Exploring the dreams of Canadian soldiers with content analysis

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Summary. The current study explored the differences in dream imagery in two samples of Canadian males, soldiers and civilians. Participants included 25 Canadian male soldiers with operational experience in Afghanistan as well as an age and gender matched control group of 25 Canadian male civilians. Dream reports were scored using the Hall and Van de Castle (1966) content analysis guidelines. In addition, emotional intensity as well as intensity of aggression was rated by two independent judges. Results first describe through exploratory analyses the dream content categories in soldiers' dreams and the significant relationships among these content categories. Second, after comparing the dreams of soldiers and civilians, many significant differences between the two samples were found for dream content categories when examining dream content. Both groups had dream imagery that supports the continuity hypothesis in relevant and meaningful ways. As expected, soldiers had more dream imagery relating to war and their experiences overseas compared to civilians, reflecting the different waking day activities between the two groups. Time spent overseas was significantly related to certain dream imagery for soldiers. Limitations and directions for future research with soldiers are discussed.

Keywords: Dream content, gender differences, continuity hypothesis, social contacts, male/female percent

1. Introduction

1.1. Dreams and the Continuity Theory

The Continuity theory of dreams states that dreams reflect waking day activity. Research supporting this theory has found a strong relationship between waking day activities such as, reading, occupation, and driving and the respective activities in dream mentation (Schredl & Hofmann, 2003). Recent research has found dreams to be a realistic simulation of waking life in a wide variety of ways (Barrett & McNamara, 2007; Clarke, DeCicco, & Navara, 2010; Dale & DeCicco, 2012; DeCicco, 2007a, 2007b, 2008, 2009; DeCicco, Lyons, Pannier, Wright, & Clarke, 2010; Schredl & Hoffman, 2003). The continuity hypothesis is further supported in research exploring daytime sexuality and sexual dream content (King, DeCicco, & Humphreys, 2009; Zadra, 2007; Zanasi, DeCicco, Dale, Musolino, & Wright, 2012-2013). Current research provides evidence for the continuity theory as opposed to compensation (DeCicco, 2007b; Schredl & Hofmann, 2003). It is first hypothesized that this theory will apply to the dreams of soldiers as demonstrated through exploratory analyses of dream content categories. It is hypothesized that the waking day activities of the sol-

diers' military experiences, such as threat and military imagery, will be present in dream imagery, supporting the continuity hypothesis.

1.2. Trauma and Dreams

One of the major symptoms of trauma is the presence of traumatic dreams. Individuals exposed to trauma replay the event with fear, negative emotion, worry and rumination into sleep time (Barrett & McNamara, 2007; Scurfield, 2002; Speckhard, 2002). The September 11 attacks sparked a harsh fear, in veterans still suffering from symptoms of trauma, which combined both past and present experiences and memories which became evident in dream imagery (Scurfield, 2002). Although these men felt they were losing grip with reality, they were experiencing trauma all over again, this time, with past traumatic experiences intensifying their symptoms and fears (Scurfield, 2002).

The Threat Simulation Theory involves the notion that experiencing life-threatening situations is accompanied by more dreams with threatening themes and imagery (Malcom-Smith, Solms, Turnbull, & Tredoux, 2008; Revonsuo & Valli; 2008; Speckhard, 2002), serving the function of a survival instinct. This occurs when no physical danger is present and while in a relaxed dreaming state (Malcom-Smith et al., 2008). After the September 11 attacks people were experiencing dissociation, loss, dysfunctional coping skills, and dreams of threat such as planes crashing, being chased by an airplane, or being chased by a person (Speckhard, 2002). Themes of threat in dreams after trauma are also very common in soldiers suffering from combat trauma. It is secondly hypothesized in the current study that threat will appear more frequently in the soldiers' dreams compared to civilians as the majority of soldiers will have had much

more exposure to threat in their experiences overseas, supporting the continuity hypothesis. Soldiers returning home from combat missions often have a dream in which their weapon is not able to fire. This has been called the universal "gun not firing dream", is very common in the military, and is theorized to be linked to performance anxiety (Grossman & Christensen, 2007) This imagery is hypothesized to occur in the dreams of the soldiers in the current study, as stated in the second hypothesis.

Dreams of recurring terror were once thought to be a major symptom of what was known as anxiety neurosis of warfare (Van de Castle, 1994). In 1980 the diagnosis of PTSD was added to the third edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1980). Research on the dreams of soldiers has found that dreams involving the battlefield had a theme of threat and were about an enemy of some sort (Van de Castle, 1994). The theme of a surprise attack by the enemy has been explored with a U.S. marine during the Gulf war (Van de Castle, 1994). Dream reports during war conditions relating to combat trauma reveal that common themes include one's own or a comrade's death, being wounded, and witnessing killing and destruction (Barrett & McNamara, 2007). Vietnam veterans also experience these dreams involving combat trauma which tend to be very realistic and deal with battlefield combat situations (Esposito, Benitez, Barza, & Mellman, 1999; Van de Castle, 1994). As stated in the second hypothesis, it is expected that threat will appear more frequently in the soldiers' dreams compared to civilians as the majority of soldiers will have had much more exposure in their lives, supporting the continuity hypothesis. Also military imagery will be more prevalent in the dreams of soldiers compared to civilians, reflecting differences in the waking lives of the two groups and supporting the continuity hypothesis.

