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G4H-S: A Teaching Instrument Enhancing Social Inclusion in First Year Psychology Students

Abstract

GROUPS 4 HEALTH (G4H) is a highly effective clinical intervention which, by translating social identity principles into practice, aims to improve mental health. The present study examines the impact of G4H delivered to three cohorts of first year psychology students as the adapted version G4H-S. Social Inclusion, loneliness, social isolation, test anxiety, study satisfaction, and life satisfaction were assessed immediately before the start of the first module, during the last module, and 6 weeks after completion of the final module. Results showed positive effects of program participation on self-reported loneliness, social inclusion, test anxiety, and overall life satisfaction.

Keywords

GROUPS 4 HEALTH, undergraduate psychology program, social identity, COVID-19

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G4H-S: Ein Lehrinstrument zur Förderung sozialer Inklusion beim Studienstart für Psychologie-Erstsemester

Zusammenfassung

GROUPS 4 HEALTH (G4H) ist eine wirksame klinische Intervention, die durch praktische Anwendung der sozialen Identitätstheorie die psychische Gesundheit fördern soll. In dieser Studie wurde die Wirkung von G4H bei Studierenden untersucht, indem es als angepasste Version G4H-S in drei Kohorten von Psychologiestudierenden im ersten Studienjahr durchgeführt wurde. Soziale Eingebundenheit, Einsamkeit, soziale Isolation, Prüfungsangst und Studien- sowie Lebenszufriedenheit wurden vor Beginn des ersten Moduls, während des letzten Moduls und 6 Wochen nach Abschluss untersucht. Die Ergebnisse zeigten positive Auswirkungen auf alle gemessenen abhängigen Variablen außer Studienzufriedenheit.

Schlüsselwörter

GROUPS 4 HEALTH, Bachelor Psychologie, soziale Identität, COVID-19

1 Introduction

Individuals who are well connected socially are happier, healthier, and live longer (Holt-Lunstad, 2017). Nonetheless, loneliness is a widespread problem in modern society, with around 10 % of people reporting it (Beutel et al., 2017). Such a lack of social connectedness (i.e., social isolation) cuts people off from those who could provide emotional and practical support. Consequently, it is important to strive to prevent and reduce loneliness and social isolation, especially in vulnerable groups.

It was to help achieve this goal that Haslam et al. (2016) developed the G4H program. This intervention is based on the core ideas of the social identity theory of health (SIAH; Haslam et al., 2009) and the social identity model of identity change (SIMIC; Iyer et al., 2008). The SIAH and SIMIC both point to the importance of social identities for people's health and suggest that health and well-being can be actively improved by helping a person to build and manage their social network.

Building on this conceptual framework, the G4H program (Haslam et al., 2016) helps participants understand the importance of social inclusion and connectedness while acquiring skills to harness group-based connections in ways that support health. In particular, participants learn to evaluate their own group-based network, to actively develop strategies to support and expand this network, and to promote helpful and positive social interactions.

Previous clinical trials have shown that G4H reduces loneliness, depression, and social anxiety (Haslam et al., 2019), and that it is as effective as dose-controlled group cognitive behavioral therapy (gCBT) in management of depression (Cruwys et al., 2022), but that it proved better than gCBT in preventing loneliness relapse when social connectedness was threatened by COVID-19 lockdown restrictions (Cruwys et al., 2021).

This previous research has confirmed the effectiveness of G4H as an intervention to tackle loneliness (Cruwys et al., 2021, 2022; Haslam et al., 2016, 2019). However, the evidence here speaks primarily to the benefits of the program when loneliness is already present. This leaves unanswered the question of whether G4H might work

prophylactically in the service of loneliness prevention, particularly among young people for whom loneliness is on the rise (Lee et al., 2020), and in periods of life change which are also associated with increased risk of loneliness (Haslam et al., 2018).

1.1 Supporting the social inclusion of first year psychology students

The transition to university is a significant life change, where young individuals often move to new cities and leave behind established social ties. Thus, it can be difficult for first semester students to establish and maintain a functioning social network (Lidy & Kahn, 2006). These factors in turn increase student vulnerability and loneliness in ways that can lead to psychological distress (Richardson et al., 2017) and study withdrawal (Fandrem et al., 2021). In contrast, high perceived social support in students is strongly related to better health and reduced distress (Cassidy, 2004).

