Original Article

Verifying N.E. Miller's approach/avoidance theory during a Kilimanjaro expedition

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Abstract:

We measured approach motivation and avoidance motivation in 22 students as they conquered Kilimanjaro from the Tanzanian side. N.E. Miller's theory holds that when one's goal is distant, the gradient of approach is higher than that of avoidance, and the strength of the tendency to approach is greater than the one to avoid. When climbing the Kilimanjaro summit, the participants' motivation to act was decreasing, but their level of courage grew—that served as an additional incentive to reach the peak.

Key words: ..motivation, avoidance

Introduction

According to Miller's theory (1951), the approach/avoidance conflict arises when a person faces a goal both appealing and unappealing at the same time. This conflict of motivations is accompanied by emotional tension connected with having to choose. N.E. Miller based his theory on the following five assumptions:

- 1) the tendency to approach grows as one gets closer to the goal (he called this phenomenon *the gradient of approach*).
- 2) the tendency to avoid the anxiety stimulus is stronger the closer one gets to the object of anxiety (*the gradient of avoidance*).
- 3) as a person gets closer to the stimulus, the tendency to avoid gains strength more rapidly than the tendency to approach.
- 4) the strengths of the tendencies to approach and avoid depend on the strengths of the underlying drives.
- 5) when these two tendencies coexist (thus creating a conflict), the stronger one prevails.

Any object that inspires both the tendency to approach and the tendency to avoid leads to experiencing a behavioral conflict. The gradients of approach and avoidance are graphically represented by lines (not necessarily straight ones). The theory holds that the line showing avoidance is steeper than the one showing approach.

The theory was verified experimentally by studying the behavior of rats pulling a small cart (Bailey & Miller, 1952; Conger, 1951; Kauffman & Miller, 1949; Murray & Miller, 1952; Miller & Kraeling, 1952).

N.E. Miller's theory is often exemplified by a skier who wants to perform a downhill ski from a slope that is steep and unknown to him. As he approaches the mountain, his motivation to ski down is high. Initially, when the summit is far off, he experiences only slight fear, but it grows as he climbs the mountain or takes a cable car to get to the top. Fear is often most intense when the skier stands on the top of a steep mountain, unsure if he can handle the ski. (Dollard, Miller, 1969, p. 323–336).

Hypotheses:

1. The gradients of approach and avoidance will intersect at the top of Mount Kilimanjaro.
2. As the climbers get nearer their goal (the Kilimanjaro summit), their motivation to avoid should prevail over the motivation to approach.

Method

Participants

We examined 22 male students at the Gdansk University of Physical Education and Sports (aged 19 to 22 years; $M = 24.1$; $SD = 2.47$) as they were climbing Africa's highest mountain, Mount Kilimanjaro (elev. of 5,895 m).

Measure

In this study, we used a survey which probed the participants' motivation to act and motivation to avoid. The participants marked their responses on a ten-centimeter-long vertical scale:

+10 meant *I am full of energy and vigor, ready to act.*

0 meant *I do not feel like doing anything. I feel sluggish and drowsy.*

-10 meant *I do not have the strength to do anything. I am very tired.*

On a similar ten-centimeter-long scale the respondents marked their answers to indicate the following:

+10 meant *I am very brave, I fear nothing.*

0 meant *I do not know if I am brave or fearful.*

-10 meant *I am terrified, overcome by great fear.*

Every participant was instructed to use the first scale to indicate their motivation to climb Mount Kilimanjaro (their drive) and the second scale to mark their motivation to avoid climbing it (their fear). Results

As shown in Figure 1 and Table 1, the participants experienced the lowest level of motivation to act (their drive) when they were heading back home (the measurements were taken at London airport). The highest level of avoidance motivation was reported when the climbers were in the first base camp (elev. of 3,100 m) on February 8. It could have been expected that the level of motivation to climb Mount Kilimanjaro would be increasing (Laing & Crouch, 2013). Instead, its highest level was observed at the beginning of the climb, in the first base camp. In the following days, the motivation was decreasing. When we consider only the period of climbing the top of Kilimanjaro, the motivation level was considerably low in the third base camp (elev. of 3,900 m) on February 10. On February 12, in the base camp no. 5 (elev. of 4,600 m) the motivation level rose again—this measurement was taken six hours before heading for the top. The participants reached the summit on February 13 and no measurements were taken there. However, the climbers filled in the questionnaire on the same day, after an 18-hour-long descent.

