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A prospective study of homesickness in soldiers during military deployment

Julie A. Niziurski* & Dorthe Berntsen*

* Center on Autobiographical Memory Research, Department of Psychology and Behavioral Sciences, Aarhus University

Address for correspondence:

Julie A. Niziurski

Center on Autobiographical Memory Research

Department of Psychology and Behavioural Sciences, Aarhus University

Bartholins Allé 9, 8000 Aarhus C,

Denmark

Phone 45 87165225

julie@psy.au.dk

Abstract

Homesickness has been shown to negatively affect a person's physical, social, and cognitive wellbeing. Research on homesickness tends to focus on university students, young students, and immigrants, and has largely ignored another vulnerable population, namely soldiers deployed to military service. Here we examine homesickness in a company of soldiers who were deployed to Afghanistan for six months in 2009. We used measures of personality, depression, and autobiographical memory, all obtained prior to deployment, to predict homesickness during deployment. Pre-deployment measures of neuroticism, and depression as well as a tendency to rehearse one's most negative autobiographical memory, were all predictors of homesickness during deployment. The present study is unique in its prospective design, use of a military sample, and the inclusion of autobiographical memory measures. It replicates and extends previous findings to a military sample and shows the importance of considering memories of negative life events.

Keywords: Homesickness; Military; Autobiographical Memory; Personality

1. A Prospective Study of Homesickness in Soldiers during Military Deployment

Homesickness has been shown to negatively affect a person's physical, social, and cognitive wellbeing. Typically, it is described as arising from a response to a geographic move away from one's normal environment (Fisher, 1989). Homesickness is mainly examined in populations of university students (Fisher & Hood, 1987; Fisher & Hood, 1988; Lu, 1990; Carden & Feicht, 1991; Beck, Taylor, & Robbins, 2003; Scopelliti & Tiberio, 2010), young students (Fisher, Frazer, & Murray, 1984; Fisher, Frazer, & Murray, 1986; Tartakovsky, 2007; Kerns, Brumariu, & Abraham, 2008), and foreigners in a new country (Nicassio & Pate, 1984; Eurelings-Bontekoe, Brouwers, & Verschuur, 2000; Ying, 2005; Vergara, Smith, & Keele, 2010) (for reviews see Fisher, 1989; Stroebe, Schut, & Nauta, 2015). Unfortunately, these studies ignore a large population who have experienced a significant geographic move and who therefore may suffer from homesickness, namely, soldiers deployed to military service abroad. In the present study, we examined homesickness in a company of soldiers who were deployed to Afghanistan in 2009. We used measured of personality, depression, and autobiographical memory obtained before deployment to predict homesickness during deployment.

Most of the studies on homesickness have focused on children and young adults, and typically examined personality traits as predictive measures of homesickness (see Fisher, 1989; Stroebe et al., 2015, for reviews). It is often found that high levels of neuroticism are predictive of homesickness (Van Heck et al., 1997; Verschuur, Eurelings-Bontekoe, Spinhoven, & Duijsens, 2003). Low levels of extraversion and openness to experience have also been shown to play a role in the development of homesickness (Eurelings-Bontekoe, 1997; Van Heck et al., 1997). Furthermore, those who seek to escape the reality of their new environment with fantasies and day dreams of home have an increased likelihood of homesickness (see Van Heck et al., 1997 for

review). Of the psychological disorders, depression is often correlated with homesickness, though their exact relationship is less understood (Stroebe, van Vliet, Hewstone, & Willis, 2002). Stroebe and colleagues (2002) conducted a cross-cultural comparison study of homesickness in college students in the Netherlands and the UK. One purpose of the study was to determine the relationship of homesickness and depression. Using path analyses, the authors found support for their hypothesis that homesickness precedes depression. However, the authors note that given their cross-sectional design, a common limitation in the homesickness literature (Stroebe et al., 2015), they cannot rule out the possibility of other relationships between homesickness and depression (i.e., depression precedes homesickness). Therefore, the authors suggested longitudinal studies to examine this relationship further (Stroebe, et al., 2002).

