation to relate to agentic career goals and there was no such effect in any of the three studies. If meditation increases youth's communion without decreasing their agency, this may be beneficiary, since some consider being high on both dimensions as ideal (e.g., Bem, 1974; Frimer *et al.*, 2011).

In two of the studies, agentic and communal career goals were uncorrelated, but they were interrelated in Study 3. This variation corresponds with the literature that tends to find the dimensions orthogonal, but with variations in correlation (Abele & Wojciszke, 2014; Diekmann *et al.*, 2016).

LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

The current studies have several methodological strengths by using experimental design, reducing demand effects by deceiving the participants that the meditation was unrelated to the career goal measure, and including both a passive and an active control group. The studies also have limitations which concern both external and internal validity.

Power and external validity

The two studies with high-school students had adequate power, but the study with adult participants was underpowered and need replication with a larger participant sample to evaluate the effectiveness of the intervention on adults. All studies were based on convenience samples which limits the external validity. We collected the data in Sweden, a country that Hofstede (2016) states stands out as particularly low in "masculine" (i.e., agentic) values, such as competitiveness. It would therefore be interesting to see if the result replicates in countries higher in agency and if it replicates in non-Western countries (Henrich, Heine & Norenzayan, 2016). Also, we did not expect gender to moderate the effect of the meditation and found no such effects. The study was however not powered to test for interactions between gender and condition.

Potential confounding variables

For practical reasons, we cluster randomized the participating school classes in Study 1, which implies a risk of potential confounding variables. Exploring the baseline characteristics showed that the majority in both conditions had never meditated and there was no group difference in attitude towards meditation. There was also no difference in the gender distribution between conditions, but the participants in the control group was on average 4 months older than the experiment group. Although the age difference was statistically significant, we do not suspect that this very small age difference significantly compromised the effect of the meditation. Further, note that the result of Study 1 was replicated in Study 3, where we used individual randomization. There was a larger age difference (circa 2 years) between conditions in Study 2 following randomization. Although we do

not suspect that a few years in age difference matters for the effectiveness of the meditation in adults, it is possible that age matters for the flexibility in one's career goals, as previously stated.

Pre-and post-measures

The design did not include a pre-measure and we encourage finding creative solutions for including this without increasing the risk of participants guessing the hypothesis. We also recommend including a follow-up measure, to test how long the effect of the meditation lasts on communal career goals. It is likely that the effect of one single short session of loving-kindness meditation will not have long lasting effects on communal career goals, although some studies do find long-lasting effects of relatively short, one-shot interventions (Cohen, Garcia, Purdie-Vaughns, Apfel & Brzustoski, 2009; Grant, Campbell, Chen, Cottone, Lapedis & Lee, 2007; Walton & Cohen, 2011; Walton, 2014). A more extensive meditation intervention is perhaps more likely to have substantial effects on career goals. Other research has confirmed that several weeks of meditation practice (or even longer) can have strong and long-lasting effects on other prosocial factors (Lutz et al., 2008; McCall, Steinbeis & Singer, 2014; Jazaieri et al., 2014; Weng et al., 2013). Especially timing the intervention to critical times, such as when school children are about to make educational choices, could potentially generate meaningful and long-lasting effects for the individual (e.g., see Shoffner & Dockery, 2015 for a discussion of the importance of critical times for career interventions). It is of course important to carefully consider ethical implications of any intervention which has the potential to affect children's career choices.

Mediation of the meditation effect

This study is a first attempt to test if loving-kindness meditation may affect communal career goals and more research is needed to develop and test a theoretical framework that explains why the effect occurs. Understanding what mechanisms drives the effect may reveal ways to make the intervention more precise and thereby strengthen it (Walton, 2014). Previous research has shown that loving-kindness meditation can strengthen perspective-taking, which mediates prosocial effects (Hafenbrack et al., 2020) and factors related to empathy may perhaps also explain why loving-kindness meditation affect communal career goals. However, since our meditation only lasted for 12 min, it could also be a more direct priming effect. Social psychological research has often found that verbal primes can activate associated mental concepts and behavior outside of conscious awareness (see Molden, 2014 for a review). Perhaps listening to a message of spreading love to others, primed the high school students career goals congruently, and may them at least temporarily more inclined to care for others.