1.3. Dreams, Soldiers, and Post-Traumatic Stress Disorder (PTSD)

Combat related PTSD is defined as PTSD as a result of combat trauma (Elwood, Hahn, Olatunji, & Williams, 2009; Esposito et al., 1999; Prigerson, Maciejewski, & Rosenheck, 2001). Prigerson et al (2001) examined men exposed to different types of trauma and found that those reporting combat trauma as their worst trauma, as opposed to other types of trauma, were more likely to have lifetime PTSD, delayed symptom onset, and more unresolved symptoms.(Prigerson et al., 2001). Dreams of combat related PTSD in Vietnam veterans found themes of threat in the dreams. The dreams were some variation of the experience of the combat trauma event, and contained a distortion in reality (Esposito et al., 1999). Dream reports of combat related PTSD also tend to take place in past settings such as when the trauma occurred (Dow, Kelsoe, & Gillin, 1996; Esposito et al., 1999).

1.4. Dreams and Content Analysis

Hall and Van de Castle (1966) developed a method to analyze the elements and imagery found in dream reports known as content analysis. The goal of content analysis is to objectively analyze dreams and to quantify the data found in the imagery to examine differences between populations. Currently, content analysis is the most popular system for scoring dreams and dream coding. The categories are very specific to the collection of dreams and to the content being

analyzed. For example, objects, places, settings, emotions, and certain imagery are scored objectively (Van de Castle, 1994).

1.5. Purpose

The purpose of the present study was twofold. First, was to explore and describe the dreams of Canadian male soldiers with operational experience.. Soldiers' dreams were examined using Content Analysis to explore the relationships among dream content categories. Second, was to examine the differences in dream content categories between Canadian civilian males and Canadian soldiers in relation to the continuity hypothesis.

1.6. Hypotheses

1) The first hypotheses is an exploratory analysis to determine what categories of dream imagery are present in the dreams of Canadian soldiers with operational experience in Afghanistan and how these categories of dream imagery are related to one another. This method was used in previous research exploring the relationship among dream content categories for Canadian males (Dale & DeCicco, 2012) and females (DeCicco, 2007). It is hypothesized that the waking day activities of the soldiers' military experiences, such as threat and military imagery, will be present as content categories in soldiers' dreams.

2) Since past research on combat trauma has shown images of threat in dreams of soldiers (Barrett & McNamara, 2007; Esposito et al., 1999; Van de Castle, 1994), it is hypothesized that this imagery will appear more frequently in the dreams of soldiers with operational experience. It is also expected that these soldiers will have specific imagery of their weapon not firing as was found in the dreams of many soldiers returning home from combat missions, in previous research (Grossman, 1996). Soldiers are expected to have more recurrent dream themes and negative dream imagery including, aggression, death, and combat scenes compared to the control group of civilians, as per the continuity hypothesis. When comparing the content of dreams across the two groups the dream imagery will differ significantly for many categories.

3) It is hypothesized that length of service in the military will be significantly related to certain dream content categories. For example, more years of service, more tours, or a longer total duration of tours will be significantly related to aggression and weapons in dream content. In support of the continuity theory, the more individuals are exposed to combat and aggression in waking day, the more this will be reflected in dreams.

2. Method

2.1. Participants

The participants were divided into two groups; the first group of participants (N = 25) are Canadian combat arms soldiers with operational experience and were recruited for the study by being contacted and asked to volunteer in a study on dreaming. The mean age of the soldiers was 30.32 years (SD = 5.12). The control group were a sample of Canadian male civilians (N = 25) without military experience and were chosen from a large sample of data of civilian males who were age-matched to the sample of soldiers and

had competed TSM worksheets. The age matching of the two groups of participants was tested with an independent samples t-test $t(48) = 1.76$, $p = .08$. The data for the civilian group was collected from a sample of Trent University students with a mean age of 27.44 years ($SD = 6.37$).

2.2. Measures and Procedure

Participants in the study completed a paper and pencil package including a consent form, demographics form, and provided one recent dream, from within the last two weeks. The demographics form included information on age, rank, trade, years of service in the military, and number and duration of tours, if any. This took approximately 15 to twenty minutes to complete.

Content Analysis Categories. One dream report from each participant was then analyzed using the Content Analysis scoring system (Hall & Van de Castle, 1966). The categories chosen (mentioned below) were scored and the total frequencies were summed for each category, across all dreams. Content categories that were both relevant and meaningful for soldiers were based on the findings of previous studies on dream imagery for both males and soldiers (Barrett & McNamara, 2007; Dale & DeCicco, 2011; Esposito et al., 1999; Van de Castle, 1994). Many categories, previously coded by Hall and Van de Castle (1966), were included in the analyses and coding followed the basic guidelines. All subcategories of emotions were coded including: Happiness, Sadness, Confusion, Apprehension/Fear, and Anger. Total Emotions, a score obtained by summing the frequency of all subcategories, was added as well.