Originally designed for clinical populations facing mental health decline due to social disconnection and loneliness, we believe that G4H can be equally helping prevent social isolation in vulnerable contexts like life transitions. Thus, in the present research it was adapted and piloted for higher education.

To explore the value of G4H for loneliness prevention in new students (referred to here as the G4H student program; G4H-S), the program was integrated into an undergraduate psychology program at a German university as mandatory course for first-year students.

This approach is particularly suitable for students who may apply such learning to various fields of psychology. Indeed, experiential learning through peer delivery is an established approach to student learning (Kolb & Kolb, 2005). According to Kolb (1984), such learning describes a didactic model that is based on the assumption that only immediate and practical interaction with learning enables an individual to learn effectively and meaningfully.

1.2 The G4H program and its adaptation for the psychology education context

The original G4H program comprises five 90-minute modules. Module 1 (“Schooling”) focuses on the importance of social inclusion and the use of social resources for health. In Module 2 (“Scoping”) participants create a social identity map to illustrate their social groups, raising awareness of their social group connections, how they relate to their groups, and how their groups relate to each other. In Module 3 (“Sourcing”) participants reflect on their existing social group memberships and associated identities to determine the most health-enhancing components for them to focus on developing and strengthening. In Module 4 (“Scaffolding”) participants focus on extending their social group connections by joining new groups. Here they are provided with strategies to identify meaningful groups to join and are helped to create plans to achieve this goal. The first four modules take place over four consecutive weeks, and the final module takes place at least a month later so that participants have had the opportunity to put their plans into action. Accordingly, when they return for Module 5 (“Sustaining”) the focus is on reviewing progress, troubleshooting challenges and reinforcing key learnings from the program.

However, in order to apply G4H for prevention purposes in a university context, it was necessary to make structural and content-related changes to the program. In other publications it has already been shown that adapted versions of G4H are still effective to prevent social isolation and wellbeing, for instance in form of a very short online version (Groups 2 Connect, Bentley et al., 2022).

The changes in this program were informed by feedback from the student recipients and peers involved in the first two program runs. To track the development of the course systematically, we followed the approach of “empirically-founded teaching” (cf. Boser et al., 2017), which is the empirical observation of one’s own teaching. Evidence-based course planning (Dunn et al., 2013) is also integrated by taking stock of the feedback from participants and trainers after each round of delivery informed refinements of the G4H-S program.

These changes involved four content-related alterations to the G4H program. First, the theoretical foundations of G4H were extended, so as to support students' understanding of the psychological processes that underlie behavior which is a key element of their undergraduate training in psychology. To this end, the social psychological theory and evidence that informed the design of G4H was expanded in the first module to explore more fully the links between social connectedness and health. Second, in the interest of furthering psychoeducation, we explored the potential of the G4H program and its elements as tools that students could use in their future practice as psychologists in various applied contexts. Third, based on feedback from students who requested insight into the process of resolving conflict in relationships, we introduced communication and conflict resolution exercises in Module 3. These focused mainly on classic psychological theories and practices of active listening (Rogers & Farson, 1957) and feedback provision (Hattie & Timperley, 2007) described in the dual-concern model of negotiation (Pruitt, 1983). Fourth, in Module 4 we let the students decide whether they wanted to join a version of the program that focused on gaining new groups or a version that focused on optimizing an existing one. This was intended to give them a feeling of control and empowerment during course selection in ways that might increase their commitment to the program (Brooks & Young, 2011).

Alongside this, a number of structural changes were introduced including (i) the addition of an initial introductory session to explain program origins and objectives as well as raising awareness of the relevance of G4H to students' future practice, (ii) a reduction in the number of sessions (from 5 to 4) and an increase in the length of each (from 1.5 to 2 hours) to better fit the structure of the curriculum, and (iii) a reduction in the time taken to trial the social plans that students developed (from 4 weeks to 2 weeks between the two last modules).

