Journal of Research in Personality 44 (2010) 155–158

Contents lists available at ScienceDirect

Journal of Research in Personality

journal homepage: www.elsevier.com/locate/jrp

Brief Report

Dissociating the facets of hope: Agency and pathways predict dropout from unguided self-help therapy in opposite directions

Adam W.A. Geraghty [a,*], Alex M. Wood [b], Michael E. Hyland [a]

[a] School of Psychology, Portland Square, University of Plymouth, Plymouth, Devon PL4 6AA, United Kingdom
[b] School of Psychological Sciences, University of Manchester, Manchester, England, M13 9PL, United Kingdom

ARTICLE INFO

Article history:
Available online 16 December 2009

Keywords:
Hope
Attrition
Self-help
Gratitude
Worry
Intervention
Positive psychology

ABSTRACT

Hope comprises two components: agency ("goal directed determination") and pathways ("planning of ways to meet goals"). We tested whether these two components can be dissociated and therefore differentially predict dropout from two unguided self-help interventions to reduce worry (gratitude vs. thought monitoring and cognitive restructuring interventions, N = 247 entered, 136 completed). The two hope components significantly predicted attrition in opposite directions; agency predicted completion (OR = 2.15, CI = 1.27–3.64, $p = .004$), whereas pathways predicted dropout (OR = .47, CI = .29–.77, $p = .003$). Gratitude and thought monitoring reduced worry compared a wait list control, and for completers there was no difference in outcome. Conclusion: hope facets can be dissociated; gratitude techniques are as effective and have better retention than a technique commonly used in cognitive behavior therapy.

1. Introduction

Unguided self-help interventions delivered via the internet have great potential to make psychological therapy accessible for people without ready access to treatment, particularly when interventions are automated. However, attrition from unguided self-help therapy is consistently high (Eysenbach, 2005), substantially limiting the benefit of the interventions. Previous research investigating predictors of attrition from self-help interventions has focused on clinical characteristics and demographics (Christensen, Griffiths, & Farrer, 2009). Personality predictors of dropout from self-help therapy have been almost entirely neglected. In this paper we investigate trait hope as a predictor of self-help attrition, with the dual aim of demonstrating the importance of personality to the understanding of disengagement from self-help therapy, and to show that the two facets of hope can be disassociated in applied contexts.

In Snyder et al.'s (1991) conceptualization, hope is defined as a cognitive set determined by the reciprocal interplay of two components, agency: 'goal directed determination' and pathways: 'planning of ways to meet goals' (Snyder et al., 1991). Agency represents the motivational component of hope theory, and provides the mental energy to start and maintain the use of a particular pathway through all stages of goal pursuit (Snyder, 2002). The pathways component of hope provides a measure of an individual's ability to be flexible in the face of obstacles, and their ability to see and produce alternative routes to desired goals (Snyder, 2002). In general, the two facets have been considered additive, and are often summed give an overall measure of trait hope.

The construct of hope is closely related to dispositional optimism, and where the latter measures beliefs about expected outcomes. Previous research investigating disposition optimism in intervention contexts found it to be unrelated to attrition (Fontaine & Shaw, 1995). This is the first study to investigate trait hope constructs as potential predictors of attrition. Theoretically, hope may be a principle predictor of attrition as it provides a direct measure of 'will', referring to intention to act (Snyder, 2002). Thus rather than measuring beliefs about *outcomes*, the hope facets may give a strong indication of *intentions* to engage with an intervention. Intentions are widely believed to be one of the strongest predictors of future behavior.

Snyder et al. (1991) have proposed that agency and pathways, although being strongly correlated, remain distinct concepts. Creamer et al. (2009) investigated dispositional hope in injury survivors. They found that agency and pathways had different sized positive correlations with a variable related to childhood trauma. Although this reported distinction was important, psychometric dissimilarities, such as operationalization of the subscales in the particular sample, may have lead to the observed differences. We present a very conservative test of the distinction between agency and pathways by showing they can be related in opposite directions – thereby creating a full dissociation. Attrition reflects a phenomenon where this dissociation may occur. Agency may reflect determination to meet set goals, for instance completing a self-help intervention. Pathways, seeing multiple paths to goals, could

* Corresponding author.
E-mail address: adamgeraghty@gmail.com (A.W.A. Geraghty).

0092-6566/$ - see front matter © 2009 Elsevier Inc. All rights reserved.
doi:10.1016/j.jrp.2009.12.003

possibly be associated with more ready disengagement from self-help interventions, in order to pursue alternative pathways.