1.1. Homesickness and Military Populations

While military populations are often studied in relation to Posttraumatic Stress Disorder (PTSD), little is known about the extent to which soldiers experience homesickness during military service. However, research on homesickness in the military has theoretical as well as applied relevance. First, homesickness may interfere with performance during military service, by involving a sense of loneliness, ruminations about home, depression, anxiety, and somatic symptoms (Fisher, 1989; Burt, 1993; Bell & Bromnick, 1998; Archer et al., 1998), which are states associated with cognitive and attentional problems. In a study of military-trainees, Du, Derks, Bakker, and Lu (2017) found that daily homesickness negatively affected not only job performance, but also safety on the job. Second, homesickness might add to our knowledge on desertion, which is a major problem receiving substantial attention (Ramsberger & Bell, 2002; also see Woodbury, 1921). In a recent study on deserters at Fort Knox, the two most common reasons given for leaving were family problems (33%) and a failure to adapt to the military (31%) (Briefing, n.d.; also see

Bell & Houston, 1976). Given the previously mentioned symptoms, homesickness has been shown to consequently affect one's ability to adapt to a new environment (Fisher, 1989; Bell & Bromnick, 1998; van Vliet, 2001) and therefore may prevent a soldier from adapting to military life.

The few studies that have measured homesickness in the military have mainly focused on somatic symptoms (Corp, 1791; Tausk, 1969) and personality characteristics (Eurelings-Bontekoe, Duijsens, & Verschuur, 1996; Sandal, Endresen, Vaernes, & Ursin, 1999) in order to predict or explain homesickness. Eurelings-Bontekoe, Vingerhoets, and Fontijn (1994) examined how personality traits correlated with homesickness in soldiers in the Dutch army. Those, who were suffering from severe homesickness, were found to score high on measures of shyness, social anxiety, and low assertiveness. Furthermore, the homesickness group had poor coping mechanisms for dealing with their homesickness, using such techniques as daydreaming and withdrawal (Eurelings-Bontekoe, et al., 1994).

One limitation of these previous studies is that they have adapted a cross-sectional design, such that measures of personality, cognitions, and psychological disorders are obtained after homesickness has developed. This design limits the ability to disentangle variables predictive of homesickness from states caused by, or following, the development of homesickness. Only a few studies have used a prospective design. In the non-military literature, Smith, Hanrahan, Anderson, and Abbott (2015) predicted homesickness in athletes at sporting institutions. Smith and colleagues (2015) measured personality, coping styles, and homesickness at two intervals, three weeks apart. The authors found that neuroticism, lower self-esteem, and mental escape were predictors of homesickness (Smith, et al., 2015). In the military literature, Sandal and colleagues (1999) examined homesickness and stress in a study of NATO submariner crews who participated in 10 day or 40 day missions. Comparing the 10 day versus 40 day missions, the authors found a

significant increase in homesickness for the crew on the 40 day mission, especially in the last week of the mission. Seeking social support was also predictive of homesickness, which the authors conclude may be related to dependency and low self-esteem (Sandal et al., 1999).

1.2 Homesickness and Autobiographical Memory

By involving longings for a temporarily or permanently lost personal environment, homesickness is related to autobiographical memory (e.g., Salaman, 1982). Autobiographical memory is closely related to the self and the way in which we interpret and makes sense of the past (i.e., Baerger & McAdams, 1999; Conway & Pleydell-Pearce, 2000; Pillemer, 2003; Berntsen & Rubin, 2007). It is therefore possible that differences in the ways we remember our personal past may be associated with vulnerability to homesickness. In non-clinical populations, the fading affect bias, which is the rate at which a memory decreases in affective intensity as time passes, helps to maintain a generally positive state of mind. However, rehearsal of autobiographical memories for non-social purposes (e.g., recalling an event involuntarily) has been shown to reduce the fading affect bias such that negative memories may be remembered with the same intensity as positive memories (Walker, Skowronski, & Thompson, 2003; Walker et al., 2009). Highly vivid and intense negative autobiographical memories prior to deployment therefore might be associated with a vulnerability to developing homesickness during deployment, particularly if these memories are kept to oneself.