1.3 The present study

The primary aim of this study was to determine whether engagement in the program would impact perceptions of social connectedness and life satisfaction. For this purpose, we measured three related outcomes hypothesized to increase by the training both (a) directly after the program and b) at a six-week follow-up: (i), perceptions of social inclusion, (ii), social isolation and loneliness. Landmann and Buecker (2022) stress that loneliness, defined as a perceived deficit in one's social relationships, and social isolation, characterized by feelings of rejection and exclusion, are distinct constructs. Although these concepts overlap, they can be theoretically distinguished, which is why we consider both in our analysis; (iii) we assessed general life satisfaction. More specifically, we hypothesized (H1) that participation in G4H-S would increase participants' perceived social inclusion, (H2) that it would decrease their perceived social isolation and loneliness, and (H3) that it would increase their general life satisfaction, both (a) directly after the program and (b) at a six-week follow-up.

A second aim was to examine the effect of G4H-S on learning, and in particular on test anxiety and study satisfaction. As loneliness is associated with anxiety and stress (Richardson et al., 2017), we expected that any increase in loneliness in the transition to university might have an impact on test anxiety, which is widespread among students and known to have a strong negative effect on academic success (Macauley et al., 2018). In light of evidence that social support provides an effective buffer against anxiety, we expected that, because it strengthens social resources, and social support in particular, G4H-S should help to reduce students' test anxiety (Yildirim et al., 2008). Also, a recent meta-analysis by Huntley et al. (2019) showed the efficacy of a broad range of interventions on test anxiety on university students. Additionally, we examined students' satisfaction with their program of study. We predict that the practical skills that G4H-S offers which aim to build social support should improve students' overall study satisfaction. Specifically, we hypothesized (H4) that participants' perceived test anxiety would decrease and (H5) that their study satisfaction would increase, again both (a) directly after the program and (b) at a six-week follow-up.

One unanticipated complication with the program was that in the course of integrating the G4H-S program into the curriculum, the COVID-19 pandemic struck. This pandemic caused lockdowns and these severely reduced people's social interaction which was associated with increased social isolation and loneliness among individuals, which in turn resulted in increased depression and suicidality (Killgore et al., 2020).

The occurrence of the COVID-19 pandemic had two effects on our program. First, due to the nationwide lockdown of universities in Germany from summer term 2020 to summer term 2021 (Steinmetz et al., 2021), we were required to develop an online version of the G4H-S program which we offered to two of the three cohorts. The program was fully offered via videoconference. Second, this was also an opportunity to survey the effects of G4H-S on participants who were living through a crisis while participating in the program. Accordingly, for explorative purposes, we compared outcomes across the online and in-person versions of the G4H-S program.

2 Method

2.1 Participants

Participants were first-year psychology students required to take the G4H-S course for one academic credit. Each G4H-S group comprised between nine and twelve students. In total, three cohorts comprised of 322 students participated in the study. In the summer term 2019, 92 students participated in their second term (63 female participants, mean age 21.42 years, $SD = 3.1$), in the summer term 2020, 90 students participated in their second term (58 female participants, mean age 22.62 years, $SD = 6.31$) and in the winter term 2020, 140 students participated in their first term (106 female participants, mean age 21.66 years, $SD = 4.61$).

2.2 The organization of the G4H-S programs in the undergraduate psychology program

The adapted G4H program was integrated into the undergraduate psychology program at a German university. G4H-S was delivered to the first-year students as part of a compulsory module to be completed by all students in this program.

In the summer term 2019 the program was conducted in-person. In the summer term 2020 and winter term 20/21, the programs were conducted online due to the COVID-19 pandemic. The content of the program was not changed. The program began in the first weeks of the term and ended around the middle of the term.

The program was led by more senior students. In preparation for this, they attended a train-the-trainer course and asked to participate in supervision sessions accompanying the program. As compensation, the trainers were employed as student assistants and received a trainer certificate.

2.3 Evaluation Process and measures

For each cohort of students who participated in G4H-S, outcomes were measured at three measurement time points using online questionnaires. The first questionnaire (T1) was completed at baseline, immediately before the start of Module 0. The second questionnaire (T2) was completed at G4H completion, and the final questionnaire (T3) was completed six weeks after they had completed the final program session.

In the first questionnaire, participants first answered demographic questions (age, gender, country of origin) and they generated an individual code so that their answers could be matched at T2 and T3. After this, the following items were presented and repeated in T2 and T3 questionnaires:

Social inclusion was measured by the “Multiple Group Membership Rating Scale” (Haslam et al., 2008). Its four items (e.g., “I get practical help from lots of different

social groups.”) were rated on a five-point scale, ranging from 1 (*do not agree at all*) to 5 (*strongly agree*).