In order for two variables that are highly positively correlated to predict opposite behaviors, a suppressor situation would be required. Suppressor situations occur when the simultaneous inclusion of two variables into a regression model (agency and pathways for example) significantly improves one or both of the predictive validities, compared to when the variables are correlated with the criterion alone (Paulhus, Robins, Trzesniewski, & Tracy, 2004). Including both variables together 'suppresses' the shared variance, and may allow the *unique* variance from each variable to predict the criterion in opposite directions. If a suppressor situation occurred with regard to the hope subfacets and attrition, then this would both underscore the complex role of personality in dropout behavior, and support Snyder et al.'s (1991) assertions for the importance of conceptualizing trait hope as a two-factor construct.

We expected trait hope to be a predictor of dropout irrespective of the type of intervention. To test this generalizability, we examined the role of hope in attrition from two very different interventions featuring techniques aimed at reducing worry; a worry diary, where participants practiced self-monitoring, planning and challenging thoughts, and a gratitude diary, where participants practiced cultivating gratitude by recalling things and experiences for which they felt grateful. Both techniques represent useful affect regulation strategies (Emmons & McCullough, 2003; Ost & Breitholtz, 2000). Additionally, there is debate regarding whether simple positive tasks, such as cultivating gratitude, are effective in reducing distress. We provide the first test of a gratitude diary vs. a standard problem focused cognitive technique. The intervention was limited to two weeks, as this study was designed specifically to address attrition; research consistently shows the majority of attrition occurring at the very early stages of intervention (Christensen, Griffiths, Mackinnon, & Brittliffe, 2006). Further, we controlled for other constructs that may be theoretically related to dropout to ascertain whether trait hope was unique in predicting attrition, including dispositional optimism, self-control, outcome expectancy, anxiety and depression.

2. Method

2.1. Participants

Participants (213 females and 34 males, age range 18–72, $M = 37$) volunteered to take part via the internet. The majority of the sample were 'White British' (91%). Participants responded to information in newspapers and on local radio in the South West of England advertising the opportunity to take part in a internet administered self-help study to reduce worry (from December 2008 until April 2009). This method of recruitment gave the closest approximation to self-help take up and use in real world interventions. Participants had to be over the age of 18 and not currently undergoing treatment for a psychological disorder to be eligible. Participants were offered no incentives to complete the study other than the potential of therapeutic benefit.

2.2. Procedure

Participants visited the study website, gave consent and completed all baseline measures. All participants were then automatically randomized to one of two technique conditions or a waitlist condition. Participants read a description of the technique they were to receive and rated how much they expected the technique to help reduce their worrying. They were then able to download a workbook containing worksheets for each day of the 14-day intervention period. At the end of the 14 days, participants were sent an automatic email with a link back to the study web system, where they were required to complete the measure of worry. Participants in the waitlist completed measures at baseline, at the same time as those in the intervention groups, then following a two week wait period completed outcome measures for a second time; they were then given the chance use the workbooks.

2.3. Measures

2.3.1. Worry

The Penn State Worry Questionnaire – Past Week (PSWQ-PW, Stober & Bittencourt, 1998) contains 15 items. Example items include "I was always worrying about something". Participants responded regarding how they had been feeling over the past week, using a seven-point likert scale with zero as "never" and six as "almost always". The scale has good internal consistency $\alpha = .91$ (Stober & Bittencourt, 1998).

2.3.2. Anxiety

The Brief Generalized Anxiety Disorder Scale (GAD-7, Spitzer, Kroenke, Williams, & Lowe, 2006) contains seven items. Participants rate how often have they had been bothered by seven problems including "Not being able to stop or control worrying". Participants respond using a four-point likert scale with zero representing "never" and three, "nearly all the days". The scale has high internal consistency, $\alpha = 92$, good test–retest reliability $r = .83$ and convergent validity with the Beck Anxiety Inventory, $r = .72$ (Spitzer et al., 2006).

2.3.3. Depression

The Patient Health Questionnaire – Nine (PHQ-9, Kroenke, Spitzer, & Williams, 2001) is a nine-item measure used to detect and assess the severity of depression, based on the DSM IV diagnosis. Participants rate how often they have been bothered by nine problems. Examples items include "Little interest or pleasure in doing things". Participants rate their scores on a four-point scale from zero "not at all" to three "nearly everyday". The scale has strong internal consistency ratings ranging from $\alpha = .86$ to .89, and a test–retest correlation after 48 h of $r = .84$ (Kroenke et al., 2001).

