KEEPING UP WITH JEREMY JONES: POSITIONAL PREFERENCES AND RISKY TERRAIN CHOICES

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ABSTRACT: We use results from an online survey distributed in North America (N = 796), to analyze if backcountry riders' level of contentment is affected by others' backcountry activities, i.e., if they are positional, and if positionality for backcountry experiences is associated with increased risk-taking behavior. Our findings suggest that many are positional, and that positional preferences for challenging terrain is correlated with relatively high risk exposure. The positionality effect is present regardless of level of avalanche training, and suggests that current avalanche education does not change ones positionality related to risk taking behavior. Our results provide support for the hypothesis that social comparisons, and perhaps the fear of losing out, affects risk-taking behavior, and that current avalanche education does not change this. It further suggests that avalanche courses should be adapted to deal with the "keeping up with the Joneses" effect by incorporating some comprehension of personality type in the presentation of course material.

KEYWORDS: Decision making, Backcountry, Postionality, Terrain

1. INTRODUCTION

The main aim of this study was to test if positional preferences, related to backcountry skiing, is associated with increased risk-exposure in terms of avalanches. Research in psychology and economics show that self-esteem is closely related to social comparisons and relative social status (Baumeister and Leary, 1995; Loewenstein, 1999; Shrauger and Schoeneman, 1979; Festinger, 1954; Tesser, 1988; Rivis and Sheeran, 2003; White et al., 2009). Economists refer to utility derived from social comparison as *positional preferences*. Social aspirations encourage people to work harder to be more successful. However, because social position is relative, high levels of performance among some individuals raise the level of what is seen as "good enough" for others. As a consequence, positional positioning creates incentives to invest more in order to "keep up with the Joneses", and reduces the wellbeing of those lagging behind (e.g., Veblen, 1889; Duesenberry, 1949; Easterlin, 2001; Luttmer, 2005). In areas of potential high risk, such as travel in avalanche terrain, hoped-for gains in social status has the potential to increased risk exposure, which in avalanche terrain can lead to fatalities.

Research on the link between risk-taking behavior and social aspirations is still relatively scarce, but a few studies in other fields provide suggestive evidence that excessive risk exposure may be related to individuals who strive for social acceptance (e.g., Leary et al., 1994; Aloise-Young et al., 1996; Miller-Johnsson et al., 2003). Concerning risk-taking in avalanche terrain, some findings indicate that the desire to gain social status may play a role. For example, McCammon (2002; 2004) suggested that individuals who met others during the tour missed more warning signs than did individuals who met no-one, as a result of the need to show off. Similarly, Mannberg et al (2018) find that individuals who state that they tend to compare the type of terrain that they ski, with that of others, are over-represented among individuals with avalanche experience. However, to the best of our knowledge, no one has to date directly tested if positional preferences for risky leisure activities increase risk-exposure.

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2. METHODS

2.1 Participants

We collected data during January – April, 2018, using an online survey. AIARE, BCA, 14 American avalanche centers, and Powder Magazine published links to the survey. We also presented at several regional snow and avalanche workshops in the Western USA to solicit participation. Seven hundred and forty seven individuals over 18 years of age agreed to participate and provided complete answers to questions relevant for analysis. Of these, 24 percent were female. Median age was 35 (Mean = 37.4, SD=11.9). Most participants rated their backcountry travel skills as high: 19 percent rated themselves as beginners or intermediate backcountry travelers, 38 percent as strong, and 43 percent considered themselves to be experts or extreme backcountry travelers. The sample was relatively experienced in terms of years of skiing in the backcountry (Median = 6, M = 8.7, SD = 8.3), and average number of days skiing the backcountry per season (Median = 15, M = 21.4, SD = 22.2). Fourteen percent of the sample had no formal avalanche training, 66 percent had training corresponding to AIARE Rec level I or II, and 19 percent had professional avalanche training. 41 percent has experience of an avalanche accident or a close call.

2.2 Measurement instruments

We measured risk-taking behavior in avalanche terrain via hypothetical ski terrain choices. Respondents read about a hypothetical backcountry ski tour, including information about weather, avalanche-, and terrain hazards, and were asked which of two alternative routes down the mountain that s/he would *prefer* to ski, and which would they *accept*, to ski if someone in their group wanted to ski it, and no one else objected (see *figure 1*).

Weather, snow conditions, and the overall avalanche danger level and problem were identical for both runs and was provided in detail. Slope, and terrain features affecting the consequences of a fall or an avalanche varied systematically: The Field represented low angle terrain with low probability of an avalanche occurring and no dangerous terrain features (i.e., simple terrain according to the Avalanche Terrain Exposure scale, ATES), while the Bowl is a steep terrain trap in which avalanching is possible (complex terrain according to ATES). The order of presentation of the two runs was randomized to avoid ordering effects.

