

# Curious about Curiosity: Preliminary validity evidence for a 5-factor curiosity scale in medical students

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## Introduction

- Curiosity is essential to the work of physicians, making it important to promote in medical students<sup>1,2</sup>
- Existing literature describes stagnation of curiosity over the course of medical school<sup>3</sup>
- Curiosity is likely not a singular trait, but rather multifactorial<sup>4,5</sup>

### Objective

Gather preliminary validity evidence for Kashdan's five-dimensional curiosity scale in medical students and determine whether curiosity changes for medical students during their 4 years

## Kashdan's Five-Dimensional Curiosity Scale (2018)



### Joyous Exploration (JE)

- I view challenging situations as an opportunity to grow and learn.
- I am always looking for experiences that challenge how I think about myself and the world.
- I seek out situations where it is likely that I will have to think in depth.
- I enjoy learning about subjects that are unfamiliar to me.
- I find it fascinating to learn new information.



### Deprivation Sensitivity (DS)

- Thinking about solutions to difficult conceptual problems can keep me awake at night.
- I can spend hours on a single problem because I just can't rest without knowing the answer.
- I feel frustrated if I can't figure out the solution to a problem, so I work even harder to solve it.
- I work relentlessly at problems that I feel must be solved.
- It frustrates me not having all the information I need.



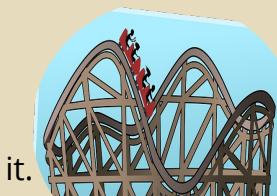
### Stress Tolerance (ST)

- The smallest doubt can stop me from seeking out new experiences.
- I cannot handle the stress that comes from entering uncertain situations.
- I find it hard to explore new places when I lack confidence in my abilities.
- I cannot function well if I am unsure whether a new experience is safe.
- It is difficult to concentrate when there is a possibility that I will be taken by surprise.



### Social Curiosity (SC)

- I like to learn about the habits of others.
- I like finding out why people behave the way they do.
- When other people are having a conversation, I like to find out what it's about.
- When around other people, I like listening to their conversations.
- When people quarrel, I like to know what's going on.



### Thrill Seeking (TS)

- The anxiety of doing something new makes me feel excited and alive.
- Risk-taking is exciting to me.
- When I have free time, I want to do things that are a little scary.
- Creating an adventure as I go is much more appealing than a planned adventure.
- I prefer friends who are excitingly unpredictable.

## Results

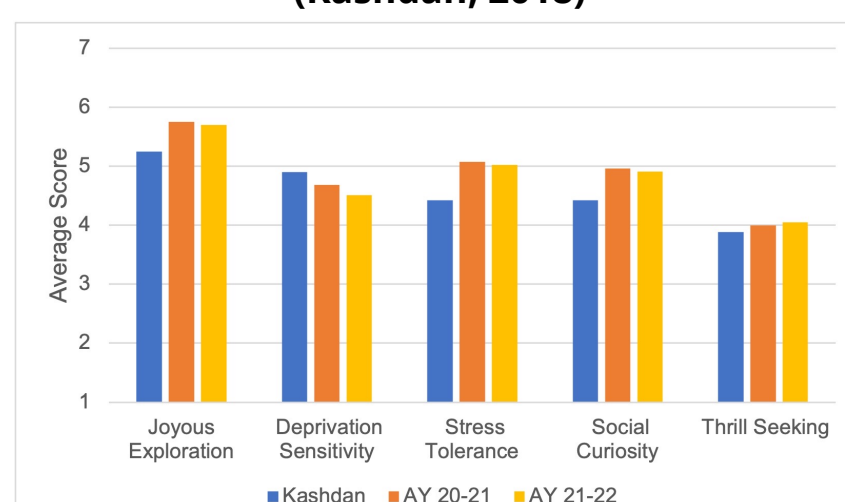
### Confirmatory Factor Analysis Results

- For both academic years, the five-factor model fit better than a one-factor model

