

Quantitative and Qualitative Indicators of Student Interest in STEM Careers

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Introduction



Identify if there was an interrelationship



Qualitative responses



Quantitative responses



Career aspirations



Participant level of interest and insightful responses

Participants

Middle school students

Involved in a workshop

Answered survey questions about space science and career choices

NASA grant sponsored

Authors seek to inspire students to select a STEM career

Research Methodology

Research Question

- To what extent is there a connection between middle schoolers' interest in space sciences and their career choices in the STEM field?

Research Study

- Eighth graders (n=41)
- Creekside Intermediate School
- Space Science Workshop
- Survey regarding their understanding and attitudes/perceptions of space science

Inter-Rater Reliability



Three researchers independently scored the open-ended item considering 1 = relevant; 0 = irrelevant.



A second round of rating considered, among the answers determined relevant, a rating of: 1 = insightful; 0 = not insightful.



A third round of rating was considered for participant responses in careers in STEM, a rating of: 1 = STEM, 0 = not STEM).

Coding System

Table 1

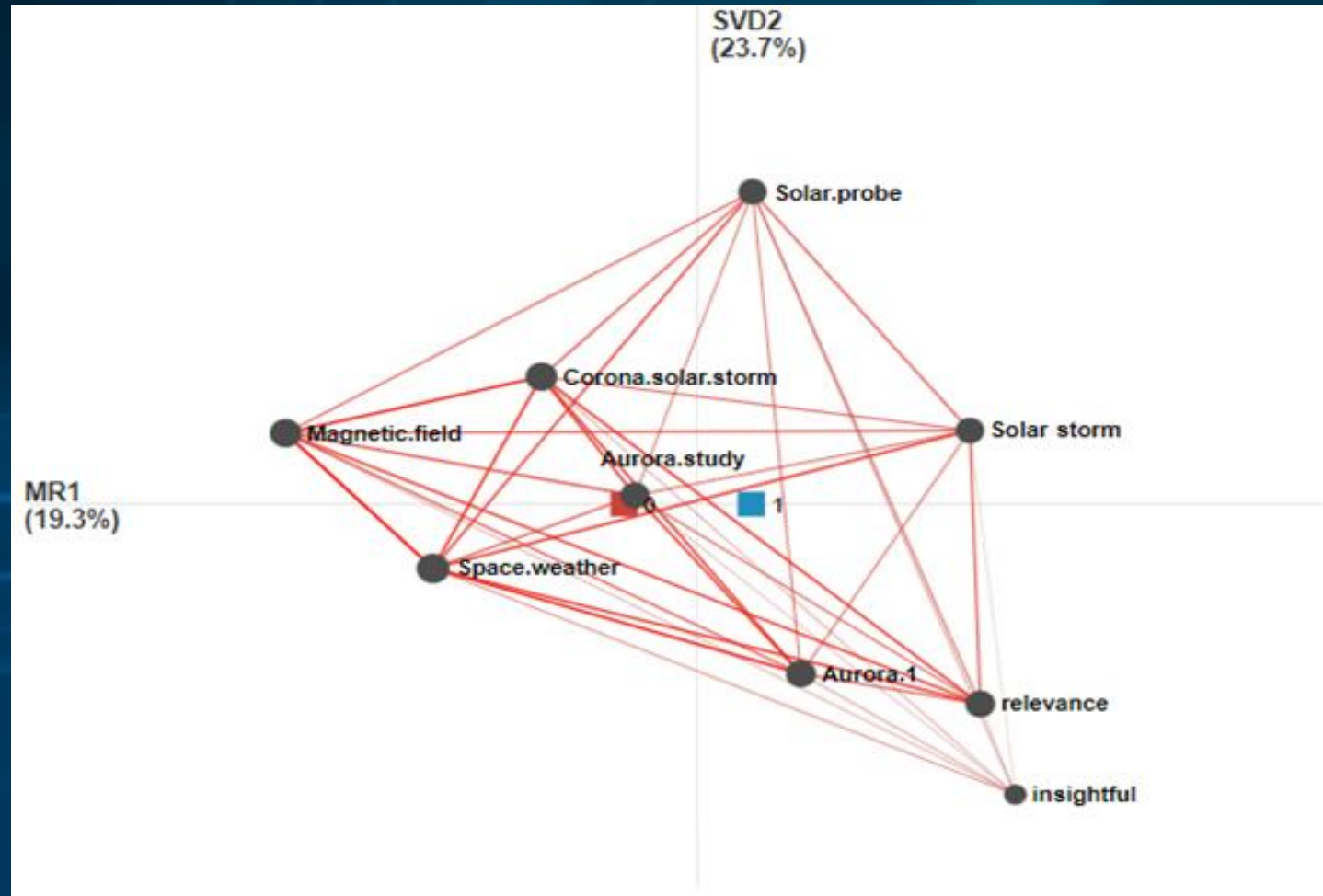
Coding System For Open Ended and Multiple Choice Questions.