Loneliness was measured by the “Roberts UCLA Loneliness Scale” (RULS-8; Roberts et al., 1993). It contains eight items, four with positive valence (e.g., “How often do you feel like you could find companionship if you wanted to?”) and four with negative valence (e.g., “How often do you feel isolated?”). Participants responded on a four-point Likert scale, ranging from 1 (*never*) to 4 (*always*).

Social Isolation was assessed with the “Friendship Scale” developed by Hawthorne (2006). This comprises six items (e.g., “While I was with other people, I felt disconnected from them.”). Participants indicated on a five-point Likert scale how much they had experienced these feelings over the past 4 weeks on a scale ranging from 1 (*not at all*) to 4 (*almost always*).

Life Satisfaction was measured using the “Satisfaction with Life Scale” (SWLS; Diener et al., 1985). It consists of five items (e.g., “I am satisfied with my life.”). Participants responded on a seven-point Likert scale, ranging from 1 (*fully disagree*) to 7 (*fully agree*).

Test anxiety was assessed with the short version of the “German Test Anxiety Inventory” (Keith et al., 2003), which consists of 15 items related to worry, excitement, mental interference, and lack of confidence in academic test situations (e.g., “I think about what will happen if I do badly.”). Participants answered on a six-point Likert scale, ranging from 1 (*does not apply at all*) to 6 (*applies completely*).

Study Satisfaction was measured with six items (e.g., “I feel comfortable in my studies.”) taken from the “Questionnaire on Study Satisfaction” developed by Spies et al. (1996). An additional question was formulated for this study, regarding satisfaction with one’s own study performance. Participants responded on a six-point Likert scale, ranging from 1 (*not true at all*) to 6 (*very true*).

3 Results

3.1 Descriptive statistics, validities, and correlations

Table 1 includes means, standard deviations, correlations, and Cronbach's alphas for the study variables at T1.

Internal consistencies are acceptable, and the correlations are mostly small to medium, with some higher correlations between measures of closely related concepts such as loneliness and isolation.

Table 1: Means (*M*), standard deviations (*SD*), reliabilities, and correlations for dependent variables at T1

Co-horts	Scales	<i>N</i>	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.
Summer term 2019	1. Social Inclusion	92	3.55	0.72	(.82)					
	2. Loneliness	92	2.14	0.47	-.31**	(.83)				
	3. Isolation	92	2.04	0.68	-.39**	.80**	(.81)			
	4. Life Satisfaction	92	4.97	1	.27**	-.50**	-.53**	(.84)		
	5. Test Anxiety	92	3.61	0.90	.00	.38**	.38**	-.31**	(.90)	
	6. Study Satisfaction	92	4.02	0.63	-.04	-.10	-.23*	.33**	-.30**	(.78)

Summer term 2020	1. Social Inclusion	79	3.36	0.84	(.83)					
	2. Loneliness	79	2.31	0.42	-.40**	(.72)				
	3. Isolation	79	2.07	0.66	-.39**	.60**	(.76)			
	4. Life Satisfaction	79	4.86	1.36	.24*	-.56**	-.66**	(.91)		
	5. Test Anxiety	79	3.68	0.88	-.10	.35**	.12	-.21	(.91)	
	6. Study Satisfaction	79	3.77	0.83	.25*	-.37**	-.40**	.58**	-.42**	(.85)
Winter term 2020/2021	1. Social Inclusion	116	3.29	0.86	(.82)					
	2. Loneliness	116	2.12	0.50	-.51**	(.83)				
	3. Isolation	116	2.15	0.72	-.50**	.76**	(.81)			
	4. Life Satisfaction	116	5.02	1.14	.24*	-.49**	-.44**	(.82)		
	5. Test Anxiety	116	3.56	0.78	-.30**	.45**	.44**	-.35**	(.88)	
	6. Study Satisfaction	116	3.94	0.63	.10	-.26**	-.23*	.27**	-.40**	(.80)

Note. * $p < 0.05$ (two-tailed). ** $p < 0.01$ (two-tailed); Cronbach's Alphas (α) in parenthesis.

3.2 Hypothesis testing

We conducted MANOVAs separately for each cohort to test for changes in dependent variables. Results are presented in Table 2.

