

## Original Paper

# Aggression in Skydivers: An Examination of Gender and Experience

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### Abstract

*The present study examined gender and aggression in novice and experienced skydivers. One hundred recreational skydivers were recruited from a skydiving club in the Northeastern United States that currently held a USPA “B License,” which requires at least 50 jumps to obtain. Skydiving experience was operationally defined as having completed 350 or more jumps. Participants completed an aggression inventory and a demographic questionnaire. Both experienced and novice female skydivers reported higher physical and total aggression scores compared to novice and experienced male skydivers. Experienced female skydivers reported higher anger scores compared to the other three groups. No significant differences were found on measures of verbal aggression or hostility. The total number of jumps and participant age were unrelated to any measure of aggression.*

### Keywords

*aggression, skydiving, gender*

## 1. Introduction

Despite the known dangers, high-risk activities such as parachuting (Malkin & Rabinowitz, 1998) continue to be popular. The United States Parachute Association (USPA) has over 42,000 members, 37% of whom have completed between 1,001 and 10,000 or more jumps, making roughly 4 million jumps per year (USPA, 2023). Sensation seeking in high-risk sports such as skydiving has received a fair amount of attention in the empirical literature (Gomez & Rao, 2016; Zuckerman, 1994, 2007). Skydivers, especially novice and intermediate skydivers, frequently describe themselves as “adrenaline junkies” (Celsi et al., 1993, p. 16).

Research involving skydivers has investigated the causes of skydiving injuries and fatalities (Dawson et al., 1998; Ellitsgaard, 1987; Ellitsgaard et al., 1989; Fer et al., 2021; Gomez & Rao, 2016; Hart & Griffith, 2004; Lee et al., 1999), personality factors (Allen et al., 2013; Boldak & Guskowska, 2013; Cazenave et al., 2007; Machado et al., 2021; Watson & Pulford, 2004) and physiological measures (Allison et al., 2012; Breivik et al., 1998; Celsi et al., 1993; Hare et al., 2013; Zuckerman, 1994, 2007). However, other factors, such as aggressiveness, have been studied in different populations (Allen et al., 2013; Dane & Sekertekin, 2005; Massimo et al., 2019) but not investigated in skydivers.

The present study explored the relationship between gender, experience, and aggression in skydivers. It was hypothesized that experienced skydivers (measured as having 350 jumps or more) would report higher levels of aggression compared to novice skydivers and controls.

## 2. Method

### 2.1 Participants

A total of 100 participants participated in this study (see Table 1 for participant demographics). Participants were recruited from a skydiving club in the Northeastern United States that currently held a USPA “B License”, which requires at least 50 jumps to obtain (see Table 2 for total number of jumps by group). Skydiving experience was operationally defined as having completed 350 or more jumps. Participants consisted of 36 females and 64 males with a mean age of 33.43 ( $SD = 7.3$ ). All participants were treated in accordance with the *Ethical Principles of Psychologists and Code of Conduct* (American Psychological Association, 2017) and in accordance with Institutional Review Board (IRB) guidelines.

**Table 1. Participant Demographics (N = 100)**

Gender	n
Female	36
Male	64
Age in years	
Range	20-68
20-25 years	9
26-30 years	33
31-35 years	21
36-40 years	14
41-45 years	7
46-50 years	5
51-55 years	4
56-60 years	3

61-68 years	4
Mean age ( <i>SD</i> )	34.98 (10.44)
Race	
White/European	79
Black/African	8
Hispanic	8
Asian	3
Native American	2
Marital Status	
Single	45
Married	25
Living together	5
Divorced/separated	4

## 2.2 Materials

Participants received a packet containing an informed consent form, a demographic survey that included items such as the number of jumps, and the Buss-Perry Aggression Questionnaire (AG; Buss & Perry, 1992). The AG is a 29-item self-report inventory rated on a 5-point Likert-type scale with response categories ranging from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). The AG is divided into four subscales: (1) Physical Aggression (nine items; e.g., “Once in a while I can’t control the urge to strike another person”); (2) Verbal Aggression (five items; e.g., “I tell my friends openly when I don’t agree with them”); (3) Anger (seven items; e.g., “I have trouble controlling my temper”); and (4) Hostility (eight items; e.g., “At times I feel I have gotten a raw deal out of life”). Higher scores on each factor represent higher levels of aggression. The AG has acceptable levels of validity and reliability (Anderson & Bushman, 2002; Buss & Perry, 1992).

**Table 2. Total Number of Jumps by Group**

Group	n	<i>M</i>	<i>SD</i>	Range
FN	23	158.52	61.51	68-267
FE	13	982.00	1035.94	400-3,600
MN	24	163.58	90.92	50-332
ME	40	2871.80	2999.96	296-10,000
Total	100	1352.10	2302.77	50-10,000

Note. FN = Female Novice; FE = Female Experienced; MN = Male Novice; ME = Male Experienced.