2.3.4. Hope

Hope was measured using the Adult Hope Scale (AHS, Snyder et al., 1991). The Adult Hope Scale comprises 12 items; four agency items, four pathways items and four filler items. Participants are asked to rate how much each statement describes them. Examples of agency items include "I energetically pursue my goals" and "I meet the goals that I set for myself". Examples of pathways items include "I can think of many ways to get out of a jam" and "I can think of many ways to get the things in life that are important to me". Participants used an eight point likert scale with one representing "definitely false" and eight "definitely true". Internal consistency has been reported as ranging from $\alpha = .74$ to .78 and a test–retest correlation over a 10 week period of $r = .82$ (Snyder et al., 1991).

2.3.5. Dispositional optimism

The Life Orientation Test – Revised (LOT-R, Scheier, Carver, & Bridges, 1994) is a ten-item scale, with six items measuring optimism–pessimism and four filler items. Participants rate the extent they agree or disagree with statements such as "In uncertain times, I usually expect the best" using a five point likert scale with zero as strongly disagree and four as strongly agree. Internal consistency is reported as $\alpha = .78$, and a test–retest correlation at four months is reported as $r = .68$ (Scheier et al., 1994).

2.3.6. Expectancy

A single-item scale measured expectancy. The participants were asked to rate the extent to which they expected the workbook technique to lessen their worrying. Participants were asked to "select the number that best reflects your opinion" on an 8-point scale with end points labeled "I think it very unlikely it will help me" (one) and "Yes, I definitely expect it will help" (eight).

2.3.7. Self-control

The Brief Self-Control Scale (BSCS, Tangney, Baumeister, & Boone, 2004) is a 13-item measure in which participants respond to how much they typically are like the statements. Items include "I am good at resisting temptation". Participants respond on a 5-point scale with one as "not at all" and five as "very much". The scale has high internal consistency $\alpha = .85$ and test–retest correlation over a three week period of $r = .87$ (Tangney et al., 2004).

2.4. Techniques

2.4.1. Gratitude diary

The workbooks described how gratitude, and in particular counting blessings, could be used to reduce worry. Gratitude was described as technique that could be useful to help reduce worrying by broadening attention to all that is good in ones life. Participants were asked to complete a gratitude diary, lists of up to six things for which they felt grateful for, every day for 14 days. Gratitude diaries, or gratitude lists have been shown by Emmons and McCullough (2003) to significantly improve well-being.

2.4.2. Worry diary

The workbook described that is was important to become aware of worries, and the worry diary could be used to do this. Participants were to complete a self-monitoring technique, recording their worries once a day in their diary. Challenging unhelpful worries was described as useful and workbooks provided examples how to do this; thinking of evidence for and against a worry, and then providing an alternative thought that was more neutral and balanced. Participants were also informed that planning how to address a particular worry may also be useful. Participants were required to practice challenging worries each day. Monitoring and challenging thoughts are common strategies used in treating anxiety (see Ost & Breitholtz, 2000).

3. Results

Using the clinical cut-off points on the PHQ-9 and GAD-7, 64% of the sample would be classified as depressed, and 81% as anxious (PHQ-9 $M = 12.6$, SD = 6; GAD-7, $M = 14.4$, SD = 4). Of the 247 participants who began the study, 111 dropped out (44%), including 24 (30%) from the wait list, 41 (44%) from the gratitude diary, 46 (62%) from the worry diary. These dropout rates compare favorably to other unguided self-help studies reporting dropout rates of up to 79% (Christensen et al., 2006).

3.1. Effectiveness of treatment

At time 1, an ANOVA showed there were no significant differences in worry between the gratitude diary, $n = 52$ ($M = 66.36$, SD = 9.86), worry diary, $n = 28$ ($M = 67.00$, SD = 10.61) and the control group, $n = 56$ ($M = 67.05$, SD = 11.64), $F(2, 133) = .062$, $p = .93$. At time 2, ANCOVAs (including T1 worry as a covariate) showed that relative to the control condition ($M = 65.66$, SD = 10.70) both the gratitude diary ($M = 47.11$, SD = 13.71, $F(1, 105) = 75.36$, $p < .001$), and the worry diary ($M = 48.78$ SD = 14.33, $F(1, 81) = 58.66$, $p < .001$), significantly reduced worry. The interventions produced large pre-post effect sizes (Cohen's d, gratitude diary = 1.8 worry diary = 1.2). There were no significant differences between the gratitude diary and the worry diary ($F(1, 77) = .20$, $p < .66$), demonstrating that both interventions produced equivalent reductions in worry. To control for the effect of dropout we conducted a last-case carried forward intention-to-treat analysis (see Mazumdar, Liu, Houck, & Reynolds, 1999), and both intervention groups remained equivalent, and superior to control (at $ps < .001$).