Table 2: MANOVA results for the dependent variables in the three cohorts

Cohort	Dependent Variable	$F(df)$	η^2
Summer Term 2019	Social Inclusion	5.58* (2)	.09
	Loneliness	8.59** (2)	.14
	Isolation	4.37* (2)	.07
	Life Satisfaction	2.28 (2)	.04
	Test Anxiety	1.22 (2)	.02
	Study Satisfaction	1.84 (2)	.03
Summer Term 2020	Social Inclusion	16.20** (2)	.21
	Loneliness	1.16 (2)	.02
	Isolation	5.12* (2)	.08
	Life Satisfaction	5.99** (2)	.09
	Test Anxiety	5.36* (2)	.08
	Study Satisfaction	1.28 (2)	.02
Winter Term 2020/2021	Social Inclusion	11.60** (2)	.14
	Loneliness	3.28* (2)	.04
	Isolation	3.98* (2)	.05
	Life Satisfaction	2.17 (2)	.03
	Test Anxiety	10.55** (2)	.13
	Study Satisfaction	1.08 (2)	.02

Note. * $p < 0.05$ (two-tailed). ** $p < 0.01$ (two-tailed).

Findings from these analyses showed that social inclusion and isolation changed significantly across time points in all three cohorts. Loneliness, life satisfaction, and test anxiety changed significantly in two of the three cohorts, while study satisfaction showed no change.

Table 3 summarizes the study's findings as they relate to our main hypotheses. The differences in the sample sizes between the three measurement times is due to drop-outs. The results are broadly confirming H1a, H2a, H3a, and H4a, between T1 and T2, there was an improvement in social inclusion, and test anxiety in all three cohorts and loneliness, isolation, life satisfaction each improved in two of the cohorts. These improvements were maintained at T3 in five of the cases, providing partial support for H1b, H2b, and H4b. However, and in contrast to H3b, there was no improvement in life satisfaction. There was also no support for H5a and H5b (changes in study satisfaction).

Table 3: Results of paired *t*-tests between T1 and T2 and between T1 and T3

Cohort	Variables	T1			T2			T3		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Summer Term 2019	Social Inclusion	92	3.44	.72	78	3.85**	.71	58	3.74	.74
	Loneliness	92	2.14	.47	78	2.02**	.53	58	2.04**	.56
	Isolation	92	2.04	.68	78	1.90*	.68	58	1.93*	.70
	Life Satisfaction	92	4.97	1.0	78	5.18*	.98	58	5.19	.99
	Test Anxiety	92	3.61	.90	78	3.51*	.93	58	3.60	1.01
	Study Satisfaction	92	4.02	.63	78	3.96	.64	58	3.96	.75

Summer Term 2020	Social In- clusion	79	3.36	.84	84	3.79**	.79	69	3.57*	.76
	Loneliness	79	2.31	.42	84	2.29	.43	69	2.38	.42
	Isolation	79	2.07	.66	84	1.89**	.68	69	2.01	.76
	Life Satis- faction	79	4.86	1.36	84	4.98*	1.35	69	4.85	1.36
	Test Anxiety	79	3.68	.88	84	3.46**	.91	69	3.51*	.91
	Study Sa- tisfaction	79	3.77	.83	84	3.83*	.81	69	3.74	.81
Winter Terms 2020/21	Social In- clusion	116	3.29	.86	130	3.70**	.81	83	3.55**	.84
	Loneliness	116	2.12	.50	130	2.03*	.48	83	2.06	.52
	Isolation	116	2.15	.72	130	1.99**	.69	83	2.16	.72
	Life Satis- faction	116	5.02	1.14	130	5.05	1.19	83	4.84	1.18
	Test Anxiety	116	3.56	.78	130	3.43**	.83	83	3.71	.69
	Study Sa- tisfaction	116	3.94	.63	130	3.83	.81	83	3.88	.72

Note. *= difference to T1 significant on the 5 %-level; **= difference to T1 significant on the 1 %-level.

4 Discussion

The aim of the present study was to test the effects of G4H-S in the context of preventing loneliness in psychology students transitioning to university. Results indicate that these students benefited from the program, especially on outcomes directly targeted by the program—namely those related to social connectedness. In all three cohorts, perceived social inclusion increased whereas social isolation decreased due to program participation, and in two out of the three cohorts loneliness also decreased. In about half of the cases these changes were sustained six weeks after program completion such that they did not return to the original levels reported at baseline. Life satisfaction also increased in two of the three cohorts, but in both cases this improvement was not sustained six weeks after the training. Of the two dependent variables related to student experiences (study satisfaction and test anxiety), only test anxiety showed consistent improvement—with participation in G4H-S leading to decreases in anxiety in all three cohorts. However, there were no consistent changes in students' study satisfaction.