Characters coded included: Total Characters, Familiar characters, Females, Groups, and Family/Relatives together. Various Hall and Van de Castle (1966) categories relevant for soldiers and civilians included Body Parts, Aggression, Outdoor Scenes, Success at tasks performed, Failure at tasks performed, Activity/Movement, Friendly Interactions, Good fortune, Misfortune, Transportation, Familiar Scenes, and Geographical Locations. Threat was added based on dream imagery for soldiers (Barrett & McNamara, 2007; Esposito et al., 1999; Van de Castle, 1994). Based on the findings of DeCicco, Zanasi, Dale, Murkar, Longo, & Testoni (in press), Scene Changes was added as a category. Categories expected to be relevant for soldiers included in the analyses for comparison were: Comrades, Weapons, Combat, and Death. After scrutinizing the dreams for relevant categories to be included, Enemy (the word enemy appeared frequently) and Leadership/Protection (being a leader or protecting a group of people) were added as categories.

Emotional Intensity as well as Intensity of Aggression were added as categories. The dreams of both soldiers and civilians were analyzed for emotional intensity. This was rated on a 4 point scale; 0 = not emotional, 1 = somewhat emotional, 2 = emotional, and 3 = very emotional. This was assessed by two researchers reading the dream and was not based on specific emotions mentioned in the actual dream. All of the dreams were also analyzed for Intensity of Aggression. As with emotional intensity, this was also rated on a 4 point scale; 0 = not intense in aggression, 1 = somewhat intensely aggressive, 2 = intensely aggressive, 3 = very intensely aggressive. Each researcher rated the dreams (N = 50) for both categories independently. Intensity of aggression was assessed independent from intensity of emotions as many dreams were intensely aggressive without any emotions. Inter-rater reliability was calculated as the total number of agreements divided by the total number of observations. Inter-rater reliability was 91% which was excellent, considering an inter-rater reliability score of 70% is recommended and considered adequate (Spata, 2003).

2.3. Analyses

Statistica 7.0 (StatSoft Inc., 2004) was used for all statistical analyses.

3. Results

3.1. Correlations among Dream Content Categories for Soldiers

There were many significant relationships among dream content categories as was revealed through exploratory correlational analyses. See Table 1 for correlations among dream content categories. For emotions, Happiness in dreams was correlated with Sadness ($r = .42$, $p = .036$), Confusion ($r = .50$, $p = .012$), Total Emotions ($r = .66$, $p < .001$), and Activity/Movement ($r = .55$, $p = .004$). Sadness in dream imagery was correlated with Total Emotions ($r = .64$, $p < .01$), Groups of Characters ($r = .49$, $p = .013$), and Failure ($r = .52$, $p = .007$). Confusing dream imagery was correlated with Apprehension/Fear ($r = .45$, $p = .024$) and strongly with Total Emotions ($r = .86$, $p < .01$). Confusing dream imagery was also correlated with Outdoor Scenes ($r = .42$, $p = .037$) and negatively with Comrades ($r = -.46$, $p = .02$). Apprehension/Fear in dreams of soldiers was correlated with Total Emotions ($r = .57$, $p = .003$), Outdoor Scenes ($r = .48$, $p = .016$), and Family ($r = .47$, $p = .017$). Anger in dream imagery was correlated with Weapons ($r = .49$, $p = .012$) and Failure ($r = .41$, $p = .043$). Total Emotions in dreams was negatively correlated with Comrades ($r = -.49$, $p = .012$), Activity/Movement ($r = .41$, $p = .04$), and Family ($r = .42$, $p = .038$).

As with emotions, imagery related to both war and males was strongly correlated with various dream content categories. Weapons in dream imagery was strongly correlated with Aggression ($r = .83$, $p < .001$), Threat ($r = .79$, $p < .001$), and Combat ($r = .71$, $p < .001$). Weapons in dream imagery was also correlated with Success ($r = .46$, $p = .02$) and Failure ($r .45$, $p = .025$). Aggression in dreams was strongly correlated with Threat ($r = .86$, $p < .001$) and Combat ($r = .90$, $p < .001$). Aggression was also significantly related to dream content of Success ($r = 54$, $p .006$) and Failure ($r = .51$, $p .009$). Threat was strongly correlated with Combat ($r = .83$, $p < .001$), Success ($r = .45$, $p .023$), and Failure ($r = .41$, $p = .042$). Combat was correlated with Success in dreams ($r = .54$, $p = .006$). Outdoor Scenes in dream imagery was correlated with Family Characters for soldiers ($r = .51$, $p = .01$). Death in the dreams of soldiers was significantly correlated with dream imagery of Aggression ($r = .46$, $p = .022$) and Threat ($r = .44$, $p = .026$).

When examining characters, Total dream characters was strongly correlated with Familiar Characters ($r = .74$, $p < .001$), Females ($r = .67$, $p < .001$), Friends ($r = .48$, $p = .014$), and Friendly Interactions ($r = .61$, $p < .01$). Familiar Characters was correlated with Females ($r .47$, $p .018$), Friends ($r = .49$, $p = .013$), and Friendly Interactions ($r = .54$, $p = .006$). Females in dreams of male soldiers was correlated with Friends ($r = .51$, $p = .009$) and Friendly Interactions ($r = .54$, $p = .006$). Groups of Characters was significantly

Table 1. Correlations among Dream Content Categories for Soldiers.