1.3 Present Study

The present study is unique in several major aspects. First, it uses a prospective design, predicting homesickness measured during deployment by measures obtained prior to deployment. Most of the studies examining homesickness do so after homesickness has developed. That is, they measure all variables at the same time and separate groups based on their levels of

homesickness (Stroebe et al., 2015, for review). Second, the present study predicted homesickness in soldiers deployed to military service, which is rarely done even though it could be of critical importance with regard to desertion, job performance, and company morale. Third, we extend previous work on personality as a predictive factor by also including measures of autobiographical memory. While previous studies often measure tendencies to use mental escape to deal with homesickness or having repetitive thoughts of home (see Fisher, 1989; Stroebe et al., 2015, for reviews), we included autobiographical memory measures on soldiers' most negative and most positive memories from their lifetime. Therefore, we are not solely focusing on their thoughts of home, but how their negative and positive memories are affecting their current well-being.

2. Methods

2.1 Participants

A total of 381 soldiers of the Danish Contingent of the International Security Assistance Force 7 (ISAF 7) completed personality, mental health, and autobiographical memory questionnaires prior to deployment to Afghanistan in 2009, as well as a homesickness questionnaire during deployment (see Berntsen et al., 2012, for details). The sample had a mean age of 26.14 years ($SD = 8.00$), and 359 (94.23%) were men. All soldiers were volunteers and varied in rank: 67.72% were privates, 21.00% were sergeants, and 11.29% were officers. The soldiers were part of a larger company of 746 Danish soldiers involved in a longitudinal study addressing mental health, risk factors, and other relevant measures before, during and after deployment (see also Berntsen et al., 2012).

2.2 Measures

The soldiers answered a series of questionnaires prior to their deployment (Berntsen et al., 2012). However, only some are relevant for the present study. We included measures typically

used in homesickness studies, in addition to measures of autobiographical memory, as described in the introduction:

- (1) The second edition of the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) which is a 21-item measure of depressive symptoms (Cronbach's $\alpha = .84$).
- (2) The NEO Five Factor Inventory (NEO- FFI; Costa & McCrae, 1989) is a 63-item questionnaire which measures the five-factors of personality: Neuroticism (Cronbach's $\alpha = .79$), Extraversion (Cronbach's $\alpha = .80$), Openness (Cronbach's $\alpha = .70$), Conscientiousness (Cronbach's $\alpha = .83$), and Agreeableness (Cronbach's $\alpha = .74$).
- (3) The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) which is a 15-item measure of thought suppression (Cronbach's $\alpha = .93$).
- (4) The Autobiographical Memory Questionnaire (AMQ; Rubin, Feldman, & Beckham, 2003). Soldiers answered the AMQ prior to deployment with their most negative memory and most positive memory from their entire life. For the AMQ, we examined the variables of reliving (e.g., "When I recall the situation, I can see for myself what happened"), rehearsal (e.g., how often the person thinks about the memory, both voluntarily and involuntarily), and emotion (e.g., "The feelings I experience when I recall my situation are intense").
- (5) The homesickness questionnaire was completed during deployment. We used the Dundee Relocation Inventory, Questionnaire C (Fisher, 1989). The measure is comprised of 15 questions which are rated on a 5-point scale. Scores can range of scores from 15 – 75. Participants were instructed to judge how intensely they felt each given statement (e.g., "I miss home." or "I feel unhappy here" (Cronbach's $\alpha = .87$).

2.3 Procedure

All pre-deployment measures were collected five to six weeks before deployment at a military camp in Denmark. These measures included the BDI, NEO-FFI, WBSI, and AMQ. Military psychologists informed the soldiers about the study and explained that additional measurements would be taken at various intervals in the future. Soldiers were told that their responses would be confidential and would only be used for research purposes. Each soldier was given a random ID code in order to maintain anonymity. All soldiers had been deployed between two and five months to Afghanistan, when the homesickness questionnaire was answered. Prior to going on leave, military personnel at Camp Bastion, Kabul International Airport, or Kandahar Airfield gave soldiers the questionnaire, as well as other questionnaires not relevant to the present study. All answers were submitted in a closed envelope and placed in locked mailboxes. The locked mailboxes were then transported to the research team in Denmark.

3. Results

The mean homesickness score was 28.77 (SD = 8.00, 95% CI = [27.96 – 29.57]). Scores ranged from 15.00 (low) – 61.00 (high). There was no effect of rank, $F(2, 378) = 1.84, p = .16, \eta^2 = .01$, on homesickness scores; Privates ($M = 28.72$), sergeants ($M = 27.86$), and officers ($M = 30.74$) had similar levels of homesickness during deployment. There was also no effect of gender, $t(379) = -.58, p = .56$, Cohen's $d = .14$, 95% CI = [-4.47 – 2.44], with males ($M = 28.71$) and females ($M = 29.73$) having similar levels of homesickness.