3.2. Hope and attrition

Zero order correlations of baseline variables and a dichotomous dropout variable for the intervention groups can be seen in Table 1. Although non-significant, pathways and agency correlated with the attrition variable with opposite signs, highlighting the potential for suppression. A suppressor situation would be apparent if, when added simultaneously into a logistic regression model, agency and pathways explained more variance in attrition than if agency or pathways were regressed on attrition alone. To test for suppression, in a first step we examined the predictive validity of agency alone on attrition in a logistic regression model ($b = .05$, $p = .09$, Nagelkerke $R^2 = .02$). Second, we added pathways into the model, which significantly improved the predictive validity of agency ($b = .13$, $p = .002$, Nagelkerke $R^2 = .08$, Sobel Test, $z = -2.67$, $p < .01$). To test if there was a mutual suppression, the same steps were followed for pathways. First, pathways alone was entered into a model predicting attrition ($b = -.04$, $p = .41$, Nagelkerke $R^2 = .005$). Second, we added agency into the model which significantly improved the predictive validity of pathways ($b = -.12$, $p = .007$, Nagelkerke $R^2 = .08$, Sobel Test, $z = 2.95$, $p < .01$). Finally, to assess the robustness of the suppressor finding, agency and pathways were entered simultaneously into a logistic regression model containing age, gender, group, baseline anxiety, optimism, expectancy, self-control and depression (see Table 2). Allocated group was a significant predictor of attrition, with participants in the gratitude group being 2.24 times more likely to complete than people in the worry diary group. With all variables controlled, people one SD higher on agency were 2.15 times more likely to complete, whereas people one SD higher on pathways were 2.12 times more likely to dropout. To test whether the hope facets had the same effect on dropout irrespective of interventional technique, the model was rerun adding an additional step including interaction terms: agency x group and pathways x group. Neither of the interactions were significant (interaction step $\chi^2 = .85$, $df = 2$, $p = .65$), indicating that the relationship between trait hope and dropout occurred independently of allocated group.

4. Discussion

In this study, trait hope facets, agency and pathways significantly predicted a behavior notoriously difficult to predetermine – attrition. First, we believe this study to be the first that shows that trait hope is personality construct that can be used to predict attrition in applied contexts. Second, we show that pathways and agency components may not always be additive, and can significantly predict different behaviors. Third, pathways and agency significantly predicted attrition with the most likely potential attrition-related personality and psychological variables controlled. Hope is a distinct predictor of attrition and not simply a substitute for measures with which it is correlated, such as dispositional optimism, expectancy or depression.

The hope constructs dissociated and predicted directly opposite health related behaviors; agency predicted completion, and pathways predicted dropout. This suggests that predictions based on

Table 1
Zero order correlations of baseline variables and dichotomous attrition variable, for participants in the intervention conditions.

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9
1. Age	36.35 (13.91)	–								
2. Gender[a]	–	.10	–							
3. Anxiety	13.64 (4.66)	.03	−.11	–						
4. Depression	12.28 (6.29)	.01	.01	.63**	–					
5. Expectancy	5.28 (1.65)	−.06	−.12	−.12	−.16*	–				
6. Optimism	10.32 (4.90)	.06	.06	−.24**	−.31**	.25**	–			
7. Self-control	39.55 (5.83)	−21**	.02	.18*	.24**	−.07	−.23**	–		
8. Pathways (hope)	19.73 (5.51)	.09	.04	−.25**	−.25**	.24**	.32**	−.23**	–	
9. Agency (hope)	19.64 (5.76)	−.07	−.10	−.29**	−.31**	.28**	.38**	−.23*	.70**	–
10. Attrition[b]	–	.03	−.02	−.08	−.05	.04	.02	−05	−.06	.13

[a] Female = 0, male = 1.
[b] Dropout = 0, complete = 1.
* $p < .05$.
** $p < .01$, $n = 167$.