These results indicate that G4H-S can help students feel more socially included and less lonely during the period of social reorientation associated with their transition to university. We assume two key ways in which it might do this. First, by providing students in their first year of study with practical guidance about how to manage their social network. Second, by allowing students to create meaningful connections to fellow students in the G4H-S training group who are then available as a social resource.

The effects of the G4H-S program on study-related variables were less clear. On one hand, there was little change in study satisfaction as a result of participation in the G4H-S program. This might reflect the fact that this program is a rather unique course that is not seen as part of the regular psychology curriculum and therefore has little bearing on students' evaluation of the quality of their overall study. On the other hand, test anxiety was reduced in all three cohorts, but after six weeks this change remained significant in only one cohort. The fact that this effect was not consistent

over the longer term could in part be due to the point in the semester at which participation occurred. For example, at the end of the program, students were in the middle of the semester, whereas at T3 they were about to take end-of-semester exams, which may have increased the salience of exams which is typically associated with higher anxiety. Nevertheless, overall these findings suggest that social support and increased social resources may indeed be an effective antidote to test anxiety, as some researchers have previously postulated (Yildirim et al., 2008).

4.1 G4H-S during COVID-19

In addition to these findings, the context of the COVID-19 crisis led to another finding related to G4H-S. Due to the lockdown, the program had to be transferred to an online teaching format. It could be argued that the quality of online delivery might be compromised compared to an in-person delivery, especially for a program that is supposed to teach and support social inclusion. However, the effects on the dependent variables do not seem to confirm this. The results of the summer term 2019 (in-person) and the summer term 2020 (online) are comparable and even tend to be slightly more positive for the online program. This suggests that the G4H program works well for both online and in-person format.

While we would still recommend that the program should be delivered in person if possible, in certain situations or with certain groups of students, an online offering of the program can be useful.

4.2 Practical implications and future research

This study has shown that in the introductory phase of their studies, it can be valuable for psychology students to participate in a program such as G4H-S, which teaches them the value of social inclusion and provides practical help with social connection and networking within the study cohort and beyond. However, our experiences in running G4H-S indicate that the respective programs must be adapted to the needs

of the students as well as to the general framework and the content of the study curriculum.

In this context, it would also be interesting to examine the effect of this G4H-S program on other study programs. On the one hand, one could examine whether the results reported above can be replicated in similar undergraduate programs in psychology. On the other hand, it would also be interesting to see whether students from very different disciplines of study can benefit from G4H-S, even when its content is less related to one's field of study.

In future research, it would also be important to study the effects of the changes that the program has to undergo in order to be suited to different study programs and cultural contexts.

4.3 Limitations

One obvious limitation of the present research is that for reasons of study organization no control group could be used to test whether the changes in the dependent variables were really caused by G4H-S participation or by other factors including potentially confounding variables associated with natural changes over the course of the academic term (e.g., in workload and stress).

Another problem for a comparable evaluation of this G4H-S program is that this course was compulsory for all students. As a result, students who were socially well integrated and had no problems with loneliness were included in this study. Those students might still have benefited from this program intellectually but they are unlikely to benefit from the program in a way that could be captured by our dependent variables. The low mean baseline of loneliness and social isolation indicates that this might have been the case for a considerable proportion of the participants which may have caused ceiling effects. We would note, though, that to the extent that this was the case, it rendered the study a more conservative test of our hypotheses. Nevertheless, other programs might consider including G4H-S as a voluntary course targeted at those who are at self-perceived risk of isolation.

