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Personal condition but social cure: Agentic ingroups elevate well-being in chronically ill patients through perceptions of personal control

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Objectives. Social-cure research has shown that ingroup identification can be beneficial for personal health and well-being. Initial evidence for healthy participants suggests that this might be due to group membership providing a sense of personal control. In this research, we investigate this pathway for chronically ill patients, assuming that any ingroup (even patient identity) can serve as social cure by increasing control as long as the ingroup is perceived as agentic (i.e., effective).

Design. We conducted six correlational field studies with patients suffering from different chronic conditions, e.g., cancer ($N_{\text{total}} = 795$).

Methods. All participants were asked about one specific ingroup, e.g., their self-help group. Our main measures were ingroup identification, ingroup agency, personal control and well-being, as well as self-esteem and social support (both discussed as alternative mediators). We performed simple mediation and/or moderated mediation analyses for each study and across studies (merging Studies 2–6).

Results. Overall, the impact of ingroup identification on personal well-being was uniquely mediated via personal control (Studies 1, 2, 3, 6) but, as expected, only for those perceiving their ingroup as highly agentic (Studies 4, 5, 6).

Conclusions. Ingroup agency is a boundary condition for the control-based pathway of the social cure effect supporting the model of group-based control. This has practical implications for clinical interventions with chronically ill patients.

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Statement of contribution

What is already known on this subject?

- Ingroup identification enhances personal health and well-being, known as the social cure effect.
- Initial evidence on healthy participants suggests that this can be explained by social identity increasing perceived personal control.

What does this study add?

- This indirect relationship is also true in the context of chronic conditions, even for disease-related ingroups such as patient identity.
- However, those ingroups need to be perceived as agentic (i.e., effective) to serve as a source for personal control and, in turn, well-being.
- This indicates that group-based control is the underlying mechanism for personal control mediating the social cure effect.

Background

People benefit personally from defining themselves as a group member. Identified group members feel connected (Jetten, Haslam, Haslam, Dingle, & Jones, 2014), supported (Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005), appreciated (Jetten et al., 2015), and empowered (Greenaway et al., 2015). Consequently, they report better health and well-being (Haslam, Jetten, Postmes, & Haslam, 2009). To experience these benefits, people need to identify with a relevant group (Turner, Oakes, Haslam, & McGarty, 1994). The social identity resulting from this identification protects and helps to increase impaired mental and physical health (Haslam, Jetten, Cruwys, Dingle, & Haslam, 2018).

However, it remains unresolved under which conditions people benefit most from their group memberships. While traditional explanations focus on self-esteem and social support, more recent research suggests that identification as an ingroup member fosters people's sense of being in control of their life outcomes and actions (Greenaway et al., 2015). Identifying with an agentic group allows people to gain a sense of control through their (social) self, even when their personal control seems compromised. Adopting this notion of group-based control (Fritsche et al., 2013), our work is the first to test the unique role of group-based control in a health field context. Importantly, we extend previous work by investigating the perceived agency of a certain group as boundary condition of the beneficial effects of the identification with that group.

Why social identities promote personal health and well-being

Psychological research demonstrates that social identities have lasting effects on personal health and well-being (Haslam, McMahon, et al., 2018). Ingroup identification, as the subjective perception of being integrated in social groups, improves health outcomes over and above social contact (Sani, Herrera, Wakefield, Boroch, & Gulyas, 2012). Research on this *social cure* effect (Haslam, Jetten, et al., 2018; Haslam et al., 2009; Jetten, Haslam, & Haslam, 2012) is based on the rationale of the social-identity approach (Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) proposing that people define themselves not only on a personal ('I') but also on a social ('We') level. If a relevant ingroup identity is salient, people adopt ingroup values, norms, standards, goals, and other features to describe themselves (Turner et al., 1994).

Social identities serve as psychological resource because they satisfy basic human needs, such as belonging, control, support, esteem, or meaning (Greenaway, Cruwys,

Haslam, & Jetten, 2016; Haslam et al., 2009; Vignoles, Regalia, Manzi, Gollidge, & Scabini, 2006). For instance, they can boost personal self-esteem via collective self-esteem, i.e., a positive self-evaluation of one's social identity (Bailis & Chipperfield, 2002; Jetten et al., 2015). Need satisfaction, in turn, leads to personal functioning, happiness, and health (Baumeister & Leary, 1995; Deci & Ryan, 2000; Ryff, 1989). Evidently, identifying highly with social ingroups makes people physically and mentally healthier, happier, and longer living (Berkman & Syme, 1979; House, Landis, & Umberson, 1988; Tay, Tan, Diener, & Gonzalez, 2013; Van Dick, Ketturat, Häusser, & Mojzisch, 2017; Veenhoven, 2008).

Social identities have both protective and curative potential (Cruwys et al., 2013) while being more widely accessible, less resource-intensive, and less stigmatised than, e.g., psychotherapy (Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014). The underlying mechanisms of the social cure effect, such as mediating factors, are still under discussion. At this time, most is known about social support, i.e., the exchange of resources being intended to increase the recipient's well-being (Shumaker & Brownell, 1984). Indeed, people perceive more social support when they are strongly identified with a relevant ingroup because high identifiers receive and accept more support from their ingroup and interpret the support in the intended way (Haslam et al., 2009). This promotes health and well-being (Cohen, 2004; Steffens, Jetten, Haslam, Cruwys, & Haslam, 2016). However, receiving social support can be detrimental (Stroebe & Stroebe, 1996) as it may question people's sense of control (e.g., by lacking in autonomy through being dependent from others). In fact, personal control might be an even better predictor of health outcomes than social support (Schwarzer & Schröder, 1997). Personal control is further strongly associated with – but distinct from – self-esteem (Vignoles et al., 2006). We subsequently argue that ingroups do not only provide social support and self-esteem but also control – if perceived as agentic (i.e., effective).

When social identities provide a sense of personal control

People have a basic need to perceive themselves in control over important aspects of their environment through their autonomous self (Preston & Wegner, 2005; Skinner, 1995). This includes the ability to cope with negative life experiences, e.g., chronic illness (Lazarus & Folkman, 1984). Here, the potential of perceived (rather than actual) control becomes relevant (Langer, 1975; Taylor, 1983). Whereas a chronic illness is an immutable stressful condition, the way of adapting to that challenge is mutable (Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993). Basic self-management skills are, e.g., interpreting symptoms or managing the use of medication (Holman & Lorig, 1992).

Identifying with an ingroup can foster members' sense of control. Specifically, the model of group-based control (GBC; Fritsche et al., 2013) proposes that people often conceive of groups as agents rather than descriptive categories (Brewer, Hong, & Li, 2004). Agentic groups are considered to have shared autonomous goals, concerted goal-directed action, and effects on their environment (Stollberg, Fritsche, & Bäcker, 2015). Thus, when people's subjective control is threatened at the personal level, they may restore control through identifying with an ingroup that is both salient and agentic. Indeed, people who were reminded of low (vs. high or neutral) personal control over their life more strongly identified with salient (Fritsche et al., 2013; Fritsche, Jonas, & Fankhänel, 2008) and agentic (vs. less agentic; Proudfoot & Kay, 2018; Stollberg et al., 2015) ingroups. Ingroup identification, in turn, was positively associated with perceived personal control and, subsequently, well-being (Greenaway et al., 2015). Identifying with

an agentic social group should therefore serve as a relevant source for personal control under health-related threats.