Var.	Sad	Con	App	Ang	TE	Wpn	Agg	Thr	Cbt	Dth	Out	TC	Fam	FC	Fem	GC	Crd	En	L/P	Suc	Fl	A/M	FI	EI	AI
Hap	.42*	.50*	-.08	-.09	.66***	-.07	.17	.07	.10	.29	-.12	-.05	.01	-.13	.20	-.10	-.29	-.05	-.02	-.07	.05	.55**	-.03	.20	.22
Sad	-	.38	.07	-.05	.64**	.17	.38	.34	.33	.38	.09	.01	.26	-.14	.33	.49*	-.17	.07	.28	.02	.52**	.10	.13	.12	.19
Con		-	.45*	-.11	.86***	.07	.26	.29	.31	-.13	.42*	-.01	.38	-.28	.05	-.05	-.46*	-.15	.00	-.06	.27	.41*	-.04	.16	.23
App			-	-.13	.57**	-.22	.08	.04	.11	-.17	.48*	-.13	.47*	-.25	-.01	.05	-.38	-.26	.25	-.14	.17	.05	-.02	.14	.00
Ang				-	-.14	.49*	.34	.24	.11	.10	-.08	.06	-.10	.28	-.07	-.25	.33	.11	-.14	.21	.41*	.16	-.13	.10	.03
TE					-	-.03	.31	.26	.30	.10	.34	-.07	.42*	-.30	.19	.12	-.49*	-.16	.18	-.10	.35	.41*	.01	.23	.23
Wpn						-	.83***	.79**	.71***	.26	-.04	-.07	-.15	-.10	-.23	-.10	.16	.30	-.16	.46*	.45*	.20	-.31	.40*	.63**
Agg							-	.86***	.90***	.46*	.13	-.01	.07	-.07	-.07	-.08	-.11	.28	-.10	.54**	.51**	.36	-.27	.39	.64**
nThr								-	.83***	.44*	.10	-.08	.14	-.07	-.14	-.02	-.10	.15	.14	.45*	.41*	.22	-.17	.37	.56**
Cbt									-	.35	.19	-.06	.14	-.11	-.06	.07	-.17	.32	-.03	.54**	.36	.32	-.27	.32	.70***
Dth										-	-.10	.07	.14	.26	.06	.04	-.16	.14	.18	.34	.13	.32	-.08	.18	.09
Out											-	-.05	.51*	-.13	-.14	.05	-.03	.21	.14	.07	.29	-.12	.02	-.14	-.04
TC												-	.06	.74***	.67***	-.36	-.10	-.21	-.25	-.23	-.07	.18	.61**	-.65***	-.38
Fam													-	.05	.01	.13	-.06	-.15	.36	-.19	.35	-.09	-.08	.18	.09
FC														-	.47*	-.30	-.03	-.10	-.24	-.03	-.08	.07	.54**	-.51*	-.40*
Fem															-	.16	-.23	-.08	.06	-.22	.04	.16	.79***	-.41*	-.29
GC																-	.15	.32	.49*	.09	.18	-.24	.15	.27	.01
Crd																	-	.21	.22	-.12	.16	-.29	-.04	.03	-.24
En																		-	.01	.58	.06	.00	-.27	.23	.22
L/P																			-	-.28	.18	-.12	.20	.21	-.13
Suc																				-	.13	.26	-.39	.22	.34
Fl																					-	.17	.02	.23	.30
A/M																						-	-.12	.27	.18
FI																							-	-.47*	-.47*
EI																								-	.41*
AI																									-

Note. Hap = Happiness; Sad = Sadness; Con = Confusion; App = Apprehension/Fear; Ang = Anger; TE = Total Emotions; Wpn = Weapons; Agg = Aggression; Thr = Threat; Cbt = Combat; Out = Outdoor scenes; TC = total characters; Fam = Family/relatives; FC = Familiar characters; Fen = Females; GC = Groups; Crd = Comrades; En = Enemy; L/P = Leadership/Protection; Suc = Success; Fail = Failure; A/M = Activity/Movement; Fl = Friendly Interactions; EI = Emotional Intensity; AI = Intensity of Aggression

* p < .05.   ** p < .01.   *** p < .001.

Table 2. Differences between Soldiers and Civilians for Dream Content Categories.

	Soldiers		Civilians		
	M	*SD*	*M*	*SD*	*t*(48)
Happiness	0.32	0.75	0.60	1.08	-1.07
Sadness	0.16	0.62	0.08	0.28	0.59
Confusion	0.40	0.76	0.16	0.37	1.41
Apprehension/fear	0.52	0.82	0.64	0.99	-0.46
Anger	0.04	0.20	0.20	0.65	-1.18
Total Emotions	1.40	2.02	1.68	1.46	-0.56
Weapons	1.88	1.74	0.16	0.47	4.77***
Aggression	2.76	2.63	0.20	0.50	4.77***
Death	0.60	0.82	0.12	0.33	2.72**
Threat	1.96	1.79	0.44	0.71	3.94***
Body Parts	1.40	2.06	1.24	1.79	0.29
Combat	1.88	2.15	0.08	0.40	4.12***
Scene Changes	0.68	0.80	0.20	0.50	2.54*
Geographical locations	0.64	0.76	0.16	0.37	2.84**
Familiar Scenes	0.16	0.47	0.56	0.77	-2.22*
Total Characters	0.72	0.94	1.12	1.20	-1.31
Family	0.24	0.52	0.36	1.04	-0.52
Females	0.28	0.54	0.36	0.76	-0.43
Groups	1.08	0.91	0.80	0.96	1.06
Leadership/protection	0.40	0.58	0.08	0.28	2.50*
Success	0.92	1.08	0.04	0.20	4.02***
Failure	0.20	0.41	0.12	0.33	0.76
Good Fortune	0.00	0.00	0.20	0.50	-2.00
Misfortune	0.64	0.86	0.56	0.82	0.34
Activity/Movement	3.60	3.04	3.28	3.48	0.35
Transportation	0.64	0.70	0.28	0.61	1.93
Friendly Interactions	0.56	0.87	2.00	2.53	-2.69*
Intensity of Emotions	2.72	0.61	1.92	1.04	3.32**
Intensity of Aggression	1.84	1.31	0.36	0.86	4.71***

