

ETHICS OF EXPERIMENTING WITH PEOPLE'S LIVES IN WINTER BACKCOUNTRY

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ABSTRACT: The purpose of the Avaluator Avalanche Accident Prevention Card, designed by Haegeli and McCammon (2006) and published by the Canadian Avalanche Association (CAA), was to reduce the number of avalanche accidents in Canada. Speaking to the ISSW 2006 audience, McCammon (October 3, 2006) announced an experiment on the Avaluator's effectiveness: "This is an experiment. This is an experiment with people's lives, with their loved ones." Subsequently, we (Uttl et al., 2008a,b; 2009a,b,c,d) have shown that (1) the data behind the Avaluator are not available for inspection, (2) Haegeli and McCammon inappropriately excluded 1,148 avalanche records (82% of their sample) due to missing data, (3) the Obvious Clues prevention values in the Avaluator are grossly inflated, and (4) the number of accidents in Canada doubled following the introduction of the Avaluator. The two new disclaimers in the latest printing of the Avaluator (2009) advise that the Avaluator's Obvious Clues Method is not suitable for "any particular purpose" and that the Canadian Avalanche Center (CAC) is not responsible for any "injuries or death" or other damages caused by the Avaluator. Inexplicably, the CAA and CAC continue to claim that the Avaluator is "the best tool" and have not recalled it. We asked over 100 individuals how ethical various actions taken by the developers, CAA, and CAC (e.g., not recalling it) are. The participants rated the actions as nearly extremely unethical and believed that the developers, CAA and CAC should "tell the truth" and recall the Avaluator.

KEYWORDS: Ethics, Avaluator Avalanche Accident Prevention Card, Accident Prevention, Risk reduction tools, Risk, Decision Making

1. INTRODUCTION

The purpose of the Avaluator Avalanche Accident Prevention Card, developed by Haegeli and McCammon (2006) and published by Canadian Avalanche Centre (CAC), was to reduce the number of Avalanche accidents in Canada. However, the method and data behind the Avaluator are held in secrecy (Uttl et al., 2008a,b); the Avaluator has no scientific basis (Uttl et al., 2008a,b; Uttl et al., 2009a,b,c,d; Uttl et al., 2010; Uttl & Kisinger, 2010); several independent studies failed to replicate the findings published in the Avaluator (Uttl et al., 2008b; Uttl et al., 2009c; Floyer, 2008); and the number of accidents has increased rather than decreased following the introduction of the Avaluator on the market (Uttl et al., 2008b; Uttl et al., 2009a).

Inexplicably, CAC is keeping it secret that the Avaluator has no scientific basis and the Avaluator continues to be taught to all students in the

Avalanche Safety Training 1 (AST 1) courses approved by Canadian Avalanche Association (CAA) (e.g., back-country skiers, snowmobilers, hikers).

However, the CAC recently included two new fine print liability disclaimers in the new printing of the Avaluator (2009, 3rd printing) stating that (a) Avaluator Avalanche Prevention Card is suitable for no "particular purpose, use or application" and Drs. Haegeli and McCammon are not responsible for any damages arising from its use and (b) the CAC is not liable for any damages, including any "injury or death, claims by third parties, or for other similar costs, or any special incidental or consequential damages" caused by the use of the Avaluator (see Table 1 for the full text of the two liability disclaimers and Table 2 for the time line of major events in the history of the Avaluator).

The actions of Drs. Haegeli and McCammon, the CAA, and the CAC's raise several ethical issues. First, is it ethical to experiment with human lives without participants' knowledge, without their free and informed consent? On October 3, 2006, Dr. Ian McCammon announced, on behalf of Haegeli et al. (2006) an experiment with human participants evaluating the Avaluator's effectiveness in preventing accidents. He

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understood that the Avaluator was “an experiment with people's lives”:

“... but what's the real point of this? The point of this is to be effective, and one of the things that I was very honored to be included in this project, I was very honored because of it, is because *this is an experiment, this is an experiment with people's lives... with their loves ones, with their friends. And I think we owe it to them, to try to understand how effective this tool really is.* [emphasis added] How do we measure if this thing is effective? How do we monitor it? How do we keep our eyes open? Rather than just creating this thing and putting it out there in the world and then saying, well it's out there, I feel good about that. I want to make sure we can see what the trends are. See if it really is *making a difference, or is it making things worse.* [emphasis added]” (McCammon, 2006, ISSW, Telluride, Co, USA)

However, to our best knowledge, the AST 1 students and individuals who purchased the Avaluator off the shelf in stores such as Mountain Equipment Coop (MEC) have never been informed that they are participants in an experiment, have never been told about the risks (injuries and deaths) and benefits (if any) of participating, and thus, have never given free and informed consent to participate in Haegeli et al. (2006) experiment (cf., ethical guidelines for conducting research with humans, Interagency Panel on Research Ethics, 1998).

Second, having recognized that they were experimenting with people's lives and having overwhelming evidence that the Avaluator is “not making a difference” and if anything “is making things worse”, is it ethical for Drs. Haegeli, McCammon, the CAA, and the CAC not to have stopped this experiment?

Third, is it ethical to market the tool not suitable for any purpose and require that all AST 1 students purchase it and learn how to use it? Should the CAA and CAC have recalled the Avaluator Avalanche Accident Prevention Card as not suitable for “any particular purpose, use or application” and restore AST 1 curriculum to pre November 15, 2006, days?

We examined undergraduate students' perception of various actions of the Avaluator developers (Drs. Haegeli and McCammon), the CAA, and the CAC. Do people consider their actions legitimate or do they consider them

unethical? Students were presented with ethical scenarios describing Drs. Haegeli and McCammon, the CAA, and the CAC actions and subsequently rated how ethical each action was.

Table 1. New Liability Disclaimers in the Third Printing of Avaluator Avalanche Accident Prevention Card (Haegeli & McCammon, 2006; 3rd printing January 2009).

First Liability Disclaimer

“The Obvious Clues Method and related materials, all rights to which are reserved, were developed exclusively by Dr. Ian McCammon and SnowPit Technologies, and are reprinted here under a Royalty-free License Agreement. The Obvious Clues Method is provided “as is” and the developers [Drs. Haegeli and McCammon] make no warranty, representation or guarantee whatsoever, whether express [sic] or implied, regarding the suitability of the Obvious Clues Method or related materials for any particular purpose, use or application [i.e., Haegeli and McCammon make no presentation that Avaluator Avalanche Accident Prevention Card is suitable for avalanche accident prevention]. In no events shall the developers assume any liability for any damages whatsoever arising out of the use or application of the Obvious Clues Method or related materials.”

Second Liability Disclaimer

“USE AT YOUR OWN RISK
The Avaluator is intended for personal and recreational purposes only. It is not intended for operational or commercial purposes. The Avaluator card and other information in this booklet are provided “as is” and in no event shall the Canadian Avalanche Centre be liable for any damages, including without limitation damages resulting from discomfort, injury or death, claims by third parties, or for other similar costs, or any special incidental or consequential damages arising out of the use of this publication.”

2. METHOD

As part of a larger study, 133 undergraduate students were presented with one of two ethical scenarios: (1) Avaluator scenario and (2) Helmet scenario. The Avaluator scenario described the Avaluator history, including key claims and actions of the developers (Drs. Haegeli and McCammon) and the publisher (Canadian Avalanche Association) (see Table 2 for the time-line of major events). The Helmet scenario was

Table 2. Avaluator Experiment: Time Line of Major Events

2003-2006: The Avaluator is developed by Dr. Haegeli (Postdoctoral Fellow, Simon Fraser University, Canada) and Dr. McCammon (Instructor, National Outdoor Leadership School, USA), at a cost of approximately \$500,000 of Canadian taxpayers' money (Search and Rescue New Initiative Fund, Government of Canada) as part of the Avalanche Decision Framework for Amateur Recreationists (ADFAR) project (Haegeli et al., 2006).