Table 1. Kruskal-Wallis analysis of variance performed on the variables

	January 30	February 05	February 08	February 10	February 12	February 13	February 16	February 18	H	p
Motivation to act	199.50	212.50	268.50	193.00	229.00	219.50	152.50	121.50	14.42	*
Motivation to avoid	28.50	30.36	38.36	27.57	32.71	31.36	21.79	17.36	7.89	***

*p≤.05. **p≤.01. ***p≤.001

Fig. 1. Regression lines for gradients of approach and avoidance.

The second parameter we measured was the participants' avoidance motivation, marked on a *fear–courage* continuum. It should be noted that all the obtained results range from 2 to 7. This means that the participants did not experience fear, but rather courage of varying intensity. According to N.E. Miller's theory, we could have expected that the higher the climbers were, the greater their fear would be. This could be true for a number of reasons: the increasingly difficult trekking; trudging through the volcanic dust that slides from under the feet and in which the shoes sink; cold; concerns about one's health condition, breathing problems, stamina, etc. (Mellor et al., 2014). The highest values of avoidance motivation (*fear–courage*) were recorded on February 8, in the first base camp (elev. of 3,100 m). The lowest values were reported at London airport.

Discussion

While climbing Mount Kilimanjaro, the motivation to act was slightly decreasing, and the motivation to avoid was slowly rising. This means that the climbers' fear was subsiding, and the average level of courage was growing. These are the conclusions we drew after analyzing the regression lines for approaching and avoiding shown on the plot above ($y_1=7.77-.043x$; $y_2=-4.65+1.x$). Miller's theory predicts that one's fear should grow in

intensity. Please note that the regression lines refer only to the upward climb. When plotting the lines, we did not include the levels of approaching and avoiding measured after the climbers descended from the peak. The chart shows that the regression lines intersected when the summit was reached.

According to the theory, the motivation to approach should be growing as the climbers were getting nearer to the top. We observed, however, that its regression line was slightly decreasing. One reason for this could be the climbing fatigue.

The motivation-to-avoid scale was a continuum reaching from maximum fear to maximum courage, but the results obtained only describe various levels of courage. The participants' motivation to act was at the same level throughout the expedition, whereas the motivation to avoid not only did not increase, but even fell. We could say that the gradients of approach and avoidance exchanged their places. We created a scale ranging from the maximum level of fear to the maximum level of courage, but this made the participants focus only on the second part of the scale and fear was not reported at all.

The first hypothesis, predicting that the gradients of approach and avoidance will intersect at the top of Mount Kilimanjaro, was confirmed. We did not confirm the second hypothesis, the one predicting that as the climbers get nearer their goal (the Kilimanjaro summit), their motivation to avoid should prevail over the motivation to approach.

Conclusions

When climbing the Kilimanjaro summit, the participants experienced decreasing motivation to act, but their level of courage was growing. The latter factor was an additional incentive to reach the peak.

References

- Bailey, C. J., & Miller, N. E. (1952). Effect of sodium amytal on behavior of cats in an approach – avoidance conflict. *Journal Of Comparative And Physiological Psychology*, 45, 205 – 208
- Conger, J. J., (1951). The effects of alcohol on conflict behavior in the albino rat. *Quart J Stud Alcohol*, 12, 1-29
- Hull C. (1949). Stimulus intensity dynamism (F) and stimulus generalization, *The Psychological Review*, 56 (2)
- Kauffman, E. L., & Miller, N. E. (1949). Effect of Number of Reinforcements on Strength of Approach in an Approach – Avoidance Conflict. *Journal of Comparative And Physiological Psychology*, 42, 65-74
- Laing, J. H., & Crouch, G. I. (2013). Frontier tourism: Retracing mythic journeys. *Annals of Tourism Research*, 38(4), 1516-1534
- Mellor, A. J., Woods, D. R., O'Hara, J., Howley, M., Watchorn, J., & Boos, Ch. (2014). Rating of perceived exertion and acute mountain sickness during a high-altitude trek. *Aviation, Space, and Environmental Medicine*, 85(12), 1214-1216.
- Miller, N. E., (1951). Comments on Theoretical models illustrated by conflict behavior, *Journal of Personality*, 20, 82 – 100
- Murray, E. J., & Miller, N. E. (1952). Displacement steeper gradient of generalization of avoidance than of approach with age of habit controlled. *Journal Of Experimental Psychology*, 43, 222 - 226