Note. * p < .05.   ** p < .01.   *** p < .001.

correlated with Leadership/Protection (*r* = .49, *p* = .012). The enemy in the dreams of soldiers was significantly correlated with Success (*r* = .58, *p* = .003).

Intensity of Emotions and Intensity of Aggression was rated by two independent judges, independent of what was mentioned in the dream report. Intensity of Emotions was strongly correlated negatively with Total Characters (*r* = -.65, *p* < .001), Familia*r* Characters (*r* = -.51, *p* = .01), Females (*r* = -.41, *p* = .04), and Friendly Interactions (*r* = -.47, *p* = .017). Emotional Intensity of the dream was also correlated with Weapons (*r* = .40, *p* = .05). Intensity of Aggression was strongly associated with Weapons (*r* = .63, *p* = .001), Aggression (*r* = .64, *p* = .001), Threat (*r* = .56, *p* = .003), Combat (*r* = .70, *p* < .001), negatively with Familiar Characters (*r* = -.40, *p* = .046), Friendly Interactions (*r* = -.47,

p = .019), and also correlated with Emotional Intensity (*r* = .41, *p* = .043).

3.2. Significant Differences in Dream Content fo*r* Soldiers and Civilians

When testing hypothesis 2, dream content categories were compared for both soldiers and civilians. It was hypothesized there would be many significant differences in dream content categories between soldiers and civilians. See Table 2 for t-tests for significant differences in dream content for soldiers and civilians for many content categories. There were no significant differences between soldiers and civilians with regards to emotional content in dreams. However, the dreams of soldiers were found to be significantly

more Emotionally Intense than the dreams of civilians, $t(48)$ = 3.32, p = .002. When examining war related imagery many significant differences were found in dream reports. Soldiers had significantly more Weapons in dream content than civilians, $t(48)$ = 4.77, p < .001. Dream imagery of a weapon not firing or being ineffective in fighting back occurred in 4 (16%) of the soldiers' dreams. There was also significantly more Combat in the dreams of soldiers than civilians, $t(48)$ = 4.12, p < .001. As with war imagery, there were significant differences between the dream imagery for soldiers and civilians when examining Aggression and Threat in dreams. Soldiers had significantly more Aggression, $t(48)$ = 4.77, p < .001 and Threat, $t(48)$ = 3.94, p < .001, in dream content than civilians. The dreams of soldiers were also rated as significantly higher in Intensity of Aggression than civilians, $t(48)$ = 4.71, p < .001. There was also significantly more imagery of Death in the dreams of soldiers than the dreams of civilians, $t(48)$ = 2.72, p = .009.

When examining the setting of the dreams for both soldiers and civilians many significant differences were found. Soldiers reported much more Scene Changes in dreams than civilians, $t(48)$ = 2.54, p = .014. Soldiers also reported significantly more references to Geographical locations, $t(48)$ = 2.84, p = .007 and significantly less Familiar settings in dreams than civilians, t(48) = -2.22, p = .031. Various other dream content categories revealed significant differences. Soldiers had significantly more Leadership/Protection in dreams than civilians, $t(48)$ = 2.50, p = .016. Soldiers reported more Success in dreams than civilians as well, $t(48)$ = 4.02, p < .001. When examining Friendly Interactions in dream reports, soldiers had significantly less Friendly Interactions among the characters in their dreams, $t(48)$ = -2.69, p = .010.

3.3. Correlations among Years of Service and Dream Content Categories for Soldiers

The third hypothesis was partially supported. Dream content categories related to soldiers and to war were not significantly correlated with years of service, number of tours, or total time spent overseas on tour. Interestingly, Failure was the only dream content category that was significantly related to Total Number of Tours (r = .49, p = .014) and Total Time spent overseas (r = .45, p = .023). Intensity of Aggression as rated by 2 independent judges was significantly correlated with the months spent overseas on the First Tour (r = .47, p = .019).

4. Discussion

4.1. Dream Content for Soldiers

The present study explored the dream content of soldiers returning home from the war in Afghanistan. The dreams of soldiers follow the continuity hypothesis and support previous research on dream themes for soldiers (Barrett & McNamara, 2007; Esposito et al., 1999; Grossman & Christensen, 2007; Van de Castle, 1994). Soldiers' dreams clearly reflect their waking lives and the combat experiences they have endured.