Question	Coded
Why are solar wind and space weather something we should think about on Earth?	1 = Relevant (e.g. <i>"So that we can protect Astronauts; "It can help us survive"</i>) 0 = Not Relevant (e.g. <i>"The movement or shiftment"; "idk"</i>)
Why are solar wind and space weather something we should think about on Earth?	(Second round, among the Relevant answers) 1 = Insightful (e.g. <i>"They can affect many important aspects of our lives such as electronics. They can also create cool auroras."</i>) 0 = Not insightful (e.g. <i>"It could kill us"; "Storms"</i>)
I plan to have a career in: <ul style="list-style-type: none">• Science• Technology• Engineering• Mathematics• Other	1 = STEM (e.g. <i>"Science"; "Technology"; "Engineering"; "Mathematics"; "Other: Aeronautics"; "Other: Medical Field"</i>) 0 = Not STEM (e.g. <i>"Other: Sports"; "Other: Marketing"; "Other: Hospitality as a cruise director"</i>)

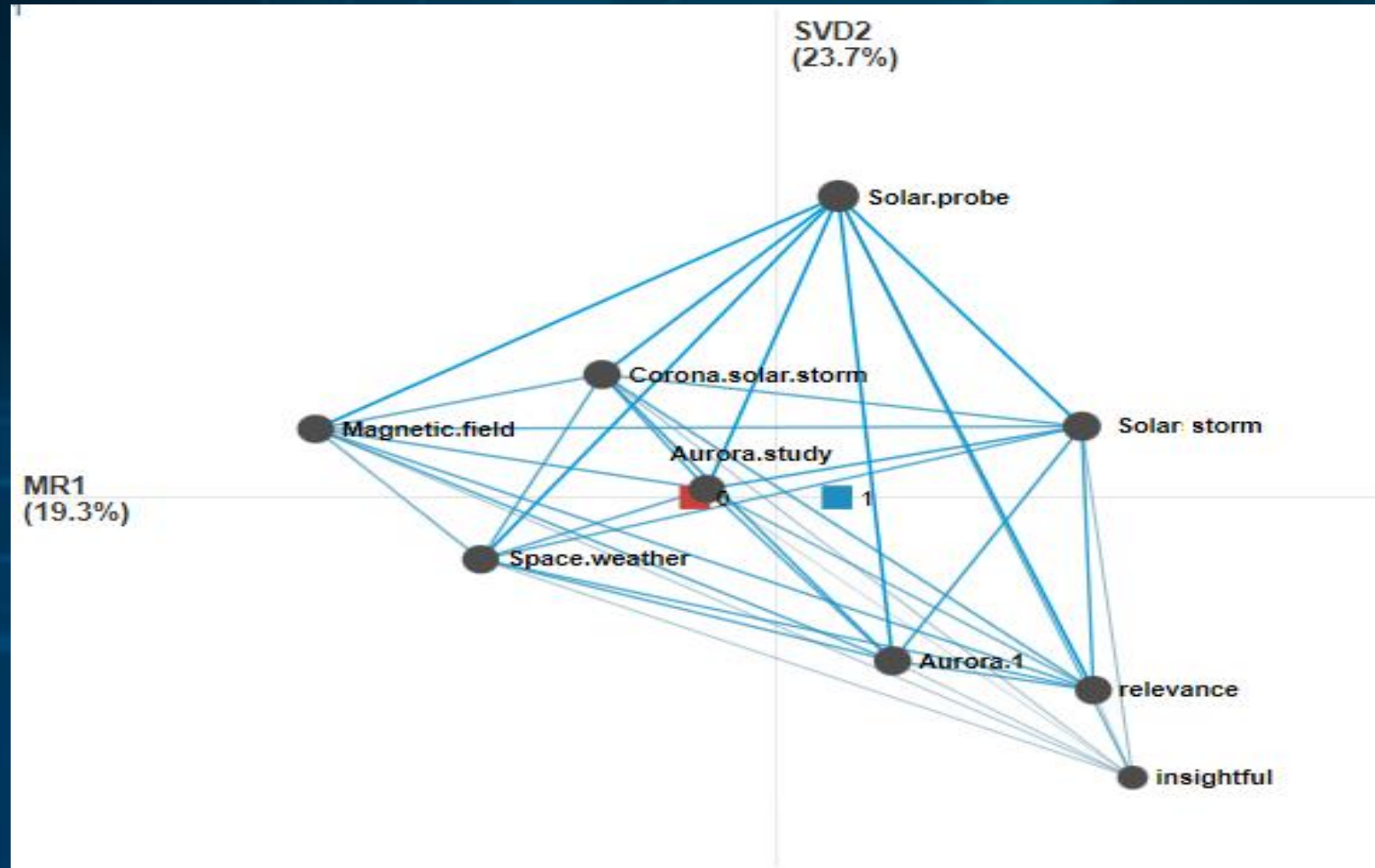
Epistemic Network Analysis (ENA)

- **Quantitative ethnography**
- **ENA Assumes:**
 - It is possible to systematically identify a set of meaningful features in the data (items/factors)
 - An important feature of the data is the way that items/factors are connected to one another within conversations (Shaffer, 2017).

STEM Careers



Not STEM Careers



Findings

Significant relationship between middle schoolers' interest in space science (as investigated through the multiple-choice and open-ended items), and their possible choice of career.

Implications



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References

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