In social-cure research, the role of ingroup agency has not yet been fully captured. For example, Greenaway et al. (2015) found that personal control but not social support mediated the effect of ingroup identification on well-being in a low-control context; however, they did not assess ingroup agency. Other research found that social support mediated the effect of ingroup identification on (ill-) health, but the effect of social support was further mediated by collective self-efficacy, i.e., stressor-specific ingroup agency (Häusser, Junker, & Dick, 2020; Junker, van Dick, Avanzi, Häusser, & Mojzisch, 2019). Here, the stressor (e.g., a negative experience in the past) was explicitly shared with the ingroup. Indeed, (self-) stigmatised social identities, e.g., detainees, can function as ‘social curse’ rather than ‘social cure’, meaning that they reduce rather than increase personal well-being (Jetten et al., 2017; Kellezi, Bowe, Wakefield, McNamara, & Bosworth, 2019). However, meta-analytical evidence revealed that individuals who identified highly with an ingroup tended to report less depression, no matter whether the ingroup was stigmatised (Postmes, Wichmann, van Valkengoed, & van der Hoef, 2019). This suggests that there must be a further ingroup factor determining whether or not ingroup identification leads to social cure. From a GBC perspective, social groups should buffer the adverse consequences of perceived threat as long as they appear agentic or group members experience agency through group-based action (Stollberg, Fritsche, Barth, & Jugert, 2017).

The present research

The present research examines whether identifying with an agentic ingroup helps patients cope with health-related threats – here: chronic conditions – through enhancing or maintaining ingroup members’ sense of personal control. Building on previous evidence, we hypothesise ingroup identification to have a positive impact on personal well-being mediated by an increased sense of personal control (H1). Extending previous research, we further assume that ingroup identification entailing perceived personal control depends on perceived ingroup agency (H2, see Figure 1). Specifically, we expect that the positive effect of ingroup identification on personal control is stronger when perceived ingroup agency is high. We further expect this conditional effect regardless of whether the ingroup is related to the disease and after controlling for effects of general social support and personal self-esteem. To the best of our knowledge, this research is the first test for the buffering effect of an agentic ingroup in a health field context.

We conducted six correlational field studies ($N_{\text{total}} = 795$) in Germany between 2014 and 2020. Studies have been pre-registered (2–4) or re-analysed (5 & 6); for details, see

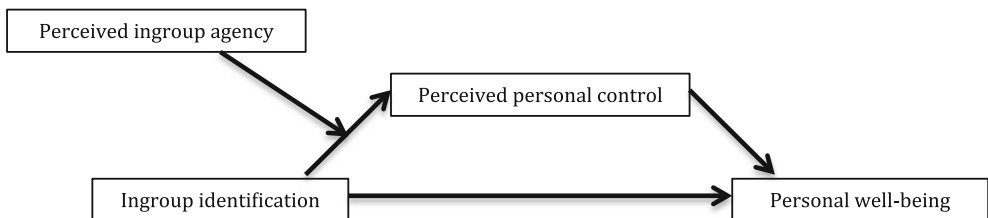


Figure 1. Theoretical model of this research.

Supporting Information. Samples were relatives of terminally ill patients (Study 1), patients with depression (Study 2), addiction (Study 3), and cancer (Studies 4–6). We received an approval from the ethics committee of the German Psychological Society (DGPs). All studies were conducted as paper–pencil or online-based surveys in group- or disease-specific settings, e.g., recruited through self-help groups or mobile nursing services. In all reported studies/conditions, specific groups were made salient (i.e., patient identity, self-help group, or disease-unrelated groups). An overview of (sub-) samples and ingroups, including social demographics, is presented in Table 1. Measures are reported in the order of presentation. Table 2 presents means, standard deviations, scale reliabilities, inter-scale correlations, and example items of central variables per study. Detailed descriptions of exclusion criteria, samples, recruitments, and measures are provided in [Supporting Information](#) of this research.

STUDY I

Study 1 investigated the relationships between ingroup identification, personal control, and personal well-being in caring relatives of terminally ill patients.

Methods

Sample

Sixty participants (58.3% female, 41.7% male; $M_{\text{age}} = 62.07$, $SD_{\text{age}} = 14.92$) who have been caring for a terminally ill relative were recruited by health-care staff. Using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009), a sensitivity power analysis revealed that this sample is large enough to have 80% power to detect a significant indirect effect of medium size ($f^2 = 0.17$).

Procedure and measures

After indicating socio-demographic information, participants answered either the Home Care Scale by Gräbel and Leutbecher (1993) assessing care-specific negative well-being, $\alpha = .95$, or three positive well-being scales. Positive well-being was measured by two items from the EORTC-Quality-of-Life Questionnaire C-30 (Aaronson et al., 1993) asking for state of health and quality of life, $r_{\text{EORTC}} = .87$, $p < .001$, the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), $\alpha_{\text{SWLS}} = .84$, and the WHO Five-Well-Being Index (WHO-5; World Health Organization, 1998), $\alpha_{\text{WHO}} = .90$. The respective non-presented block was administered at the end of the questionnaire. To form a well-being index, we recoded the negative home-care items, z -standardised each item of this scale and the three positive scales, and computed the overall mean, $\alpha_{\text{index}} = .96$. We asked for the services of their mobile care providers and measured personal control with four items by Kovaleva, Beierlein, Kemper, and Rammstedt (2012). We excluded one item improving alpha from $\alpha = .48$ to $\alpha = .56$. We presented three single threat items concerning bereavement, lack of control, and mortality salience. We then assessed social contacts beyond caring, including contact frequencies and changes. Participants were asked to name a social group they identify with. Ingroup identification was measured with six items based on Leach et al. (2008), $\alpha = .85$. One further item assessed ethnocentrism. All preceding variables were assessed on ascending 7-point rating scales, except for the WHO-5 using a 6-point rating scale.

Table 1. Overview of final samples (Studies 1–6) including study design and demographics, *M*, (*SD*)

Study	Design	Sample	Ingroup	<i>N</i> _{final}	Age	% Female
1	Correlational	Caregiving relatives of terminally ill patients	Disease-unrelated group	60	62.07 (14.92)	58.3
2	Correlational	Patients with depression	Disease-related self-help group	88	49.29 (15.81)	71.6
3	Correlational	Patients with addiction	Disease-related self-help group	91	54.70 (10.90)	34.1
4	Correlational	Young patients with cancer	Identity as young patient with cancer	248	34.97 (6.40)	74.6
5	Experimental (1 of 2 conditions)	Patients with cancer	Identity as patient with cancer	114	57.15 (10.71)	71.1
6	Experimental (2 of 3 conditions)	Patients with cancer	Disease-related self-help group (1) or disease-unrelated group (2)	194 (1 = 119, 2 = 75)	64.82 (10.04)	48.5
Total	–	–	–	795	51.28 (15.94)	61.5

Note. There were two social-identity conditions in Study 6. As we did not expect differences between these two, we report both conditions combined.