One very important finding in this study occurred when examining soldiers' dreams in detail; specific emotions were rarely reported in the dream content. Dreams were rated by two independent researchers for Emotional Intensity and were found to be very emotionally intense from an objective perspective. Nineteen dreams (76%) were rated as very emotionally intense and given a rating of 3. Although these dreams were found to be very emotionally intense, emotions were not frequently, or specifically, mentioned in the dreams. Fear in the dreams of soldiers was also very rare, despite there being a high presence of threat. Interestingly, the fear expected to be associated with the threat was not mentioned. A high presence of threat occurred in 20 (80%) of the dreams with the explicit mention of fear of the dreamer occurring in only one (4%) dream. The mention of fear in other characters in the dream occurred in only two (8%) of the dreams.

A high presence of threat and aggression, in the absence of fear and very little emotional content, may be a result of the rigorous training a soldier endures to prepare for war and combat. Soldiers are trained to operate in what is called "condition yellow" and "condition red" (Grossman & Christensen, 2007). These are states of consciousness that involve being both alert and psychologically ready for combat at all times. Soldiers in training are often operating in condition red, which is where performance levels for combat and survival are at their strongest and combat skills become muscle memories that can be carried out without conscious thought (Grossman & Christensen, 2007). Training involves the inoculation of stress and fear by taking the stress out of combat in order to cognitively prepare for it in real life situations. This is done in order to ensure exceptional performance in real combat (Fink, 2010).

The universal nightmare for a soldier is dream imagery of a weapon not firing, malfunctioning, or the strikes or fire from a weapon being ineffective and has been linked to performance anxiety (Grossman & Christensen, 2007). It is believed that these dreams will dissipate with proper training that fosters confidence in performance ability (Grossman & Christensen, 2007). This theme occurred in four (16%) of the soldiers' dreams. An example of this imagery in dreams was "I try so hard to squeeze my trigger to shoot and kill them but my trigger is like jello" (participant 21).

The mention of an enemy in the dreams of soldiers occurred in seven (28%) dreams. These dreams involved the specific mention of the word "enemy". Soldiers train with an enemy target and are taught to fight an enemy that is threatening both their life and the lives of their loved ones (Grossman & Christensen, 2007). An example of the enemy was, "I jump from cover to cover killing one after another" (participant 14). Specific mention of the enemy also supports the continuity hypothesis; soldiers are accustomed to this word with frequent use in both training and in combat, and therefore, it appears in dream imagery as well.

4.2. Correlations among Dream Content Categories for Soldiers

There were many significant correlations among dream content categories for soldiers as revealed through exploratory correlational analyses. Of particular interest was imagery related to both war and males being strongly correlated with various dream content categories. Weapons in dream imagery were associated with Aggression, Threat, Combat, Success, and Failure. Aggression in the dreams of soldiers was significantly correlated with Threat, Combat, Success, and Failure. These findings imply that when aggressive behavior occurred in the dreams of soldiers it was associated

with perceived threat to the dreamer, combat scenarios, and being successful as well as failing at tasks performed in dreams. Threat was also associated with Combat, Success, and Failure. Combat was correlated with Success in dreams. These findings imply that combat scenarios are associated with being successful at tasks performed in dreams for soldiers. Outdoor Scenes in dream imagery was associated with Family for soldiers and Death was associated with dream imagery of Aggression and Threat.

Intensity in dreams as rated independent of what was mentioned in the dream was associated with various content categories. Intensity of Emotions was strongly negatively associated with Total Characters, Familiar Characters, Females, and Friendly Interactions, and was also associated with Weapons. Intensity of Aggression was strongly associated with Weapons, Aggression, Threat, and Combat. These findings imply that a higher score on Intensity of Aggression was associated with weapons such as military guns, aggressive behavior, perceived threat to the dreamer, and combat scenarios, and rating of emotional intensity in the dreams of soldiers. Intensity of Aggression was also negatively associated with Familiar Characters and Friendly Interactions. All of these findings reflect the waking lives of male soldiers and support the continuity hypothesis as well as previous research on the relationship among dream content categories for males.

4.3. Differences in Dream Content between Soldiers and Civilians

There were many significant differences in dream imagery among soldiers and civilians, for example, soldiers with operational experience had significantly more imagery in dreams related to soldiers and to war. War imagery of Weapons, Aggression, Threat, and Combat appeared more frequently in the dreams of soldiers than civilians. These findings support the continuity hypothesis as soldiers with operational experience have spent time in combat and at war dealing with weapons, aggression, threat, and combat on a regular basis while deployed (Grossman & Christensen, 2007). Civilians will rarely encounter these experiences, if ever. Therefore, dream imagery related to soldiers and to war occurs much more frequently in the dreams of soldiers, supporting the continuity hypothesis of dreams. The majority of soldiers' dreams centered on a combat situation and this was the main theme. An example of a combat situation in a soldier's dream was "I remember being in the open desert we began taking fire, several guys were injured from rocket shrapnel" (participant 5).