In order to examine whether experiences of homesickness might reflect an increase in depression symptoms related to deployment, we compared the soldiers' level of depression symptoms prior to deployment and during deployment. Rather than an increase, there was a small, but significant, decrease in depression symptoms from prior to deployment ($M = 5.36$) to during deployment ($M = 4.71$), $t(397) = 2.41, p = .02$, Cohen's $d = .11$, 95% CI = [.12 – 1.18].

In order to determine if we could predict homesickness scores during deployment from measures taken before deployment, we conducted a linear, stepwise regression analysis. In the first step of the regression analysis, we entered age and time in the military before the current deployment. In the second step, we entered the following variables, which were measured prior to deployment: Depression symptoms (BDI), thought suppression (WBSI), personality (NEO), and measures of autobiographical memory (AMQ) (see Table 1 for correlations). In this analysis, only the AMQ measures for the most negative memory were included. The ANOVA was significant at the second step, $F(12, 368) = 5.48, p < .01, \eta^2 = .15$. Only the BDI, NEO measure of Neuroticism, and the AMQ measure of rehearsal of the most negative memory were significant predictors of homesickness during deployment (see Table 2 for beta coefficients, 95% CIs, and ΔR^2). There was a positive relationship among these three variables and homesickness, such that a higher BDI score prior to deployment was predictive of homesickness during deployment. The same holds true for higher scores of Neuroticism and rehearsal of the most negative memory.

We further investigated the influence of differently valenced autobiographical memories on homesickness by conducting a linear, stepwise regression analysis, examining the impact of one's most negative and most positive memory on homesickness. In the first step, we entered age and time in the military before the current deployment. In the second step, we entered the AMQ measures of reliving, emotion, and rehearsal for both the most negative and most positive memories from the soldier's entire life. The ANOVA was significant at the second step, $F(8, 344) = 2.78, p = .01, \eta^2 = .06$. As in the previous regressions, only rehearsal of the most negative memory was a significant predictor of homesickness (see Table 3 for beta coefficients, 95% CIs, and ΔR^2).

We then ran a linear, stepwise regression analysis just on the three items of the AMQ, which measure rehearsal to determine what exactly it is about rehearsal that influences

homesickness. In the first step, we entered age and time in the military before the current deployment. In the second step we entered the AMQ items that measure rehearsal only for the most negative memory, as it had been already shown that positive memories have no impact on homesickness. The regression was significant at the second step, $F(5, 372) = 5.83, p < .01, \eta^2 = .07$. Two items of the three total items were significant predictors of homesickness; voluntary retrieval of the negative memory and involuntary retrieval (see Table 4 for beta coefficients, 95% CIs, and ΔR^2). Socially sharing the event was not a significant predictor of homesickness.

In summary, the strongest predictors of homesickness during deployment were the BDI, NEO Neuroticism, and (private) rehearsal of one's most negative memory from their lifetime, all measured prior to deployment. With higher scores on these measures, homesickness scores increased.

4. Discussion

The present study is one of the few studies to prospectively examine homesickness in a military population. Danish soldiers who were deployed together to Afghanistan completed a homesickness measure during their deployment. The present study then used measures of personality, depression, and autobiographical memory completed prior to deployment to predict the level of homesickness during deployment. High scores on measures of neuroticism and depression, as well as a tendency to rehearse one's most negative memory were all predictive of homesickness scores during deployment.

A high level of neuroticism as a predictor of homesickness is consistent with the literature examining homesickness in non-military populations, which shows a strong correlation between neuroticism and homesickness (Van Heck et al., 1997; Verschuur, et al., 2003). However, we did not find any effects of extraversion or openness to experience, which have also been shown

to relate to homesickness (Eurelings-Bontekoe, 1997; Van Heck et al., 1997). We also found an influence of depression on homesickness in our military sample, consistent with strong correlations between depression measures and homesickness reported in previous work (Fisher, 1989).