Table 2. Means, standard deviations, Cronbach's alpha coefficients (in parentheses), and inter-scale correlations between central variables, including example items (Studies 1–6)

Variable	Study	M	SD	Ingroup identification	Ingroup agency	General social support	Personal self-esteem	Personal control	Personal well-being
Ingroup identification (e.g., 'I identify with my group.')	1	5.04	0.99	(.85)	–	–	–	.39**	.07
	2	5.47	1.04	(.79)	.54***	.10	.16	.21†	.18†
	3	5.84	0.84	(.74)	.57***	.29**	.14	.19†	.18†
	4	3.87	1.40	(.86)	.60***	–	.03	.08	–.04
	5	3.95	1.58	(.90)	.69***	–.15	–.02	.09	–.18†
	6	5.09	1.31	(.91)	.59***	.15*	.22**	.25**	.21**
Ingroup agency (e.g., 'The members of my group share common goals.')	1	–	–	–	–	–	–	–	–
	2	5.14	1.05	(.83)	(.83)	.24*	.12	.22*	.23*
	3	5.87	1.00	(.82)	(.82)	.33**	.17	.21*	.26*
	4	4.27	1.50	(.84)	(.84)	–	.04	.08	–.02
	5	4.48	1.59	(.94)	(.94)	–.17†	–.11	.04	–.22*
	6	5.24	1.15	(.88)	(.88)	.16*	.15*	.20**	.15*
General social support (e.g., 'I feel supported by others in my life at the moment.')	1	–	–	–	–	–	–	–	–
	2	4.66	1.59	–	–	a	.15	.25*	.34**
	3	5.75	1.30	–	–	a	.14	.16	.15
	4	–	–	–	–	–	–	–	–
Personal self-esteem (e.g., 'I have high self-esteem right now.')	5	5.99	1.29	–	–	(.89)	.47***	.30**	.52***
	6	5.53	1.21	–	–	a	.35***	.15*	.27***
	1	–	–	–	–	–	–	–	–
	2	3.52	1.47	–	–	–	a	.74***	.66***
	3	5.51	1.56	–	–	–	a	.71***	.65***
	4	5.16	1.41	–	–	–	a	.50***	.46***
Personal control (e.g., 'I feel in control of my life right now.')	5	4.98	1.56	–	–	–	a	.58***	.72***
	6	5.17	1.42	–	–	–	a	.48***	.54***
	1	3.61	1.07	–	–	–	–	(.56)	.63***
	2	4.32	1.23	–	–	–	–	(.86)	.66***

Continued

Table 2. (Continued)

Variable	Study	M	SD	Ingroup identification	Ingroup agency	General social support	Personal self-esteem	Personal control	Personal well-being
Personal well-being (e.g., 'Overall, how happy do you feel at the moment?')	3	6.17	0.75					(.78)	.67***
	4 ^b	3.05	0.52					(.95)	.50***
	5	5.39	1.23					(.89)	.59***
	6	5.24	1.10					(.75)	.61***
	1 ^c	0.21	0.68						(.96)
	2	3.72	1.09						(.85)
Personal well-being (e.g., 'Overall, how happy do you feel at the moment?')	3	5.38	1.12						(.87)
	4 ^c	0.00	0.69						(.88)
	5	4.94	1.06						(.90)
	6	5.05	1.11						(.86)

Note. The order of variables in this table is not necessarily consistent with the order of variables in the studies. If unless noted otherwise, rating scales were ranging from 1 to 7.

¹ $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$.

^aSingle item.

^bPersonal control scale ranging from 1 to 5.

^cWell-being index of z-standardised subscale means.

Table 3. Summary of simple mediation analysis (ingroup identification on personal well-being via personal control) in Studies 1–6 including path estimates with *p*-values, unstandardised and completely standardised indirect effects with 95% bootstrap confidence intervals

Study	N	Path a	Path b	Path c' (direct effect)	Path c (total effect)	Paths a × b (indirect effect)	Completely standardised indirect effect
1	48	0.40 (<i>p</i> = .003)	0.46 (<i>p</i> < .001)	-0.14 (<i>p</i> = .142)	0.05 (<i>p</i> = .646)	0.18, CI [0.0558; 0.3197]	0.28, CI [0.0814; 0.4740]
2	88	0.25 (<i>p</i> = .041)	0.58 (<i>p</i> < .001)	0.05 (<i>p</i> = .588)	0.19 (<i>p</i> = .132)	0.14, CI [0.0085; 0.2855]	0.14, CI [0.0090; 0.2598]
3	91	0.17 (<i>p</i> = .070)	0.99 (<i>p</i> < .001)	0.07 (<i>p</i> = .578)	0.24 (<i>p</i> = .143)	0.17, CI [-0.0047; 0.3813]	0.13, CI [-0.0036; 0.2729]
4	248	0.03 (<i>p</i> = .202)	0.68 (<i>p</i> < .001)	-0.04 (<i>p</i> = .177)	-0.02 (<i>p</i> = .546)	0.02, CI [-0.0099; 0.0488]	0.04, CI [-0.0195; 0.0983]
5	111	0.07 (<i>p</i> = .403)	0.57 (<i>p</i> < .001)	-0.16 (<i>p</i> < .001)	-0.13 (<i>p</i> = .075)	0.04, CI [-0.0472; 0.1270]	0.06, CI [-0.0674; 0.1881]
6	194	0.21 (<i>p</i> = .002)	0.60 (<i>p</i> < .001)	0.05 (<i>p</i> = .332)	0.18 (<i>p</i> = .009)	0.13, CI [0.0542; 0.2124]	0.15, CI [0.0666; 0.2381]

Note. Model 4 of PROCESS for SPSS (Hayes, 2018) with 10,000 bootstrap samples and HC3 estimator.

Results and discussion

As presented in Table 2, ingroup identification was significantly positively associated with personal control but not with personal well-being, while personal control and personal well-being were highly inter-correlated. As in all of the following studies, we conducted a mediation analysis to test H1 using model 4 of the PROCESS macro for SPSS v3.1 by Hayes (2018) with 10,000 bootstrap samples and selecting the HC3 estimator for heteroscedasticity-consistent standard errors (see Table 3). Supporting H1, there was a significant indirect effect of ingroup identification on personal well-being through personal control, $b = 0.18$, 95% bootstrap CI [0.0558; 0.3197]. However, direct and total effects were non-significant (see Figure 2).

The results extend previous findings on the mediating effect of personal control on well-being to a field health context. However, Study 1 neither distinguished between different mediators (personal control, self-esteem, social support) nor tested for a possible moderating effect of ingroup agency. In the next studies, we also aimed to use a more reliable control scale. Presenting the same ingroup for all participants might further reduce variance from different groups participants identified with.