When exploring scenery in dream content, soldiers had significantly more Scene Changes. Scene changes in dream imagery have been linked to more anxiety in waking day in past research on dream imagery for Italians and Canadians (DeCicco et al., 2011). These findings imply that soldiers may score higher on a measure of waking day anxiety than civilians. Soldiers also had more Geographical Locations in dream imagery than civilians. This was usually referencing the location of a mission or combat situation while deployed overseas on tour. This supports the continuity hypothesis as soldiers may spend more time overseas than civilians. Civilians had more dream imagery of Familiar Scenes such as being at home or at their school. These findings imply that in contrast to students, soldiers in the present study are not dreaming of being at home with their family or at a friend's house, but rather, they are dreaming of specific events from their tours.

Civilians spent much more time in Friendly situations and interactions in dream imagery than soldiers, who were usually involved in unfriendly situations in dream imagery such as Aggression and Threat and also had significantly more imagery of Leadership and Protection. In contrast to civilians, the dreams of soldiers involved leading a team to safety and protecting civilians or comrades. An example of Leadership/Protection in soldiers' dreams was "I am commanding my patrol…I had an inexperienced crew…tried to move my patrol safely and have an idea of what was going on with the other patrols" (participant 18). These findings support the continuity hypothesis as soldiers are often involved in a leadership role and protecting people from the enemy is their job (Grossman & Christensen, 2007) and some soldiers in the present study were of a high rank and responsible for a whole team.

When rating the intensity of the dreams, the dreams of soldiers were found to be much more Emotionally Intense, although there was no significant difference in actual emotional dream content, as well as more Intense in Aggression. An example of Aggression in soldiers' dreams was "I dig my knife into his neck, like in slow motion I watch the blade enter and disappear into his neck. I'm covered in blood, I feel calm, silence" (participant 14). Another example of Aggression in soldiers' dreams was "I went from room to room chopping patients into pieces. Blood and bone fragments flew everywhere; blood was all over my arms and face" (participant 23). These findings are expected due to the experiences soldiers endure which many civilians would find very intensely aggressive as well as emotionally intense and strongly support the continuity hypothesis.

4.4. Correlations among Years of Service and Dream Content Categories for Soldiers

Failure was the only dream content category that was significantly related to total number of tours and total time spent overseas. The more failure in the dreams of soldiers the longer they spent overseas and the more tours they had. These findings imply that the longer a soldier spends overseas on tour the more it affects their dreams resulting in insecurity and themes of failure in dreams. Intensity of aggression as rated by 2 independent judges was significantly correlated with the months spent overseas on the first tour. This is an interesting finding that the longer a soldier spent overseas for the first time ever, the more intense in aggression their dream was. This may be due to the shock of experiences during the first tour affecting the soldiers' dreams. These findings demonstrate the effects war might have on the dreaming mind of a soldier.

4.5. Limitations and Future Directions

A larger sample size for future research would result in findings that are more generalizable to the population of Canadian soldiers. A larger sample size may also reveal themes that were not frequent in the present sample. For example, imagery of a weapon not firing may occur more frequently in a larger sample size. The use of a dream diary would also provide a rich sample of the data and a much more accurate portrayal of soldiers' dreams. This would allow for tracking of specific dream themes over time and help monitor changes or shifts in dream imagery for soldiers. Asking for

one recent dream does not specify whether the dream is the most traumatic one the individual has experienced recently. It also leaves the potential for participants to purposely not report certain dreams for analyses that may be more intense or traumatic.

Future research in this area should be longitudinal in nature, examining symptoms of various psychological disorders which soldiers may be at high risk for developing. Measures assessing symptoms of PTSD, anxiety, sleep disturbance, and trauma, should be included with dream analysis in future studies on the dreaming mind of soldiers.

Another interesting population with which to compare the dreams of soldiers, in future research, would be heavy military gamers. Research has found that gamers experience more intensely aggressive dreams than people who do not game (Gackenbach, Ellerman, & Hall, 2011). Grossman and Christensen (2007) explain how video games involving point and shoot, as in military based games, teach children to kill. These games involve the same conditioning and learning techniques used by modern day soldiers. However, this occurs in the absence of character development, safeguards, and discipline which are maintained in soldiers (Grossman & Christensen, 2007). Research comparing the intensity of aggression in soldiers' dreams compared to the dreams of heavy gamers playing military based games such as "Call of Duty", would provide insight into the dreams of soldiers in relation to aggression experienced in waking life as well as the impact of violent video games on the dreams of heavy gamers.

Future research should extend analyses of the content of soldiers' dreams to what the soldiers learn from their dream, also known as discovery. Various dream interpretation techniques should be tested with soldiers such as The Storytelling Method (TSM) which uses word association to gain meaning from a dream report (DeCicco, 2007). This would help soldiers deal with negative affect and recurring or troubling dreams due to experiences while deployed, by working with dream imagery and discovery about waking day issues. Future research should use content analysis to analyze the discovery from the dream for soldiers. This method has been used in past research with female (DeCicco, 2007) as well as male university students and was successful (Dale & DeCicco, 2012). This would provide deeper insight into the relation of dreams to the waking day lives of soldiers with operational experience.

References

Abdi, H (2007). Bonferroni and Šidák corrections for multiple comparisons (http://www.utdallas.edu/~herve/Abdi-Bonferroni2007-pretty.pdf). In N.J. Salkind (ed.). Encyclopedia of Measurement and Statistics.Thousand Oaks, CA: Sage.

Barrett, D., & McNamara, P. (2007). The new science of dreaming. (Vol. 2). Westport: Praeger Publishers.