2006, October 3: McCammon announces the Avaluator Avalanche Accident Prevention Card – “an experiment with people's lives... with their loved ones” – at ISSW 2006, Telluride, CO, USA. (video recording available from http://www.avalanche-research.com/site/dynamic_library.asp?flv=5/issw07-4a.flv&logID=89)

2006-2007 Winter Season: the Avaluator is introduced on the market and made mandatory part of the Avalanche Safety Training 1 (AST 1) courses approved by the Canadian Avalanche Association (CAA), effective November 15, 2006 (Canadian Avalanche Centre, 2006). The AST students have no idea they are participating in an experiment.

2006, December: Jan Uttl, AST instructor for the University of Calgary Outdoors Centre, notices huge discrepancies between prevention values published by McCammon (2002, 2004) and those in the Avaluator (2006). However, Haegeli and McCammon refuse to explain the discrepancies and they also refuse to clarify their methodology (see Uttl et al., 2008a,b).

2008, March: Uttl et al. (2008a,b) report that the Avaluator's Obvious Clues prevention values are invalid because they are based on non-representative sample of only 252 accidents after Haegeli and McCammon inappropriately deleted 1,148 records due to missing values (Uttl & Kisinger, 2010).

2008, March: The first independent study of the Obvious Clues prevention values by Uttl et al. (2008b) reveals that the prevention values published in the Avaluator are hugely inflated.

2008, April – June: Haegeli and McCammon refuse to provide access to their data for the limited purpose of verifying their claims. They also refuse to clarify their methodology.

2008, May: the Canadian Avalanche Center (CAC), the publisher of the Avaluator, also attempts but fails to obtain access to the data behind the Obvious Clues prevention values from Haegeli and McCammon.

2008, July 14: The CAC commissions Dr. James Floyer to conduct another “independent” study of the Obvious Clues prevention values. Dr. Floyer has just completed his Ph.D under the guidance of Dr. Jamieson (University of Calgary), Dr. Haegeli's close collaborator on the ADFAR project.

2007-2009 Winter Season: The number of avalanche accidents in Canada reaches the highest level ever since 1995 (Uttl et al. 2008a,b).

2008, September 18: Dr. Floyer completes his study and confirms Uttl et al. (2008 a,b) findings that the Avaluator's Obvious Clues are hugely inflated.

2008, September: The CAC Board of Directors decides (1) not to print any more Avaluators and (2) to direct AST providers to tell the students to disregard the Obvious Clues prevention values.

2008, September 25: Responding to Uttl et al.'s (2008 c,d) criticism of the Avaluator's method and inflated prevention values at the ISSW, Whistler, BC, the CAC's Vice President asserts that “the world is better with the Avaluator than without it” but withholds from the audience that the CAC's own study had already confirmed Uttl et al.'s (2008a,b) criticisms and found the prevention values inflated.

2009, January: After discussing the liability issues, the CAC issued the 3rd printing of the Avaluator with two new disclaimers. The disclaimers, in fine print, state that the Avaluator is good for nothing and that the developers and the CAC are not responsible for any “discomfort, injury, or death” due to its use.

2009, April 19: Albi Sole, the AST coordinator for the University of Calgary Outdoors Centre reveals publicly, for the first time, that instructors are to tell their students to disregard the Avaluator's Obvious Clues prevention values (in *Is There a Problem with the Avaluator?*, *Calgary Herald*, April 19, 2009).

2008-2009 Winter Season: The number of avalanche accidents in Canada increases further, breaking the previous year's record (Uttl et al., 2009a).

2009, October 30: Chris Stethem, President of Canadian Avalanche Foundation (CAF) and Past President of the CAA, misuses his position as a session chair and sabotages four academic presentations by Uttl et al. (2009a,b,c,d) on Canadian experience with the Avaluator (ISSW 2009, Davos, Switzerland; see “How to Sabotage an Academic Talk” on www.youtube.com or www.docbob.ca)

Present: The CAA/CAC continue to sell the Avaluator and require its use in the AST courses approved by the CAA. The “experiment with people's lives” continues on.

created from the Avaluator scenario by replacing references to the Avaluator with references to “a new type of motorcycle helmet”, references to the CAA with references to “the public agency”, and references to Drs. Haegeli and McCammon with references to the “developers”. After reading the scenario, participants rated how ethical various actions were on the 10-point scale ranging from 0 = Perfectly OK to 9 = Extremely unethical. Participants were also asked to comment on any ethical issues that came to their mind while reading the scenarios.