STUDIES 2 AND 3

In both studies, we asked people suffering from a mental disorder (depression and addiction, respectively) questions about their self-help group.

Methods

Sample

In Study 2, the sample consisted of 99 members of 18 depression self-help groups, while the sample in Study 3 contained 95 members of 15 addiction self-help groups. Participants completed the questionnaire either at the beginning or the end of a regular group meeting on-site. Based on pre-registered exclusion criteria, we excluded 15 participants ($n = 11$, Study 2; $n = 4$, Study 3), resulting in $N = 88$ in Study 2 (71.6% female, 27.3% male, $M_{\text{age}} = 49.29$, $SD_{\text{age}} = 15.81$) and $N = 91$ in Study 3 (34.1% female, 64.8% male, $M_{\text{age}} = 54.70$, $SD_{\text{age}} = 10.90$). Two sensitivity power analyses revealed that, in both studies, we have 80% power to find a significant interaction effect of medium size ($f^2 = 0.13$).

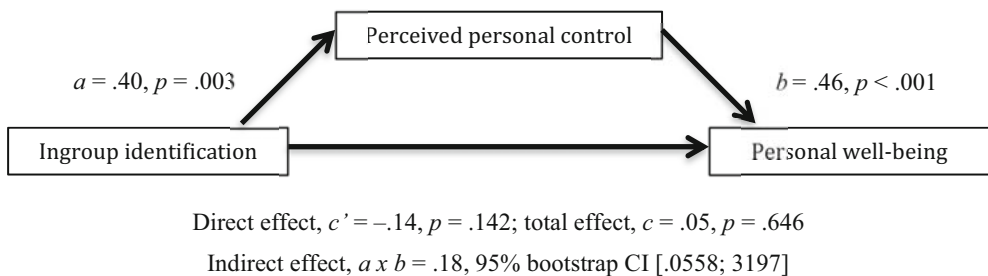


Figure 2. Simple mediation model in Study 1 ($N = 48$) with ingroup identification as a predictor of personal well-being mediated by perceived personal control. The confidence interval for the indirect effect is a percentile bootstrap 95% CI based on 10,000 samples.

Procedure and measures

Participants were first asked about demographics and diagnosis. We measured disease-related threat, mood (Study 2), frequency of attendance (Study 3), identification with their self-help group (five items, Study 2, $\alpha_{\text{Study2}} = .79$; six items, Study 3, $\alpha_{\text{Study3}} = .74$, both adapted from Leach et al., 2008), perceived ingroup agency (four items, $\alpha_2 = .83$, $\alpha_3 = .82$, Stollberg et al., 2015), perceived personal control (six items combining scales from Greenaway, Louis, & Hornsey, 2013, and, adapted, Burger & Cooper, 1979, $\alpha_2 = .86$, $\alpha_3 = .78$), personal self-esteem (one item, based on Robins, Hendin, & Trzesniewski, 2001), appreciation from their self-help group, general social support in life, self-help group support, well-being (three items, Greenaway et al., 2015, $\alpha_2 = .85$, $\alpha_3 = .87$), control motivation (Study 2), retrospective control (Study 3), and one question about the main reason for attending their group. We used ascending 7-point rating scales in all measures.

Results and discussion

In both studies, ingroup identification and ingroup agency were highly inter-correlated but not significantly associated with personal control or well-being. In Study 2, as expected, the indirect effect of ingroup identification on well-being via personal control (H1) was significantly positive, $b = 0.14$, 95% bootstrap CI [0.0085; 0.2855], while direct and total effects were non-significant. In Study 3, there was an indirect effect as a non-significant trend, $b = .17$, 95% bootstrap CI [-0.0047; 0.3813]; direct and total effects were non-significant.

We then tested whether ingroup agency moderated the effect of ingroup identification on personal control (H2). As in all subsequent studies, we tested moderated mediation by using model 7 of the PROCESS macro for SPSS (Hayes, 2018) with a HC3 estimator and 10,000 bootstrap samples. This analysis did not confirm an interaction effect of both z -standardised predictors, ingroup identification and ingroup agency, on personal control, neither in Study 2, $b = -0.00$, $SE = 0.12$, $t(84) = -0.02$, $p = .988$; nor in Study 3, $b = -0.03$, $SE = 0.08$, $t(87) = -0.40$, $p = .688$ (see Table 4).

Identification with a self-help group was associated with high personal control and, as a consequence, personal well-being irrespective of the magnitude of agency participants attributed to their group. This can be explained by the specific nature of self-help groups as being prototypically high in agency (indeed, 80.7% of participants in Study 2 and 92.3% of participants in Study 3 indicated ingroup agency values above the scale mean). Given that virtually no one considered ingroup agency to be low, it was not possible to test the hypothesised agency moderation. Thus, in the following studies, we addressed groups less strongly and less unequivocally associated with agency. Additionally, we increased sample size to be able to detect even a small – but theoretically meaningful – interaction effect.

STUDY 4

In this study, the sample was asked about their identity as young patients with cancer. The so-called AYAs (adolescent and young adults) were a special patient group between 15 and 39 years old due to their developmental tasks, living situation, and tumour biology.

Table 4. Summary of moderated mediation analysis (ingroup agency moderating the effect of ingroup identification on personal control mediating the effect on personal well-being) in Studies 2–6 including unstandardised regression coefficients, standard errors, *t*- and *p*-values, *R*² of the model, *R*² increase due to interaction, and indices of moderated mediation with 95% bootstrap confidence intervals

Study	<i>N</i>	Predictors	<i>b</i> (SE)	<i>t</i>	<i>p</i>	<i>R</i> ²	ΔR^2	Index of moderated mediation
2	88	Constant	4.32 (0.14)	31.09	<.001			
		Ingroup identification	0.15 (0.16)	0.94	.353			
		Ingroup agency	0.19 (0.15)	1.26	.212			
		Ingroup identification × Ingroup agency	−0.00 (0.12)	−0.02	.988	.06	.00	−0.00, CI [−0.1247; 0.1826]
3	91	Constant	6.19 (0.09)	69.45	<.001			
		Ingroup identification	0.08 (0.09)	0.88	.381			
		Ingroup agency	0.10 (0.08)	1.24	.218			
		Ingroup identification × Ingroup agency	−0.03 (0.08)	−0.40	.688	.05	.00	−0.03, CI [−0.1891; 0.1285]
4	248	Constant	3.01 (0.04)	73.45	<.001			
		Ingroup identification	0.01 (0.04)	0.33	.746			
		Ingroup agency	0.06 (0.05)	1.23	.219			
		Ingroup identification × Ingroup agency	0.07 (0.03)	2.26	.025	.03	.02	0.05, CI [0.0068; 0.0842]
5	109	Constant	5.23 (0.15)	36.08	<.001			
		Ingroup identification	0.06 (0.18)	0.30	.766			
		Ingroup agency	0.15 (20)	0.76	.451			
		Ingroup identification × Ingroup agency	0.24 (0.13)	1.91	.059	.22	.04	0.14, CI [−0.0067; 0.2771]
6	194	Constant	5.12 (0.09)	60.55	<.001			
		Ingroup identification	0.24 (0.10)	2.56	.011			
		Ingroup agency	0.19 (0.11)	1.82	.070			
		Ingroup identification × Ingroup agency	0.22 (0.06)	3.46	<.001	.13	.07	0.13, CI [0.0404; 0.2016]

Note. Model 7 of PROCESS for SPSS (Hayes, 2018) with HC3 estimator, 10,000 bootstrap samples, and z-standardised ingroup identification and ingroup agency. Study 1 is not included, as we did not measure ingroup agency.