### 3. Results

A 2 (participant gender: female, male) x 2 (skydiving experience: novice, experienced) between-groups factorial ANOVA was calculated on total aggression scores (see Table 3). The main effect for participant gender was significant,  $F(1,96) = 6.95$ ,  $p = .01$ ,  $\eta^2 = .07$ . Female skydivers reported higher total aggression scores ( $M = 150.28$ ,  $SD = 24.48$ ) than male skydivers ( $M = 139.03$ ,  $SD = 25.02$ ). The main effect for participant experience was not significant,  $F(1,96) = 3.13$ ,  $p = .083$ . Finally, the interaction was significant,  $F(1,96) = 4.10$ ,  $p = .043$ ,  $\eta^2 = .04$ . Experienced female skydivers reported higher total aggression scores ( $M = 163.0$ ,  $SD = 17.44$ ) than experienced male skydivers ( $M = 138.53$ ,  $SD = 25.02$ ), and novice male skydivers ( $M = 139.81$ ,  $SD = 25.14$ ), but not novice female skydivers ( $M = 143.09$ ,  $SD = 25.25$ ).

A 2 (participant gender: female, male) x 2 (skydiving experience: novice, experienced) between-groups factorial ANOVA was calculated on physical aggression scores. The main effect for participant gender was significant,  $F(1,96) = 9.04$ ,  $p = .003$ ,  $\eta^2 = .086$ . Female skydivers reported higher physical aggression scores ( $M = 46.61$ ,  $SD = 10.0$ ) than male skydivers ( $M = 40.97$ ,  $SD = 10.47$ ). The main effect for participant experience was not significant,  $F(1,96) = 2.88$ ,  $p = .092$ . Finally, the interaction was not significant,  $F(1,96) = .93$ ,  $p = .341$ .

A 2 (participant gender: female, male) x 2 (skydiving experience: novice, experienced) between-groups factorial ANOVA was calculated on verbal aggression scores. The main effect for participant gender was not significant,  $F(1,96) = 3.32$ ,  $p = .077$ . The main effect for participant experience was not significant,  $F(1,96) = .33$ ,  $p = .568$ . Finally, the interaction was not significant,  $F(1,96) = 3.06$ ,  $p = .084$ .

A 2 (participant gender: female, male) x 2 (skydiving experience: novice, experienced) between-groups factorial ANOVA was calculated on anger scores. The main effect for participant gender was not significant,  $F(1,96) = .496$ ,  $p = .482$ . The main effect for participant experience was not significant,  $F(1,96) = 2.49$ ,  $p = .113$ . However, the interaction was significant,  $F(1,96) = 5.36$ ,  $p = .020$ ,  $\eta^2 = .05$ . Experienced female skydivers reported higher anger scores ( $M = 40.46$ ,  $SD = 4.81$ ) than experienced male skydivers ( $M = 35.55$ ,  $SD = 7.86$ ), novice male skydivers ( $M = 36.75$ ,  $SD = 7.61$ ), and novice female skydivers ( $M = 34.13$ ,  $SD = 8.02$ ).

**Table 3. Aggression Scale Scores among Skydivers and Controls**

	AGG-P	AGG-V	AGG-A	AGG-H	AGG-T
Female					
Experienced	50.38**	24.08	40.46*	48.08	163.0**
Novice	44.48	21.17	34.13	43.30	143.09
Overall	46.61*	22.22	36.42	45.03	150.28*
Male					

Experienced	41.58	19.63	35.55	41.78	138.53
Novice	39.96	21.08	36.75	42.08	139.81
Overall	40.97	20.17	36.00	41.89	139.03

Note. AGG-P = Physical Aggression; AGG-V = Verbal Aggression; AGG-A = Anger; AGG-H = Hostility; AGG-T = Aggression Total.

\* $p < .05$ . \*\* $p < .01$ .

A 2 (participant gender: female, male) x 2 (skydiving experience: novice, experienced) between-groups factorial ANOVA was calculated on hostility scores. The main effect for participant gender was not significant,  $F(1,96) = 3.79$ ,  $p = .054$ . The main effect for participant experience was not significant,  $F(1,96) = 1.34$ ,  $p = .255$ . Finally, the interaction was not significant,  $F(1,96) = 1.73$ ,  $p = .197$ .

The total number of jumps and participant age were unrelated to any measure of aggression.

#### 4. Discussion

The results of the present study suggest that experienced female skydivers report higher levels of physical aggression and total aggression, which is contrary to previous research on aggression in general (Allison et al., 2012; Dane & Sekerton, 2005). While overall skydiving experience showed no correlation with levels of aggression, experienced female skydivers were more aggressive than their experienced and novice male counterparts but not female novices. How this relates to experienced female skydivers reporting higher anger scores than experienced and novice male skydivers and novice females is currently unknown.

The present study's findings should be interpreted with caution since there is virtually no previous research measuring aggression in skydivers. Future investigations should delve deeper into the gender differences and their levels of aggression compared to experience especially in light of the differences with the previous literature.

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