3. RESULTS

Table 3 shows participants' mean ratings, standard deviations, and medians for each action, for the two scenarios. Participants' rated all actions as very unethical; median scores for all but a few actions were between 8 and 9 (the “extremely unethical” end of the rating scale). The average ratings across all actions was 7.65 ($SD = 1.26$) and 7.47 ($SD = 1.27$) for the Helmet and Avaluator scenarios, respectively, $t(130) = 0.82$, $p > 0.05$.

Content analysis of open comments revealed that the top three actions participants believed the developers and/or the CAA and CAC should take were: (1) tell the truth and publicize the new developments and findings, (2) stop selling the product, and (3) recall the product.

Table 3. Ethics Perception Ratings (0 = Perfectly OK, 9 = Extremely Unethical).

Action	Helmet		Avaluator	
	<i>M (SD)</i>	<i>Mdn</i>	<i>M (SD)</i>	<i>Mdn</i>
The agency's action as described in the scenario, taken as a whole.	7.37 (1.63)	8.0	6.93 (1.81)	7.0
The agency did not disclose publicly that it could not obtain access to the data behind the risk reduction claims.	7.46 (1.12)	7.0	7.49 (1.10)	7.0
The agency did not disclose publicly that its own commission study found much lower risk reduction.	7.78 (1.46)	8.0	7.55 (1.52)	8.0
The agency did not disclose that the independent researchers found much lower risk reduction.	7.43 (1.71)	8.0	7.39 (1.51)	8.0
The agency continues to sell the product and require its use in training courses.	7.70 (2.03)	9.0	6.91 (2.45)	8.0
The agency continues to profit from the sales of the product.	7.46 (2.18)	9.0	7.13 (2.45)	8.0
The agency did not recall the product and many users do not know that they should “not take the risk reduction values seriously.”	7.87 (1.48)	8.0	7.84 (1.51)	8.5
The developers' refusal to explain the discrepancy between their earlier report and the claims about the product.	7.76 (1.59)	8.0	7.84 (1.36)	8.0
The developers refusal to explain their methodology.	7.76 (1.40)	8.0	7.70 (1.42)	8.0
The developers' refusal to provide access to their data when questions were raised about their product.	7.94 (1.49)	9.0	7.94 (1.43)	8.0
Average over all actions	7.65 (1.26)	8.0	7.47 (1.27)	7.7

Note. Avaluator scenario: $n = 63$, Helmet scenario: $n = 70$.

4. DISCUSSION

Our data reveal that the undergraduate students view Drs. Haegeli and McCammon's specific actions – the failure to provide access to their data, refusal to explain their methodology, refusal to explain the discrepancy between their successive reports – as very unethical.

Similarly, the students believe that the CAA and CAC have acted very unethically when they did not recall the Avaluator, continued to profit from its sales, continued to require it for avalanche safety training courses, did not disclose the independent studies, and did not disclose that they could not obtain access to the data from Drs. Haegeli and McCammon.

The students' top three recommendations for the developers and the agencies were: to tell the truth, stop selling the Avaluator, and recall the Avaluator.

The students' beliefs were not driven by the specific individuals (Drs. Haegeli and McCammon) or agencies (the CAA and CAC) because the ethics ratings were comparable for the Avaluator and Helmet scenarios.

We speculate that neither Drs. Haegeli and McCammon nor the CAA and CAC Boards of Directors would like to be unknowing participants in research where an intervention, be it drugs or decision-making tools, may cause them injuries and deaths, especially when the researchers and manufacturer already know the drug or tool is not suitable for “any particular purpose”.

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