Methods

Sample

The data comes from a large survey study of AYA patients with cancer. As pre-registered, we excluded those 123 out of 371 participants with too many missing values on central measures, resulting in a final sample of $N = 248$ (74.6% female, 25.4% male, $M_{\text{age}} = 34.97$, $SD_{\text{age}} = 6.40$). A sensitivity power analysis revealed that we now have 80% power to detect a significant interaction effect of small size ($f^2 = 0.05$).

Procedure and measures

We only report pre-registered measures. After a demographics section, we measured identification as an AYA patient (six items, based on Leach et al., 2008, $\alpha = .86$), ingroup agency (six items based on Stollberg et al., 2015, $\alpha = .84$), three (negative or positive) well-being indicators (depression, 14 items based on Zigmond & Snaith, 1983, ranging from 1 to 4; strain, 1 item, ranging from 0 to 10; life satisfaction, 1 item, ranging from 1 to 5; for a well-being index, we recoded the negative depression items and strain, z -standardised all items, and computed an overall mean of all three indicators' means, $\alpha = .88$), disease-related threat, personal control (10 items based on Schwarzer & Jerusalem, 1995, $\alpha = .95$), and personal self-esteem (1 item).

Results and discussion

Both ingroup identification and ingroup agency were positively but not significantly associated with personal control and negatively but not significantly associated with well-being. In the simple mediation analysis, neither the indirect, $b = 0.02$, 95% bootstrap CI $[-0.0099; 0.0488]$, nor the direct or total effects were significant ($\neq H1$). However, as expected, the moderated mediation analysis (H2) revealed a significant interaction of ingroup identification and ingroup agency, $b = 0.07$, $SE = 0.03$, $t(244) = 2.26$, $p = .025$. By default, simple slopes are calculated at ± 1 SD of the moderators' mean. At $+1$ SD , the effect of ingroup identification on personal control was still non-significant, $b = 0.06$, $SE = 0.04$, $t(244) = 1.54$, $p = .124$. However, exploring this effect using the Johnson-Neyman technique (Johnson & Neyman, 1936) shows that ingroup identification and personal control were significantly associated when ingroup agency was >1.80 SD above the mean (3.23% of the sample) $b = 0.13$, $SE = .07$, $t(244) = 1.97$, $p = .050$ (for simple slopes at ± 1 SD see Figure 3). The index of moderated mediation was significant, $b = 0.05$, 95% bootstrap CI $[0.0068; 0.0842]$, and remained significant when adding self-esteem as parallel mediator, index: $b = 0.03$, 95% bootstrap CI $[0.0038; 0.0623]$; non-significant indirect effect mediated via self-esteem: $b = 0.01$, 95% bootstrap CI $[-0.0191; 0.0357]$. As patient identities may primarily cause negative consequences, it is remarkable that they can function as positive resource for well-being by providing personal control when the ingroup is perceived as agentic. We were interested in whether this interaction can also be found for patients with cancer of every age.

STUDY 5

For study 5, we re-analysed a sub-sample of an experimental study with patients with cancer. Participants were randomly assigned to one of two conditions (experimental condition: thinking about their patient identity; control condition: thinking about their

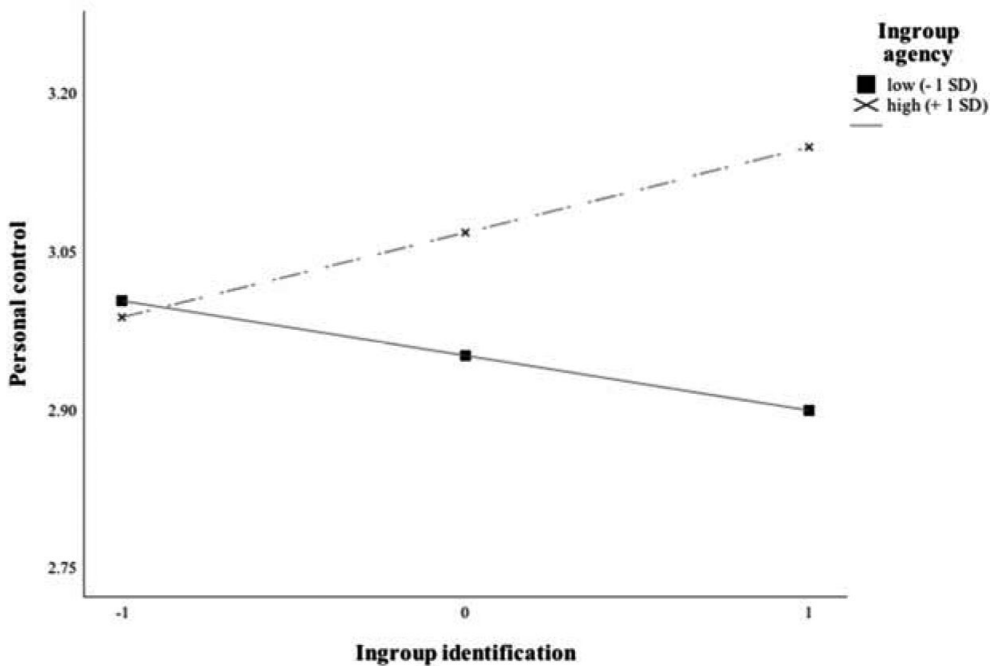


Figure 3. Simple slope equations of the regression of personal control on ingroup identification at low and high levels of ingroup agency in Study 4. Ingroup identification and ingroup agency are z-standardized; personal control was rated on a 7-point Likert scale.

daily routine). We re-analysed the data provided by participants who were in the experimental condition.

Methods

Sample

A raw sample of 282 patients with cancer was recruited via oncological rehabilitation centres, volunteer data pools, and among members of self-help groups or societies, of which 140 participants were randomly assigned to the patient-identity condition. Excluding $n = 26$ due to pre-registered criteria left a final sub-sample of $N = 114$ (71.1% female, 28.9% male, $M_{\text{age}} = 57.15$, $SD_{\text{age}} = 10.71$). A sensitivity power analysis revealed a power of 80% to detect a significant interaction effect of small to medium size ($f^2 = 0.10$).