A tendency to rehearse one's most negative memory and its relationship to homesickness has not been previously studied, to the best of our knowledge. It is worth noting that rehearsal of one's most positive memory did not affect homesickness, not even showing a negative relationship. However, frequency of voluntary and involuntary recall of one's most negative memory predicted homesickness. The autobiographical memory literature would predict negative consequences, possibly such as homesickness, when highly vivid and intense negative memories are closely related to one's sense of self (e.g., Berntsen & Rubin, 2006). Walker and colleagues (2009) also found that rehearsal for non-social purposes reduced the fading affect bias (Walker, Skowronski, & Thompson, 2003; Walker et al., 2009), consistent with the present findings.

4.1 Limitations

The present study has limitations. First, we only measured homesickness during deployment and therefore do not have a baseline measure prior to deployment. However, it seemed meaningless to administer a homesickness measure, when the soldiers were still in Denmark and thus (given the small size of the country) could reach home within a few hours. Furthermore, all the soldiers who participated in the study were deployed. Thus, any level of homesickness prior to deployment was not enough to encourage them to leave before going to Afghanistan. Second, the effects of autobiographical memory were derived from exploratory analyses and should be replicated before firm conclusions can be drawn.

4.2 Broader perspectives

The potential relationship of homesickness and desertion is a valuable avenue of study as many countries have reported rises in desertion in recent times and are looking for plausible explanations (i.e., The Netherlands: Flach et al., 2000; USA: Ramsberger & Bell, 2002; Syria: Danish Immigration Services, 2015; UK: Kiernan, Repper, & Arthur, 2015). In their final section of their U.S. Army special report, Ramsberger and Bell (2002) asked, what still needed to be learned in order to understand and prevent desertion. Specifically they asked if there were “new or emerging reasons for desertion”, as the US military had seen an increase in desertion in recent years (Ramsberger & Bell, p. 12, 2002).

The Netherlands has seen a stabilization of attrition rates (though they state they are still substantial) by adapting procedures and policies which are supported by their research on the matter. A study in the Netherlands reported that the top two reasons for leaving the military were military life not suiting the soldier (50%) and homesickness (35%) (van de Ven & van Gelooven, 2006). A model of attrition (Sumer & van de Ven, 2007) has been developed and the report urges future research to focus on better understanding the relationships and influences of key variables on attrition. One of these key variables is the fit of the person and the environment (Sumer & van de Ven, 2007).

While homesickness is certainly not a new reason for desertion, it could be a possible explanation that is largely being ignored in the military literature. The use of simple questionnaires to identify factors increasing vulnerability to homesickness in soldiers is not only a cost-effective option for studying a possible reason for desertion, but is also cost-effective in identifying those who may be more inclined to desert and end up costing the military additional money in replacement costs. Furthermore, the same questionnaires may also help to identify soldiers who are not adapting to their new environment and therefore may benefit from the use of a “buddy system”,

being paired with an experienced soldier, when first entering training (Drummet, Coleman, & Cable, 2003). This could help prevent a decline in job performance and eliminate accidents from a lack of concentration on safety protocols.

4.3 Conclusion

Homesickness has been shown to negatively affect an individual's physical, social, and cognitive wellbeing in military and non-military populations. The present study demonstrated the effectiveness of pre-deployment measures in predicting homesickness during deployment. High levels of depressive symptoms and neuroticism, and the tendency to rehearse one's most negative memory were predicative of homesickness. The present study replicates and extends previous work conducted cross-sectionally and in non-military samples.