In order to to control for differences in perceived risk, we asked respondents to answer the following question: “Keeping the information about terrain and snow conditions in mind: how big do you think the risk for an accident (e.g., due to an avalanche or a fall) would be for you if you skied down this run? The value 1 means that you think that it would be totally safe for you to ski down the run, and the value 6 means that you think that it would be a very high risk for you to ski down the run.” In addition to allowing us to control for perceived risk, this question further made it possible to check if participants ranked the risk of the two runs in accordance to our intended design.

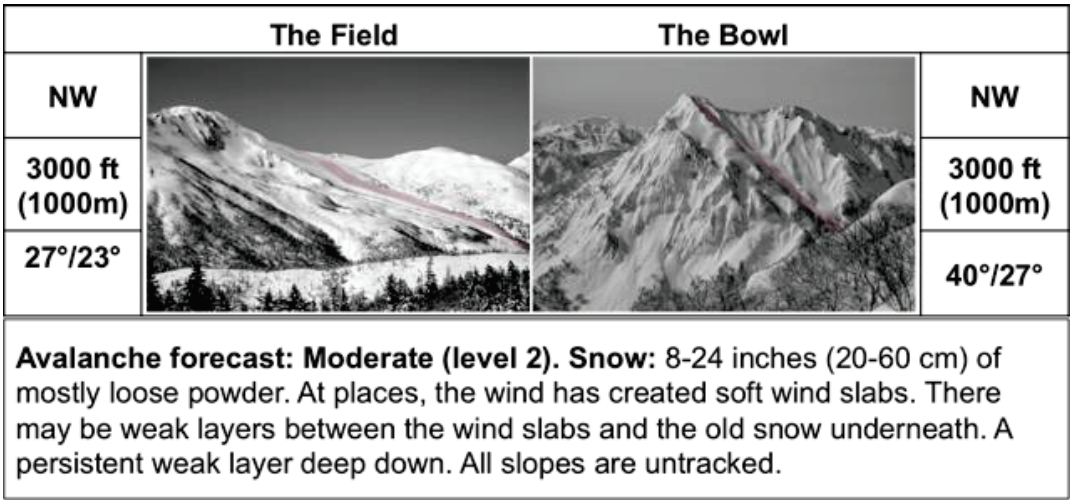

Figure 1: Hypothetical ski runs as presented in the survey.

We measured positional preferences by asking the respondents about how their level of contentment with a hypothetical riding weekend would be affected if they later found out that other riders skied either more or less challenging terrain than they did. An individual is defined as positional if s/he experience a reduction in level of contentment if other riders rode *more* challenging terrain than s/he did ***and*** an increase in level of contentment if other riders rode *less* challenging terrain than s/he did. Both conditions needed to be met before we classified the participant as positional.

We used two measures to control for attitudes to risk: The Stimulating-Instrumental Risk Index (SIRI, Zaleskiewicz, 2001) adjusted to skiing activities (Makarowski, 2013), and a risk attitudes measure developed by Dohmen et al (2011). SIRI aims to capture both preferences related to stimulating-, and more goal-oriented risk-seeking. Our factor analysis of SIRI shows an acceptable fit for items related to stimulating risk-seeking (KMO = 0.74, Chronbach's alpha = 0.75), but not for instrumental risk-seeking (KMO = 0.50, Chronbach's alpha = 0.44). We therefore only use the stimulating risk-seeking factor in the analysis, and include instrumental items as separate variables. The Dohmen risk attitude measure asks the respondents directly how willing they are to take risk during skiing activities (scale 1-10).

We used the student t-test to compare between our respective groups, where we considered $p < 0.05$ as the signifncance level. We also use a logistic regression model approach to model to examin associations between positon preferences, ski terrain, risk measures and demographic parameters.

3. RESULTS

3.1 Positional preferences

Thirty-two percent of the participants state that they would feel more content with their riding weekend if other riders rode less challenging terrain than they did, and less content if others rode more challenging terrain than they did. Individuals who display positional preferences to a higher degree agree that they would receive respect from friends if they ski steep terrain, that they themselves admire people who ski steep, and that they are more likely to talk about and post pictures of steep terrain than more mellow terrain. The means and differences are shown in Table 1.

3.2 Risk-taking behavior

Only 7 percent (N = 54) of the sample state that they *prefer* to ski the relatively risky run, i.e., the Bowl. However, 24 percent (N = 177) state that they would *accept* to ski down this run, if someone else in the group wanted to ski it. Of these, 69 percent perceive that the Bowl is strictly riskier to ski than the Field (the rest perceive the Field to be equally risky as the Bowl).