Procedure and measures

After a socio-demographics section, participants rated their severity of symptoms and retrospective disease-related threat. Participants then read a text about the collective spirit of the cancer community and were asked to write about a situation where they strongly felt connected with the group of patients with cancer and as if acting in unison, followed by three questions about their identification with that ingroup. We then measured mood, personal control (six items, based on Burger & Cooper, 1979, $\alpha = .89$), and general well-being (two items based on Greenaway et al., 2015, $r = .82$, $p < .001$). We

further assessed ingroup identification (six items, based on Leach et al., 2008, $\alpha = .90$), ingroup agency (five items, based on Stollberg et al., 2015, $\alpha = .94$), disease-related threat, emotional well-being (eight items of the CES-D, Radloff, 1977, of which six were recoded, $\alpha = .85$), subjective quality of life (two items of the QLQ-C30, Aaronson et al., 1993, $r = .73$, $p < .001$), control motivation, personal self-esteem (1 item), general social support (five items, based on Broadhead, Gehlbach, De Gruy, & Kaplan, 1988, $\alpha = .89$), ingroup activity, general social identification, and four exclusion items. To form a well-being index, we computed the mean of all general well-being, emotional well-being, and subjective quality of life items, $\alpha = .90$. We used ascending 7-point rating scales in all measures.

Results and discussion

In Table 2, it can be seen that the inter-correlational pattern of this study was similar to Study 4. The indirect effect via personal control (H1) was non-significant, $b = 0.04$, 95% bootstrap CI $[-0.0472; 0.1270]$, while the direct effect was significantly negative, $b = -0.16$, $p < .001$. In the moderated mediation analysis, the interaction of ingroup identification and ingroup agency (H2) had a non-significant trend, $b = 0.24$, $SE = 0.13$, $t(105) = 1.91$, $p = .059$. Like Study 4, the simple slope at $+1$ SD of the mean of ingroup agency was non-significant, $b = 0.19$, $SE = 0.11$, $t(105) = 1.65$, $p = .101$. Using the Johnson-Neyman technique, however, the relationship between ingroup identification and personal control was significant when ingroup agency was >1.45 SD above the mean (2.75% of the sample), $b = 0.41$, $SE = 0.21$, $t(105) = 1.98$, $p = .050$. Overall, the index of moderated mediation was found as a non-significant trend, $b = 0.14$, 95% bootstrap CI $[-0.0067; 0.2771]$, and remained that way when adding social support and self-esteem as parallel mediators, $b = 0.07$, 95% bootstrap CI $[-0.0035; 0.1382]$. This replicates Study 4, although a larger sample would have been desirable. This is provided in Study 6.

STUDY 6

For Study 6, we re-analysed a sub-sample of an experimental study with cancer self-help group members. Participants were randomly assigned to one of three conditions (experimental condition 1: thinking about their self-help group; experimental condition 2: thinking about a freely chosen disease-unrelated ingroup; control condition: thinking about their personal fate). We re-analysed the data provided by participants who were in the two experimental conditions.

Methods

Sample

For this online study, we recruited 472 members of 153 cancer self-help groups during the COVID-19 pandemic when groups were not allowed to meet in person. We excluded $n = 153$ participants due to pre-registered criteria. Our final sub-set of participants thinking about an ingroup (self-help group, $n = 119$ or disease-unrelated group, $n = 75$) was 194 of 314 participants (48.5% female, 47.9% male, $M_{\text{age}} = 64.82$, $SD_{\text{age}} = 10.04$). A sensitivity power analysis revealed 80% power to detect a significant interaction effect of relatively small size ($f^2 = .06$).

Procedure and measures

First, participants were asked about their health status, e.g., cancer diagnosis and stage, followed by disease-related threat, disease severity, and COVID-19-related threat. Participants of the self-help group condition were asked to describe how their self-help group has managed the social-distancing measures in the past weeks and months of the pandemic and to what extent they have still seen themselves as effective members. Participants of the disease-unrelated group condition were asked to think about a disease-unrelated ingroup that they have perceived as effective during the past weeks and months of the pandemic. They were further asked which group that is and to describe their feelings as group member. All participants were then asked to assess identification (six items, Leach et al., 2008) and agency (three items, Stollberg et al., 2015) of either their self-help group ($\alpha_{\text{identification}} = .91$; $\alpha_{\text{agency}} = .88$) or disease-unrelated group ($\alpha_{\text{identification}} = .89$; $\alpha_{\text{agency}} = .84$). In all conditions, we further assessed personal control (three items, Greenaway et al., 2013, $\alpha = .75$), well-being (three items, Greenaway et al., 2015, $\alpha = .86$), control motivation, general social support (1 item), personal self-esteem (1 item), general social identification, identification as patient with cancer, further COVID-19-related items, various self-help group-related items, demographical items, and what they think the aim of this study was. We used ascending 7-point rating scales in all measures.

Results and discussion

Both ingroup identification and ingroup agency were significantly positively associated with both personal control and well-being. The simple mediation analysis (H1) revealed a significant indirect effect via personal control, $b = 0.13$, 95% bootstrap CI [0.0542; 0.2124]. Whereas the direct effect was non-significant, $b = 0.05$, $p = .332$, the total effect was significant, $b = 0.18$, $p = .009$. In the moderated mediation analysis (H2), the interaction of ingroup identification and ingroup agency was significant, $b = 0.22$, $SE = 0.06$, $t(190) = 3.46$, $p < .001$, as well as the model's index of moderated mediation, $b = 0.13$, 95% bootstrap CI [0.0404; 0.2016]. As shown in Figure 4, the positive effect of ingroup identification on personal control was moderated by ingroup agency, $F(1, 190) = 11.99$, $b = 0.23$, $p = .007$, $\Delta R^2 = .07$. The relationship was only significant when participants perceived ingroup agency to be high, $+1 SD$, $b = 0.46$, $SE = 0.11$, $t(190) = 4.08$, $p < .001$, but not when perceived to be low, $-1 SD$, $b = 0.03$, $SE = 0.11$, $t(190) = 0.24$, $p = .814$. As expected, the results remained the same when adding self-esteem and social support to the model, interaction: $b = 0.21$, $SE = 0.06$, $t(188) = 3.40$, $p < .001$; index: $b = 0.10$, 95% bootstrap CI [0.0287; 0.1636], while the indirect effect via self-esteem was significant, $b = 0.07$, 95% bootstrap CI [0.0195; 0.1475], and the indirect effect via social support was non-significant, $b = 0.02$, 95% bootstrap CI [-0.0027; 0.0497]. This pattern supports our hypotheses, indicating that ingroup identification elevates well-being in those patients who consider relevant ingroups to be agentic by increasing their sense of personal control. This relationship is independent from effects of ingroup identification mediated via self-esteem and social support.