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6. Tables

Table 1

Correlations of Predictor Variables and Homesickness

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Homesick	-															
2. Age	-.07	-														
3. Yrs.	-.07	.83**	-													
4. BDI	.29**	-.20**	-.15**	-												
5. WBSI	.23**	-.26**	-.22**	.45**	-											
<u>NEO</u>																
6. Neuro	.30**	-.21**	-.16**	.45**	.51**	-										
7. Extra	-.05	-.01	-.01	-.21**	-.19**	-.43**	-									
8. Open	.07	.08	-.02	.04	.00	.02	.26**	-								
9. Agree	-.05	.22**	.15**	-.17**	-.18**	-.14**	-.02	.14**	-							
10. Consci.	-.14**	.21**	.19**	-.29**	-.33**	-.58**	.35**	.11*	.15**	-						
<u>AMQ – N</u>																
11. Reliving	.18**	.06	.05	.18**	.23**	.11*	.08*	.13**	-.07	.03	-					
12. Rehearse	.21**	-.01	-.02	.15**	.16**	.11*	.07*	.16**	-.03	-.01	.51**	-				
13. Emotion	.17**	.09	.05	.18**	.26**	.14**	.03	.06	-.01	-.07	.59**	.43**	-			
<u>AMQ – P</u>																
14. Reliving	.07	.17**	.13**	.00	.12*	-.04	.15**	.07	.01	.15**	.35**	.14**	.30**	-		
15. Rehearse	.04	.13*	.06	-.02	.07	-.00	.16**	.12**	.05	.09	.14**	.19**	.17**	.60**	-	
16. Emotion	.07	.22**	.17**	.03	.12*	-.03	.16**	.08	.04	.09*	.24**	.11*	.37**	.72**	.56**	-

Note. * = significant at .05. ** = significant at .01. Homesick = Homesickness. Yrs. = Years in Military up to 2009 deployment. NEO order = Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. AMQ – N = Negative. AMQ – P = Positive. AMQ Rehearse = Rehearsal.

Table 2

Predicting Homesickness with BDI, Personality, and Memory Measures

Regression	Homesickness			
	ΔR^2	β	Unstandardized B	95% CI
<u>Step 1</u>	.01			
Age		-.07	-.08	[-.30 - .15]
Yrs. in Military		-.01	-.01	[-.23 - .21]
<u>Step 2</u>	.15			
Age		.02	.02	[-.20 - .24]
Yrs. in Military		-.01	-.01	[-.22 - .20]
Depression (BDI)		.17**	.23	[.07 - .39]
Thought Suppression (WBSI)		.03	.02	[-.06 - .09]
<u>NEO</u>				
Neuroticism		.24**	.29	[.12 - .47]
Extraversion		.09	.11	[-.04 - .27]
Openness		.00	.00	[-.13 - .14]
Agreeableness		.03	.03	[-.10 - .17]
Conscientiousness		.01	.01	[-.15 - .16]
<u>AMQ- Negative</u>				
Reliving		.02	.13	[-.55 - .80]
Rehearsal		.13*	.82	[.13 - 1.50]
Emotion		.01	.04	[-.53 - .61]

Note. * = significant at .05. ** = significant at .01. Only the AMQ measures answered for the most negative memory were included.

Table 3

Predicting Homesickness based on Most Negative and Positive Memories

Regression	Homesickness			
	ΔR^2	β	Unstandardized B	95% CI
<u>Step 1</u>	.01			
Age		-.07	-.09	[-.31 - .14]
Yrs. in Military		-.01	-.01	[-.24 - .22]
<u>Step 2</u>	.05			
Age		-.11	-.13	[-.35 - .10]
Yrs. in Military		.02	.02	[-.20 - .25]
<u>AMQ- Negative</u>				
Reliving		.04	.20	[-.53 - .94]
Rehearsal		.18**	1.09	[.34 - 1.85]
Emotion		.03	.15	[-.48 - .77]
<u>AMQ- Positive</u>				
Reliving		.01	.04	[-.80 - .87]
Rehearsal		-.05	-.22	[-.86 - .43]
Emotion		.07	.32	[-.42 - 1.06]

Note. ** = significant at .01.

Table 4

Predicting Homesickness based on Rehearsal of Negative Memory

Regression	Homesickness			
	ΔR^2	β	Unstandardized B	95% CI
<u>Step 1</u>	.01			
Age		-.05	-.06	[-.28 - .16]
Yrs. in Military		-.02	-.02	[-.24 - .20]
<u>Step 2</u>	.07			
Age		-.09	-.10	[-.31 - .12]
Yrs. in Military		.02	.03	[-.19 - .24]
<u>AMQ- Rehearsal</u>				
Talk about event		.02	.09	[-.35 - .52]
Voluntary Retrieval		.15**	.68	[.16 - 1.19]
Involuntary Retrieval		.16**	.72	[.26 - 1.18]

Note. ** = significant at .01. AMQ questions: Talk about event = "I have talked about the recalled event". Voluntary Retrieval = "Since it happened, I purposely searched back to the incident in mind". Involuntary Retrieval = "Since it happened, this recollection has spontaneously come to mind".