Table 2
Logistical regression model of all baseline predictors with attrition as dependent variable (dropout = 0, complete = 1) of intervention conditions.

Variable	Wald ($df = 1$)	Exp (B)	CI (95%)
Age[a]	1.31	1.01	.99–1.04
Gender[b]	.07	.88	.31–2.42
Anxiety[a] (GAD-7)	.17	.92	.60–1.39
Depression[a]	.10	.93	.61–1.44
Expectancy[a]	.22	1.01	.77–1.54
Optimism[a]	.60	1.16	79–1.70
Self-control[a]	.30	.90	.62–1.31
Group[c]	5.52	2.24*	1.14–4.37
Hope-agency[a]	8.13	2.15**	1.27–3.64
Hope-pathways[a]	8.92	.47**	.29–.77

Note: Model $\chi^2 = 19$, $df = 10$, $p = .04$, Nagelkerke $R^2 = .14$, $n = 167$.
[a] Standardized variable.
[b] Male, 1; female, 2.
[c] Worry diary, 1; gratitude diary, 2.
* $p < .05$.
** $p < .01$.

hope theory and its subcomponents may vary substantially depending on the behavior or concept of interest. For instance, cross-sectional research examining trait hope and well-being showed that pathways and agency were additive (Magaletta & Oliver, 1999). Importantly, agency and pathways should be examined simultaneously using regression methods, when investigating the role of trait hope in applied health behavior. The suppressor situation in the current study suggests that observing zero order correlations alone may be misleading, as effects may only occur with the other variable controlled.

Both intervention approaches were successful in reducing worry relative to the waitlist controls. This suggests that gratitude diaries can reduce worry to the same degree as more standard approaches such as thought monitoring and cognitive restructuring. Importantly, the higher retention rate in the gratitude condition suggests that these approaches can be more effective (through equivalent outcomes, and higher completion rates) than standard cognitive techniques used in self-help therapy. Full clinical trials of gratitude interventions are needed.

Our results suggest that agency may be important in sustaining intervention behavior; designing unguided interventions with components or modules that increase agency may reduce disengagement. Despite pathways being associated with dropout, this does not necessarily make it a negative attribute. Being high in pathways may have reflected more ready disengagement from self-help techniques, in order to find alternative routes to help more suited to the particular individual's needs.

References

Christensen, H., Griffiths, K. M., & Farrer, L. (2009). Adherence in internet interventions for anxiety and depression. *Journal of Medical Internet Research, 11*, e13.

Christensen, H., Griffiths, K. M., Mackinnon, A. J., & Brittliffe, K. (2006). Online randomized controlled trial of brief and full cognitive behaviour therapy for depression. *Psychological Medicine, 36*, 1737–1746.

Creamer, M., O'Donnell, M. L., Carbon, I., Lewis, V., Densley, K., McFarlane, A., et al. (2009). Evaluation of the dispositional hope scale in injury survivors. *Journal of Research in Personality, 43*, 613–617.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377–389.

Eysenbach, G. (2005). The law of attrition. *Journal of Medical Internet Research, 7*, e11.

Fontaine, K. R., & Shaw, D. F. (1995). Effects of self-efficacy and dispositional optimism on adherence to step aerobic exercise classes. *Perception and Motor Skills, 81*, 251–255.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*, 606–613.

Magaletta, P. R., & Oliver, J. M. (1999). The hope construct, will, and ways: Their relations with self-efficacy, optimism, and general well-being. *Journal of Clinical Psychology, 55*, 539–551.

Mazumdar, S., Liu, K. S., Houck, P. R., & Reynolds, C. F. (1999). Intent-to-treat analysis for longitudinal clinical trials: Coping with the challenge of missing values. *Journal of Psychiatric Research, 33*, 87–95.

Ost, L. G., & Breitholtz, E. (2000). Applied relaxation vs. cognitive therapy in the treatment of generalized anxiety disorder. *Behavior Research and Therapy, 38*, 777–790.

Paulhus, D. L., Robins, R. W., Trzesniewski, K. H., & Tracy, J. (2004). Two replicable suppressor situations in personality research. *Multivariate Behavioral Research, 39*, 303–328.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*, 1063–1078.

Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13*, 249–275.

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*, 570–585.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine, 166*, 1092–1097.

Stober, J., & Bittencourt, J. (1998). Weekly assessment of worry: An adaptation of the Penn State Worry Questionnaire for monitoring changes during treatment. *Behavior Research and Therapy, 36*, 645–656.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271–324.