Integrated and additional analyses

In order to increase statistical power (and thus the quality of our estimations), we exploratorily merged the data from Studies 2–6 to test H2 ($N_{\text{final}} = 730$). Using G*Power, a

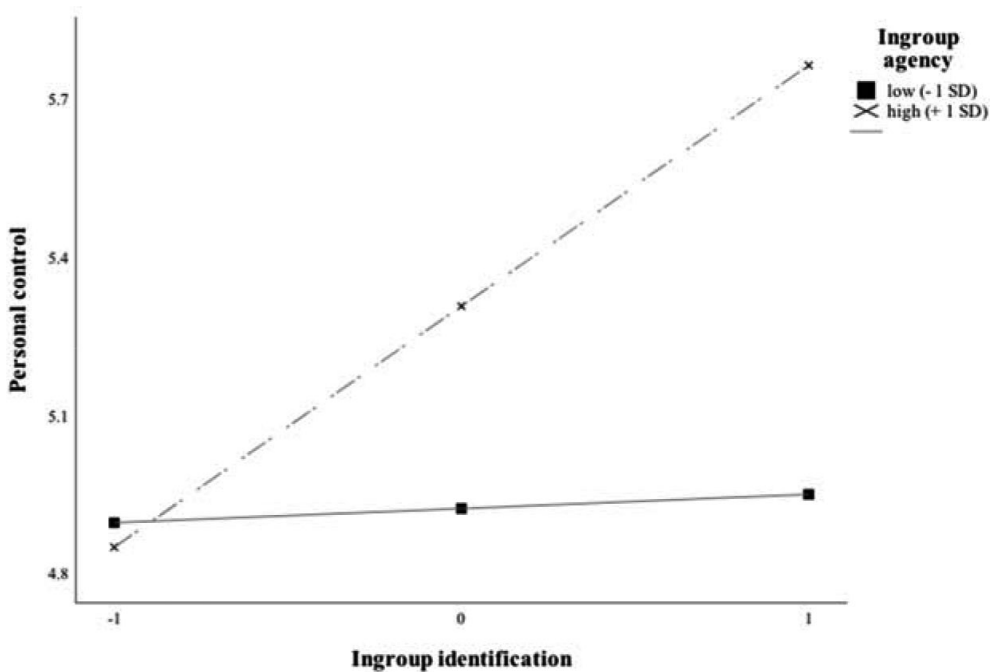


Figure 4. Simple slope equations of the regression of personal control on ingroup identification at low and high levels of ingroup agency in Study 6. Ingroup identification and ingroup agency are z-standardized; personal control was rated on a 7-point Likert scale.

sensitivity power analysis revealed that we have 80% power to detect a significant interaction effect of small size ($f^2 = .02$). We conducted a moderated mediation analysis with study as clustering variable ($n_{\text{cluster}} = 5$) using *Mplus* (Muthén & Muthén, 1998–2017). Standard errors of simple effects are estimated by using a ML estimator, while robust bias-corrected bootstrap confidence intervals are calculated for the indirect effects at $-1 SD$, mean, and $+1 SD$ of the moderators' mean. We z-standardised predictor variables and dependent variables as described in [Supporting Information](#). The model fit was good (RMSEA = .050, SRMR = .013). The interaction effect of ingroup identification and ingroup agency was significant, $b = 0.18$, $SE = 0.05$, $\beta = 3.49$, $p < .001$, indicating that ingroup identification and well-being were positively correlated at high ($+1 SD$) but not low ($-1 SD$) levels of ingroup agency. The indirect effect via personal control varied systematically as a function of ingroup agency. While the indirect effect was non-significant on low agency levels ($-1 SD$), $b = -.08$, $SE = .07$, $\beta = -1.11$, $p = .267$, 95% bootstrap CI $[-0.18; 0.02]$, it was significantly positive on high agency levels ($+1 SD$), $b = 0.15$, $SE = 0.06$, $\beta = 2.27$, $p = .023$, 95% bootstrap CI $[-0.01; 0.26]$ (see [Figure 5](#)). Additional analyses showed that, as expected, the moderated mediation was independent from social support and self-esteem as alternative mediators (see [Figure 6](#) and [Supporting Information](#)).

For validation, we further tested for the reverse causal effect of well-being on ingroup identification via personal control. Whereas the reverse effect was (marginally) significant in Studies 1, 5, and 6, it was not in Studies 2–4 (see [Supporting Information](#)).

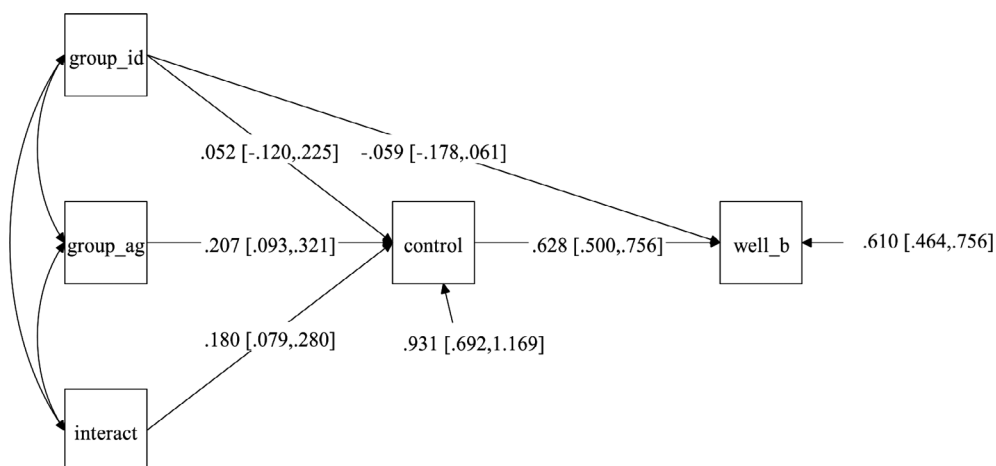


Figure 5. Path diagram of the moderated mediation analysis of merged data (Studies 2–6; $N = 730$) with study as clustering variable using Mplus (Muthén & Muthén, 1998–2017). Ingroup identification (*group_id*), ingroup agency (*group_ag*), personal control (*control*), and personal well-being (*well_b*) are z-standardised; regression coefficients and 95% bias-corrected bootstrap confidence intervals based on 10,000 samples.

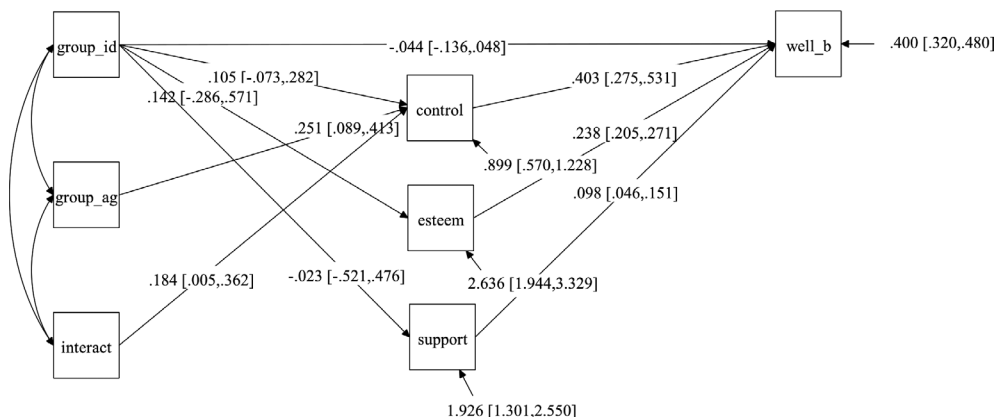


Figure 6. Path diagram of the moderated mediation analysis of merged data (Studies 2, 3, 5, 6; $N = 477$) with study as clustering variable, and self-esteem (*esteem*) and social support (*support*) as two parallel mediator variables using Mplus (Muthén & Muthén, 1998–2017). Ingroup identification (*group_id*), ingroup agency (*group_ag*), personal control (*control*), and personal well-being (*well_b*) are z-standardised; regression coefficients and 95% bias-corrected bootstrap confidence intervals based on 10,000 samples.

