Objective: The current set of analyses involved validating the Ocean Literacy Index through the use of Rasch modeling.

Data: Responses were collected from an interstate sample of 232 participants through an online link. Four sections measured four theoretically distinct constructs: ocean science knowledge, ocean ecology-related behaviors, ocean-related attitudes, and exposure to ocean concepts (as a moderating variable).

Methods: The Rasch model was used to generate a unidimensional measure of each construct: knowledge, behaviors, attitudes, and exposure. Each section was initially examined for overall Rasch model fit, reliability, and differential item functioning (DIF) were examined using ConQuest. Inter-dimensional correlations were also examined.

RESULTS (CONT.)

In comparison, only a single item was removed from the attitudes item set, and none were removed from the behaviors and exposure sections using the same conventions. The resulting scales showed no evidence of substantial violations to the Rasch assumptions (see Table 1).

There was no evidence of step disordering for scales using polytomous items (i.e., behaviors, attitudes, and exposure) (see Figure 2). Item/person correspondence was satisfactory for all constructs except for attitudes, where the participants, as a whole, showed high proficiency. Thus, the current item set was not difficult enough for most of the participants. Item/person correspondence for the knowledge scale could also be improved with some more difficult items.

Person-separation reliability was good for the attitudes and behaviors sections (>0.75) (see Table 1). Reliability was acceptable but lower for the knowledge and exposure sections (>0.65).

The correlation between the attitudes and behavior dimensions was relatively strong (>0.65) (see Table 2; lower half). Correlations between knowledge and both attitudes and behavior sections were much lower (<0.35).

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- In conclusion, the Rasch model was used to generate a unidimensional measure of each construct: knowledge, behaviors, attitudes, and exposure. Each section was initially examined for overall Rasch model fit, reliability, and differential item functioning (DIF) were examined using ConQuest. Inter-dimensional correlations were also examined.

REFERENCES


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Figure 1: Current Model

Figure 2: Wright Maps for Constructs

Figure 3: Theory of Reasoned Action

Table 1: Fit and Reliability Statistics