CONCLUSIONS AND IMPLICATIONS

This is the first study which demonstrates how communal career goals may be raised in youth. Finding ways to increase communal career goals has been a priority for researchers searching for tools to raise interest in understaffed HEED-occupations such as

nursing and teaching (Block et al., 2018; Croft et al., 2015; Diekman et al., 2010; 2016; WHO, 2020). Career interest is of course affected by a multitude of factors (Eccles, 1994; Lent et al., 1994) but previous research has identified communal career goals as one important predictor of interest in HEED-careers (e.g., Block et al., 2018; Diekman et al., 2016; Croft et al., 2015). The results from this study imply that loving-kindness meditation could potentially be implemented to raise communal career goals in youth, while simultaneously reducing stress levels. Future research may want to replicate our study and include measures of career interest, to test if meditation boosts interest in HEED-occupations, mediated by increases in communal career goals.

Communal career goals are intrinsically prosocial and include wanting to help others and benefit society in one's future career. The results of this study therefore add to the literature which has demonstrated that loving-kindness meditation increases prosocial thoughts, feelings, and behavior. Even if loving-kindness meditation appears to be a promising tool for increasing prosocial intentions and behavior in the young, it is important not to impose this technique on anyone. Some may for religious, or other, reasons oppose to this practice, which should be voluntary.

Lastly, policy-makers looking to increase interest in HEED-careers should consider not only focus on increasing communal career goals in the population. Raising agentic goal fulfillment, by for example increasing salaries in HEED, should also increase interest in this sector. Obtaining a balance between communal and agentic career goals may also be the most beneficiary for prosocial action, since this should entail both wanting to do good and having the power, means and self-efficacy to approach this goal (Chen, Lee-Chai & Bargh, 2001).

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DATA AVAILABILITY STATEMENT

Data availability statement The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A: TRANSCRIPT OF THE LOVING-KINDNESS MEDITATION

Transcript of the loving kindness meditation translated from Swedish. Original recording by (Hylander et al., 2017).

This is a meditation. Start by finding a comfortable position. It can be sitting up or lying down, a position where you feel that you can stay for about ten minutes. Once you have taken your position: Close your eyelids, close your lips and let your breathing flow smoothly, in and out through your nose. Keep your attention focused on your breathing and feel how your breathing moves through your body as the air flows and fills up the lungs and flows out and empties the lungs. Then feel your body, notice what is going on in your body right now. Notice the feeling you have in your body right now. And no matter how it feels, see if it is possible to just take notice. Observe.

Then imagine a location. It can be a real location or one that you create in your mind right now. But a place where you feel completely calm and safe. A place that symbolizes safety, security, peace, and quiet. Imagine this place. See it in front of you. What do you see around you? Are you alone? Are there other people here? Are there any sounds? Any fragrances? How

does the ground feel below your feet? Are there other things you can touch? Feel? Is there even something you can taste or feel the taste of in your mouth? Allow yourself to, right now, be in this place. With all your senses. With all your presence.

Then imagine a person who you feel warmth and love towards. Envision this person in front of you and feel the emotions that rise within you when you see this person. Feel your emotions in your body. Then imagine this person smiling at you, you embracing each other, giving each other a long warm hug. Notice how this feels within you, how it feels in your body.

Then let go of this person and move on to focus on yourself. Feel your breathing in your body again. Notice what emotions are present right now and move back to your safe place. Imagine that you are embracing yourself, just like you embraced the person you like a moment ago. Imagine that you are embracing yourself with warmth, with love, and feel calm.

Then move on to focus on the room that you are in right now. Keep your eyes closed and try to perceive what sounds surround you. Imagine the people that are present, maybe someone in the same room, in the same house, in the same neighborhood or the same city. Send your warmth and love to all those people in your surroundings right now and imagine that you are embracing each other. Spread a sense of calm, safety, warmth, and love between each other. Then let go and move back to your safe place and focus on your breathing. Feel your body. Notice which emotions are present right now.

Then imagine a person that you have interpersonal difficulties with. Maybe it is a person who has hurt you, who has embarrassed you. Or just a person whose opinions you dislike. Notice what it is that makes you dislike this person. Imagine what this person looks like when they respond to you. Notice how it feels in your body when this person is close to you. Then imagine this person as happy. Allow yourself to think that also this person has shortcomings, but certainly also good sides. Maybe you have never seen these good sides? But imagine they exist. Imagine that you right now respond to this person with calm, warmth, and love. And that this person gives you the same response back. Notice what it feels like in your body. Notice the emotions arising in you. Then let go of this person and go back to your safe place. Notice your breathing. Notice your body.

Maybe you have faced some challenges in this exercise, so allow yourself to be caring and kind to yourself. It is not always easy to treat yourself and your surroundings with love. People fail and make mistakes, and it is okay. We often learn from our mistakes. Embrace yourself and feel that you take care of yourself right now. Then come back to the room you are in. Notice your breathing. Feel your body and notice what emotions are present right now. Thank yourself for this moment. When you feel ready, softly open your eyelids. Maybe move your fingers, toes, hands, and feet a little, and finish the meditation.