To test if positional preferences for ski terrain is associated with increased risk exposure, we estimate a logistic regression model on the choice to *accept* to ski the Bowl. We also estimate a model, in which the outcome variable takes the value 1 if the individual accepts to ski terrain that they perceive to be strictly riskier than their most preferred run. Table 3, below, contains estimation results of models with best fit to the data.

Table 1. Positional preferences

	MEAN		MIN/MAX	DIFFERENCE
	Positional	Non-Positional		
Respect from riding steep	4.77	3.65	1/7	1.13**
Admire others who ride steep	5.32	4.32	1/7	1.00**
Talk about steep	0.43	0.09	-6/5	0.34**
Post pics of steep	0.71	0.23	-6/5	0.48**

$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.001$

Table 3: Estimation results, logistic regression

	Accept Bowl	Accept More
Positional preferences	0.554**	0.547*
	(0.207)	(0.216)
Perceived risk	-1.019**	-0.612**
	(0.115)	(0.109)
Dohmen risk	0.228**	0.084
	(0.066)	(0.069)
SIRI SS	0.290+	0.396*
	(0.151)	(0.160)
Risk to reach goal	0.127+	0.047
	(0.068)	(0.071)
Avalanche training		
AIARE REC I or II	-0.466+	-0.274
	(0.280)	(0.289)
AIARE PRO I, II or higher	-1.279**	-1.151**
	(0.369)	(0.411)
Avalanche experience	0.344	-0.052
	(0.211)	(0.225)
University education	-0.690**	-0.336
	(0.247)	(0.260)
Male	-0.465+	-0.604*
	(0.249)	(0.256)
N	745	745
Chi square	183.64	81.31

$^{+}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$

As can be seen in the table, we find that positional preferences for ski terrain are significantly linked to both acceptance to ski the Bowl, and willingness to *accept* more risk.

Our estimation of marginal effects suggest that the probability that an individual accepts to ski the bowl is 15 percent among non-positional individuals, while it is 23 percent among individuals who display positional preferences. The marginal effect of positional preferences is greatest for individuals with no avalanche training, but the effect remains significant for individuals with both basic and professional training.

Our results confirm previous findings that perceived risk, as well as risk attitudes and sensation-seeking preferences are strongly linked to risk-taking behavior (eg., Furman et al., 2010; Marengo et al., 2017). We find weak support for the hypothesis that individuals engage in risky activities for instrumental reasons (i.e., to reach a goal, rather than to experience a thrill).

We find no effect of previous experience of avalanche incidents on willingness to accept risk, but we do find that individuals with formal avalanche training are less likely to *accept* to ski risky terrain. Finally, our results suggest that individuals with university education are less likely to *accept* to ski the Bowl, and that males are less likely to accept to ski terrain that is riskier than their most preferred run.

3. DISCUSSION

Backcountry riding activities are associated with a trade-off between costs, i.e., the effort to get up a mountain, and the risk of an injury from a fall or an avalanche, and benefits from riding good snow, challenging our abilities, and enjoying nature. If all backcountry riders were rational and atomistic, they would choose a level of risk exposure that match their risk preferences, and their preferences for terrain. Positionality for ski terrain implies that individuals' wellbeing is not only affected by their own snow conditions and riding accomplishments, but also by what other riders do. In theory, the negative effect on feelings of contentment from others' accomplishments creates incentives to seek out more challenging terrain. Hence, if many backcountry recreationalists hold positional preferences, and if such preferences affect behavior, we might see that more and more risky terrain gets skied under dangerous conditions. Anecdotally, we see evidence of this in the progression of terrain used by ever increasing numbers. Our analysis is based on hypothetical choices, and is therefore plagued by hypothetical bias. However, our findings suggest that many individuals' level of contentment with their backcountry activities are affected by the riding activities of others, and that this does affect their (hypothetical) terrain choices. Our estimation of marginal effects show that the effect of positional preferences is present for all levels of avalanche training. From the comments on the survey, it appears as if the respondents had not previously thought about these effects, and many expressed that answering the questions made them ask themselves new questions about their choices in the backcountry. Although further analaysis and research is needed to validate our results, we argue that an inclusion of discussions about (perhaps in combination with simple tests of) positionality in avalanche courses may prove fruitful. By including this as part of future avalanche education we may increase the awareness of the role of

positionality in decision making in avalanche terrain, and through this awarenss negate, or reduce the potential negative consequences.

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