References

- Bentley, S. V., Haslam, C., Haslam, S. A., Jetten, J., Larwood, J., & La Rue, C. J. (2022). GROUPS 2 CONNECT: An online activity to maintain social connection and well-being during COVID-19. *Applied Psychology: Health and Well-Being*, 14(4), 1189–1210.
- Beutel, M. E., Klein, E. M., Brähler, E., Reiner, I., Jünger, C., Michal, M., Wiltink, J., Wild, P. S., Münzel, T., Lackner, K. J., & Tibubos, A. N. (2017). Loneliness in the general population: prevalence, determinants and relations to mental health. *BMC Psychiatry*, 17(1), 97. <https://doi.org/10.1186/s12888-017-1262-x>
- Boser, J., Scherer, S., Kuchta, K., Wenzel, S. F. C., & Horz, H. (2017). Empirically founded teaching in psychology – An example for the combination of evidence-based teaching and the scholarship of teaching and learning. *Psychology Learning & Teaching*, 16(2), 261–275. <https://doi.org/10.1177/1475725716686452>
- Brooks, C. F., & Young, S. L. (2011). Are choice-making opportunities needed in the classroom? Using self-determination theory to consider student motivation and learner empowerment. *International Journal of Teaching and Learning in Higher Education*, 23(1), 48–59.
- Cassidy, T. (2004). Mapping variables related to social identity, distress and perceived health in an undergraduate student population. *Social Psychology of Education*, 7(3), 339–352. <https://doi.org/10.1023/B:SPOE.0000037504.24380.b3>
- Cruwys, T., Haslam, C., Rathbone, J. A., Williams, E., & Haslam, S. A. (2021). Groups 4 Health protects against unanticipated threats to mental health: Evaluating two interventions during COVID-19 lockdown among young people with a history of depression and loneliness. *Journal of Affective Disorders*, 295, 316–322. <https://doi.org/10.1016/j.jad.2021.08.029>
- Cruwys, T., Haslam, C., Rathbone, J. A., Williams, E., Haslam, S. A., & Walters, Z. (2022). Groups 4 Health versus Cognitive Behaviour Therapy in young people with depression and loneliness: A randomized, phase 3, non-inferiority trial with 12-month follow-up. *British Journal of Psychiatry*, 220, 140–147. <https://doi.org/10.1192/bjp.2021.128>
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Dunn, D. S., Saville, B. K., Baker, S. C., & Marek, P. (2013). Evidence-based teaching: Tools and techniques that promote learning in the psychology classroom. *Australian Journal of Psychology*, 65(1), 5–13. <https://doi.org/10.1111/ajpy.12004>

Fandrem, H., Tvedt, M. S., Virtanen, T., & Bru, E. (2021). Intentions to quit upper secondary education among first generation immigrants and native Norwegians: the role of loneliness and peer victimization. *Social Psychology of Education*, 24(2), 489–509. <https://doi.org/10.1007/s11218-021-09614-1>

Haslam, C., Cruwys, T., Chang, M. X. L., Bentley, S. V., Haslam, S. A., Dingle, G. A., & Jetten, J. (2019). GROUPS 4 HEALTH reduces loneliness and social anxiety in adults with psychological distress: Findings from a randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 87(9), 787–801. <https://doi.org/10.1037/ccp0000427>

Haslam, C., Cruwys, T., Haslam, S. A., Dingle, G., & Chang, M. X. L. (2016). Groups 4 Health: Evidence that a social-identity intervention that builds and strengthens social group membership improves mental health. *Journal of Affective Disorders*, 194, 188–195. <https://doi.org/10.1016/j.jad.2016.01.010>

Haslam, C., Holme, A., Haslam, S. A., Iyer, A., Jetten, J., & Williams, W. H. (2008). Maintaining group memberships: Social identity continuity predicts well-being after stroke. *Neuropsychological Rehabilitation*, 18(5–6), 671–691. <https://doi.org/10.1080/09602010701643449>

Haslam, C., Jetten, J., Cruwys, T., Dingle, G., & Haslam, S. A. (2018). *The new psychology of health: Unlocking the social cure*. London: Routledge. <https://doi.org/10.4324/9781315648569>

Haslam, S. A., Jetten, J., Postmes, T., & Haslam, C. (2009). Social identity, health and well-being: An emerging agenda for applied psychology. *Applied Psychology*, 58(1), 1–23. <https://doi.org/10.1111/j.1464-0597.2008.00379.x>

Hattie, J., & Timperley, H. (2007). The power of feedback. *Rev. Educ. Res.* 77, 81–112. <https://doi.org/10.3102/003465430298487>

Hawthorne, G. (2006). Measuring social isolation in older adults: Development and initial validation of the friendship scale. *Social Indicators Research*, 77(3), 521–548. <https://doi.org/10.1007/s11205-005-7746-y>

