

## Sample solution exercise 7: Case Study: Brand recognition / sponsors of the Snowboard World Cup in Innsbruck

### Task #1

**What are the two hit (and miss) rates, what are the two false-alarm (and correct rejection) rates for the brands under consideration?**

- 1) The correct identification of an actual sponsor as a "sponsor" (a "hit"):
  - a. Bogner: 60%
  - b. Interlpen-Hotel: 50%
- 2) The incorrect identification of an actual sponsor as "not a sponsor" (a "miss")
  - a. Bogner: 40% (100%-60%)
  - b. Interlpen-Hotel Tyrol: 50% (100%-50%)
- 3) The correct identification of a foil as "not a sponsor" (a "correct rejection")
  - a. Spyder: 60% (100%-40%)
  - b. STOCK resort: 80% (100%-20%)
- 4) The incorrect identification of a foil as a "sponsor" (a "false alarm")
  - a. Spyder: 40%
  - b. STOCK resort: 20%

## Task #2

**Please calculate the  $d'$  scores and the (guessing-) corrected accuracy of the recognition of the two official sponsors. Comparing the scores between Bogner and Inter Alpen-Hotel Tyrol, what are the implications for the two sponsors?**

- The  $d'$  scores were calculated using the following website:  
<http://memory.psych.mun.ca/models/dprime/>
- In the case of Bogner vs. Spyder you have to use 0.6 (hit rate) and 0.4 (false alarm rate). For Inter Alpen-Hotel vs. STOCK you use 0.5 (hit rate) and 0.2 (false alarm rate).
- For the calculation you always use the decimal number, not the percentage!

*Table 1: Results for the  $d'$  scores and the (guessing-) corrected accuracy*

	<b>Bogner vs. Spyder</b>	<b>Inter Alpen-Hotel Tyrol vs. STOCK</b>
<b><math>d'</math> score</b>	0.507	0.841
<b>Corrected accuracy</b>	$(0.6 - 0.4) / (1 - 0.4)$ = 0.33	$(0.50 - 0.20) / (1 - 0.20)$ = 0.38

### $d'$ score

The  $d'$  score is positive for Inter Alpen-Hotel Tyrol (when compared to the competitor STOCK resort), indicating a higher recognition of the official sponsorship of the Inter Alpen-Hotel Tyrol. As regards the clothing brands, the  $d'$  score is also positive, but lower when compared to the hotel brands, the latter meaning that the competitor, Spyder, received higher recognition as opposed to the official sponsor in the clothing category (vs. the hotel category). Taking into account the discriminance in awareness between the sponsor and the main competitor, Inter Alpen-Hotel Tyrol was better recognized (as opposed to the competitor) than Bogner (as opposed to the competitor).

(We note that looking at just the hit rates without considering false alarm rates would have misled practitioners, because Bogner had a higher hit rate than Inter Alpen-Hotel Tyrol. Taking false alarms into account – and they are higher for Bogner (twice as high) than for the Inter Alpen-Hotel Tyrol) – gives a better picture of the real world.)

(We also note that  $d'$  scores and corrected accuracies can be calculated on an individual basis (per participant if one participant has responded to multiple brands). Then, the average sample scores can be computed based on individual scores.)

### **Corrected accuracy**

Again, due to large differences in false alarm rates, Inter Alpen-Hotel vs. STOCK (0.38) performs better as regards corrected accuracy when compared to Bogner vs. Spyder (0.33). This is opposite to hit rate percentages only.

### **Conclusion**

Based on these results ( $d'$  score and corrected accuracy) one can conclude, that the Inter Alpen-Hotel profited more from the sponsorship compared to Bogner as regards awareness of the brand (as opposed to competitors). The false alarms were higher for Bogner, because attendees assumed that Spyder was a sponsor, even though it was not a sponsor. The Inter Alpen-Hotel Tyrol (vs. STOCK) profited more, because attendees did not recognize the direct link between the competitor STOCK resort and the Snowboard World Cup (when compared to the winter sports clothing category). As an implication, the sponsors should analyse the market and potential strong competitors before sponsoring an event, because, in this example, attendees recognized Spyder as an official sponsor, although it was not even present at the event.