Clarke, J., DeCicco, T. L., & Navara, G. (2010). An investigation among dreams with sexual imagery, romantic jealousy and relationship satisfaction. International Journal of Dream Research, 3, 45-50.

Dale, A. L., & DeCicco, T. L. (2012). Content and discovery in the dreams of Canadian male university students: A pilot study. Dreaming, 21, 257-276.

DeCicco, T. L. (2007a). Dreams of female university students: content analysis and the relationship to discovery via the Ullman method. Dreaming, 17, 98-112.

DeCicco, T. L. (2007b). What is the storytelling? Examining discovery with The Storytelling Method (TSM) and testing with a control group. Dreaming, 17, 227-237.

DeCicco, T. L. (2008). Pondering the consequences of uninterpreted dreams. Dreamtime. Winter, p.12-13.

DeCicco, T. L. (2009). The giant compass: navigating your life with your dreams. NC: Mailto Press.

DeCicco, T. L., & Higgins, H. (2009). The dreams of recovering alcoholics: Mood, dream content, discovery, and The Storytelling Method of dream interpretation. International Journal of Dream Research, 2, 45-51.

DeCicco, T. L., Lyons, T., Pannier, W., Wright, C., & Clarke, J. (2010). Exploring the dreams of women with breast cancer: Content and meaning of dreams. International Journal of Dream Research, 3, 104-110.

DeCicco, T.L., Zanasi, M., Dale, A., Longo, G., Testoni F., & Murkar, A. (in press). A cultural comparison of dream content, mood and waking day anxiety between Italians and Canadians. International Journal of Dream Research.

Dow, B. M., Kelsoe, J. R., & Gillin, C. J. (1996). Sleep and dreams in Vietnam ptsd and depression. Biological Psychiatry, 39, 42-50.

Elwood, L. S., Hahn, K. S., Olatunnji, B. O., & Williams, N. L. (2009). Cognitive vulnerabilities to the development of pstd: A review of four vulnerabilities and the proposal of an integrative vulnerability model. Clinical Psychology Review, 29, 87-100.

Esposito, K., Benitez, A., Barza, L., & Mellman, T. (1999). Evaluation of dream content in combat-related ptsd. Journal of Traumatic Stress, 12, 681-687.

Forbes, D., Phelps, A. J., & McHugh, A. F. (2001). Treatment of combat-related nightmares using imagery rehearsal: a pilot study. Journal of Traumatic Stress, 14, 433-442.

Forbes, D., Phelps, A. J., McHugh, A. F., Debenham, P., Hopwood, M., & Creamer, M. (2003). Imagery rehearsal in the treatment of post-traumatic nightmares in Australian veterans with chronic combat-related ptsd: 12-month follow-up data. Journal of Traumatic Stress, 16, 509-513.

Grossman, D., & Christensen, L. W. (2007). On combat: The psychology and physiology of deadly conflict in war and peace. USA: PPCT Research Publications.

Hall, C. S., & Van de Castle, R. L. (1966). The content analysis of dreams. New York: Appleton Century Crofts.

King, D. B., & DeCicco, T. L. (2009). Dream relevance and the continuity hypothesis: Believe it or not? Dreaming, 19, 207-217.

King, D. B., DeCicco, T. L., & Humphreys, T. P. (2009). Investigating sexual dream imagery in relation to daytime sexual behaviours and fantasies among Canadian university students. The Canadian Journal of Human Sexuality, 18, 135-146.

Malcom-Smith, S., Solms, M., Turnbull, O., & Tredoux, C. (2008). Threat in dreams: an adaptation? Consciousness and Cognition, 17, 1281-1291.

Miller, R. G. (1981) Simultaneous statistical inference . 2nd ed. Springer Verlag,

Prigerson, H. G., Maciejewski, P., & Rosenheck, R. (2001). Combat trauma: Trauma with highest risk of delayed onset and unresolved posttraumatic stress disorder symptoms, unemployment, and abuse among men. Journal of Nervous and Mental Disease, 189, 99-108.

Revonsuo, A., & Valli, K. (2008). How to test the threat simulation theory. Consciousness and Cognition, 1292-1296.

Schredl, M. & Hofmann, F. (2003). Continuity between waking activities and dream activities. Consciousness and Cognition, 12, 298-308.

Schreuder, B., Kleijn, W., & Rooijmans, H. (2000). Nocturnal re-experiencing more than forty years after war trauma. Journal of Traumatic Stress, 13, 453-463.

Scurfield, R. M. (2002). Commentary about the terrorist acts of September 11, 2001: Posttraumatic reactions and related social and policy issues. Trauma, Violence, and Abuse, 3, 314.

Speckhard, A. (2002). Inoculating resilience to terrorism: acute and posttraumatic stress responses in U.S. military, foreign and civilian serving overseas after September 11th. Traumatology, 8, 103-130.

Van de Castle, R. L. (1994). Our dreaming mind. New York: Ballantine Books.

Zadra, A. (2007). 1093: Sex dreams: What do men and women dream about? Sleep, 30, A376.

Zanasi, M., DeCicco, T.L., Dale, A., Musolino, G., & Wright, C. (2012-2013). Dreams with sexual imagery: Gender Differences between Italians and Canadians. Imagination Cognition, and Personality, 32 (2), 68-75.