GENERAL DISCUSSION

Across six field studies, we found that perceived personal control mediated the positive effect of ingroup identification on personal well-being. As predicted, higher ingroup identification with a self-help group (Studies 2, 3, 6) or a disease-unrelated group (Studies 1, 6) was associated with increased personal control, and, in turn, better personal well-

being. Our research is the first to show processes of group-based control (Greenaway et al., 2015) elevating well-being in patients and caring relatives.

Importantly, only ingroups perceived as agentic seem to increase people's control. Identification was positively correlated with personal control in groups with high levels of mean perceived agency, such as self-help groups, whereas no such straightforward effect was present when people identified with their patient group, e.g., patients with cancer. People may associate patient identity with personal control losses implicated in their illness ('social curse'; Jetten et al., 2017). Nevertheless, as soon as people perceive their patient identity as agentic (e.g., due to common goals and advocacy), ingroup identification serves as a source of personal control and, subsequently, well-being (Studies 4–6).

These findings corroborate a novel control-based explanation of social cure effects. Earlier explanations focused on ingroup identification fostering personal self-esteem and social support. However, neither variable could explain the group-based control pathway to health that the present studies uncover. Instead, they appeared to be parallel and independent mediators of ingroup identification effects on well-being in the present integrated analyses. Our findings not only highlight the importance of perceived control for preserving or restoring health (Holman & Lorig, 1992) but also emphasize its relevance as an independent motive of social identity (Fritsche et al., 2013).

It is a strength of the present research that we were able to show consistent patterns across various samples (suffering from mental vs. physical vs. general conditions), ingroup types (disease-related vs. disease-unrelated), and recruitment settings (online vs. offline; alone at home vs. surrounded by other ingroup members). Indeed, the correlational nature of our analyses is a weakness, as it does not preclude all alternative causal paths that may explain the associations found. For instance, increased personal well-being through agentic group membership may further increase the perception of this ingroup as agentic, thus initiating a 'virtuous circle'. However, the patterns of these first results support our ideas and suggest to do further (experimental) research.

As a further limitation, one might discuss whether the lack of a moderating effect of ingroup agency in Studies 2 and 3 (i.e., self-help groups) and the weak moderating effect in Studies 4 and 5 (i.e., patient identity) may indicate lacking robustness of the moderation effect. In Studies 2 and 3, in fact, the range of scores on ingroup agency does not suggest a ceiling effect. In contrast to Study 6, the lacking moderation effect may be caused by the different design (i.e., other self-help group members being present) and the different sample (i.e., patients with mental disorders). On the contrary, ingroup agency was considerably lower in Studies 4 and 5 than in Studies 2, 3, and 6. As a result, in the patient identity studies, ingroup agency perceptions one *SD* above the sample mean roughly equal the mean scores in the self-help group studies (see Table 2). Apparently, the perceived ingroup agency of a patient group needs to be very high to be capable of buffering against the negative effect of being a member in that group. However, the results of the integrated analysis provide consistent evidence for a moderating effect of ingroup agency. Additionally, our analyses did not provide consistent evidence for a reversed causal effect (i.e., well-being increasing personal control and, in turn, ingroup identification). Accordingly, longitudinal and experimental studies are needed to further probe the sequence and direction of effects.

From an applied (health) perspective, our results support previous findings suggesting that being highly identified with social ingroups can empower individuals. However, our results demonstrate that promoting membership in social groups (e.g., in patient categories) may only be beneficial for regaining a sense of control and well-being if people

attribute agency to their group. For practitioners, our results highlight the need to consider (1) providing possibilities for patients to perceive other patients suffering from the same condition as collectively sharing, actively pursuing, and actually achieving common goals, e.g., by establishing patient newspapers, patient blackboards, or patient councils at their institution, (2) making their patients aware of accessible disease communities such as committed self-help groups, or (3) initiating social events or activity-based therapy groups to foster a sense of shared social identity focusing on common goal-driven experiences. In other words, health practitioners may take on a leadership role in helping to create settings of collective agency in patient groups (see Haslam & Reicher, 2016).

Conclusion

This research provides first empirical evidence that perceived ingroup agency is an important boundary condition of the social cure effect, i.e., social identities promoting individuals in the health context. The results support a group-based control perspective on the underlying mechanism why perceived personal control mediates the social cure effect. For practitioners, our findings provide new insights into how social identities may help patients' better cope with personal disease-related challenges.

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Prior use of data

Study 1 was presented at the 19th Annual Convention of the Society for Personality and Social Psychology (February 2018, Atlanta, US), and at the 4th International Conference of Social Identity and Health (July 2018, Lausanne, Switzerland). This study is adapted from the first author's bachelor thesis (unpublished). Study 2 is adapted from Katharina Thien's bachelor thesis (unpublished). Study 3 is adapted from Lisa von Glahn's bachelor thesis (unpublished). Study 4 is part of the fifth time point of measurement of a longitudinal survey conducted by Katja Leuteritz and the AYA research group Leipzig. Study 5 is adapted from Anne-Kathrin Kleine's master thesis (unpublished).

Conflicts of interest

All authors declare no conflict of interest.

Author contribution

Susanne Relke: Conceptualization (equal); Data curation (equal); Formal analysis (equal); Investigation (equal); Methodology (equal); Project administration (equal); Resources (equal); Software (equal); Supervision (equal); Validation (equal); Visualization (equal); Writing – original draft (equal); Writing – review & editing (equal). **Immo Fritsche:** Conceptualization (equal); Methodology (equal); Resources (equal); Supervision (equal); Writing – review & editing (equal). **Torsten Masson:** Conceptualization (equal); Formal analysis (equal); Methodology (equal); Supervision (equal); Validation (equal); Writing – review & editing (equal). **Anne-Kathrin Kleine:** Data curation (equal); Investigation (equal); Resources (equal); Software (equal); Writing – review & editing (equal). **Katharina Thien:** Data curation (equal); Investigation (equal); Resources (equal); Writing – review & editing (equal). **Lisa von Glahn:** Data curation (equal); Investigation (equal); Resources (equal); Writing – review & editing (equal). **Katja Leuteritz:** Investigation (equal); Resources (equal); Writing – review & editing (equal). **Diana Richter:** Data curation (equal); Resources (equal); Writing – review & editing (equal).

Data availability statement

Anonymised data and syntax codes supporting the findings of this research are made openly available on OSF (*Open Science Framework*).

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Supporting Information

The following supporting information may be found in the online edition of the article:

Appendix S1. Online supplemental information.