- Holt-Lunstad, J. (2017). The potential public health relevance of social isolation and loneliness: Prevalence, epidemiology, and risk factors. *Public Policy & Aging Report*, 27(4), 127–130. <https://doi.org/10.1093/ppar/prx030>
- Huntley, C. D., Young, B., Temple, J., Longworth, M., Smith, C. T., Jha, V., & Fisher, P. L. (2019). The efficacy of interventions for test-anxious university students: A meta-analysis of randomized controlled trials. *Journal of anxiety disorders*, 63, 36–50. <https://doi.org/10.1016/j.janxdis.2019.01.007>
- Iyer, A., Jetten, J., Tsivrikos, D., (2008). Torn between identities: Predictors of adjustment to identity change. In: F. Sani (Ed.), *Self-continuity: Individual and Collective Perspectives* (pp. 187–197). Psychology Press.
- Keith, N., Hodapp, V., Schermelleh-Engel, K., & Moosbrugger, H. (2003). Cross-sectional and longitudinal confirmatory factor models for the German Test Anxiety Inventory: A construct validation. *Anxiety, Stress & Coping*, 16(3), 251–270. <https://doi.org/10.1080/1061580031000095416>
- Killgore, W. D., Cloonan, S. A., Taylor, E. C., Lucas, D. A., & Dailey, N. S. (2020). Loneliness during the first half-year of COVID-19 Lockdowns. *Psychiatry Research*, 294, 113551. <https://doi.org/10.1016/j.psychres.2020.113551>
- Kolb, D. A. (1984). *Experiential Learning*. Prentice Hall.
- Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4(2), 193–212. <https://doi.org/10.5465/amle.2005.17268566>
- Landmann, H., & Buecker, S. (2023). Facetten, Quellen und Auswirkungen von Einsamkeit. In L. Arlt, N. Becker & T. Wirtz (Ed.). *Einsam in Gesellschaft. Zwischen Tabu und sozialer Herausforderung*. Transcript. <https://doi.org/10.1515/9783839463505-004>
- Lee, C. M., Cadigan, J. M., & Rhew, I. C. (2020). Increases in loneliness among young adults during the COVID-19 pandemic and association with increases in mental health problems. *Journal of Adolescent Health*, 67(5), 714–717. <https://doi.org/10.1016/j.jadohealth.2020.08.009>
- Lidy, K. M., & Kahn, J. H. (2006). Personality as a predictor of first-semester adjustment to college: The mediational role of perceived social support. *Journal of College Counseling*, 9(2), 123–134. <https://doi.org/10.1002/j.2161-1882.2006.tb00099.x>

- Macauley, K., Plummer, L., Bemis, C., Brock, G., Larson, C., & Spangler, J. (2018). Prevalence and predictors of anxiety in healthcare professions students. *Health Professions Education, 4*(3), 176–185. <https://doi.org/10.1016/j.hpe.2018.01.001>
- Pruitt, D. G. (1983). Strategic choice in negotiation. *American Behavioral Scientist, 27*(2), 167–194.
- Richardson, T., Elliott, P., & Roberts, R. (2017). Relationship between loneliness and mental health in students. *Journal of Public Mental Health, 26*, 48–45. <https://doi.org/10.1108/JPMH-03-2016-0013>
- Roberts, R. E., Lewinsohn, P. M., & Seeley, J. R. (1993). A brief measure of loneliness suitable for use with adolescents. *Psychological Reports, 72*, 1379–1391. <https://doi.org/10.2466/pr0.1993.72.3c.1379>
- Rogers, C. R., & Farson, R. E. (1957). *Active listening*. Chicago, IL.
- Spies, K., Westermann, R., Heise, E., & Schiffler, A. (1996). *FB-ST/K – Fragebogen zur Studienzufriedenheit (Kurzform)*. <https://doi.org/10.23668/psycharchives.770>
- Steinmetz, H., Batzdorfer, V., Scherhag, J., & Bosnjak, M. (2021). The ZPID Lockdown Measures Dataset for Germany. *ZPID Science Information Online, 20*(1), 1–11. <https://doi.org/10.23668/psycharchives.3019>
- Yildirim, I., Genctanirim, D., Yalcin, I., & Baydan, Y. (2008). Academic achievement, perfectionism and social support as predictors of test anxiety. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 34*(34), 287–296.