### 5-Factor Exploratory Analysis Pattern Matrix

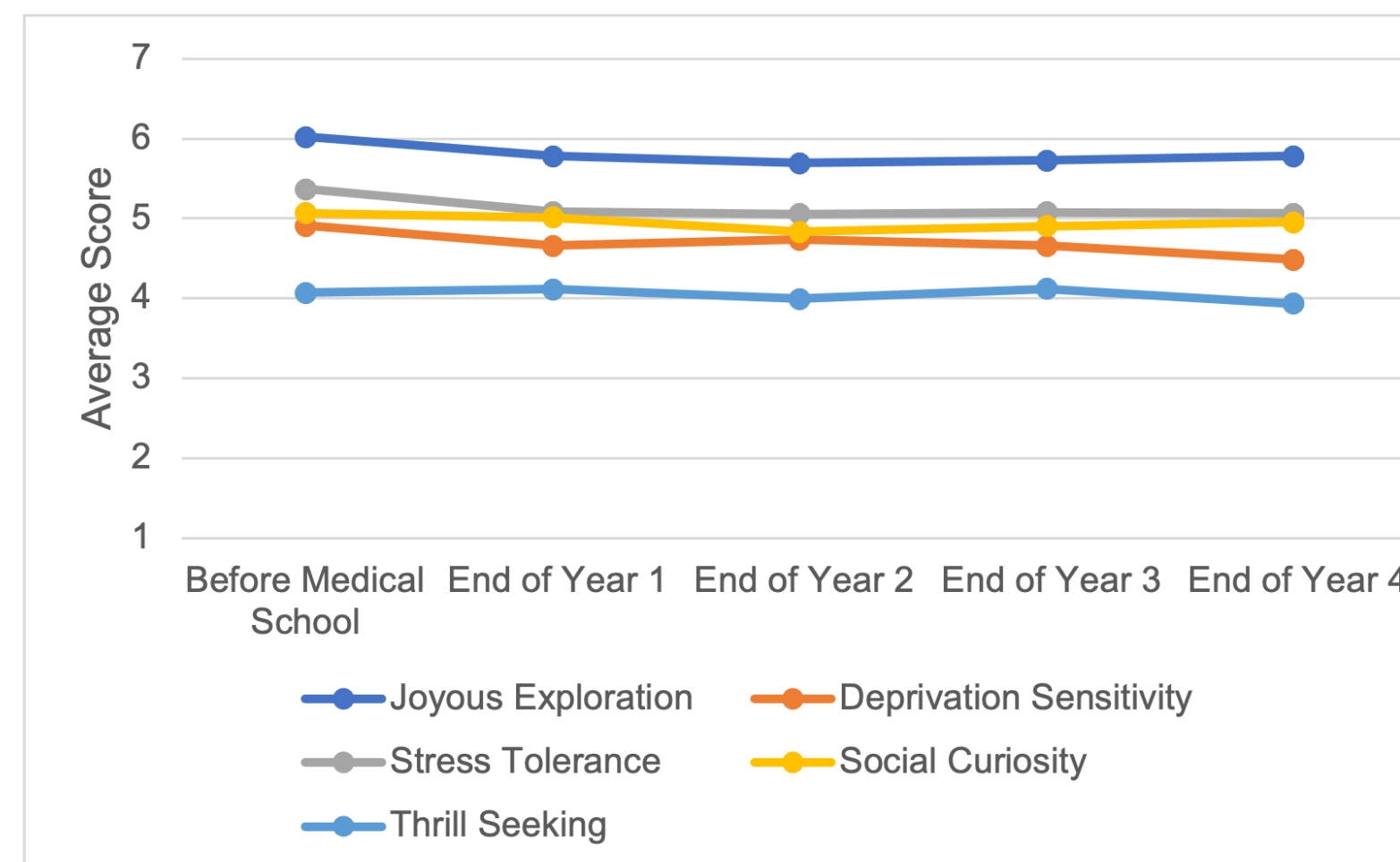
	Factor 1		Factor 2		Factor 3		Factor 4		Factor 5	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
JE1	0.70	0.77	0.05	0.00	0.08	0.05	-0.01	-0.05	0.07	-0.01
JE2	0.86	0.78	0.10	0.11	-0.08	-0.03	0.00	-0.09	-0.07	0.02
JE3	0.81	0.74	0.04	0.02	0.00	0.04	-0.02	-0.01	0.04	0.12
JE4	0.75	0.69	0.04	0.01	0.03	0.05	-0.02	-0.04	0.05	0.15
JE5	0.78	0.70	-0.09	-0.14	0.02	0.06	0.00	0.06	0.03	0.11
DS1	0.20	0.16	0.12	0.05	-0.05	-0.09	-0.04	-0.06	0.41	0.53
DS2	0.13	0.05	0.04	0.05	-0.08	-0.04	0.00	-0.02	0.60	0.72
DS3	0.00	0.01	-0.02	-0.02	0.03	0.05	-0.02	0.04	0.84	0.81
DS4	0.05	0.09	-0.04	-0.02	0.06	0.03	-0.01	-0.02	0.86	0.78
DS5	-0.15	-0.08	-0.04	-0.09	-0.19	-0.20	0.11	0.21	0.47	0.46
ST1	0.11	0.13	-0.08	-0.05	0.71	0.70	0.04	0.02	-0.06	-0.17
ST2	0.13	0.13	-0.09	-0.05	0.74	0.72	0.06	0.04	-0.01	-0.11
ST3	-0.03	-0.03	0.03	0.07	0.82	0.82	0.01	0.04	-0.02	0.09
ST4	-0.12	-0.02	0.12	0.08	0.78	0.76	-0.04	-0.03	0.07	0.03
ST5	-0.03	-0.08	0.06	-0.05	0.60	0.68	-0.10	-0.01	-0.03	0.03
SC1	0.31	0.49	-0.05	0.01	-0.03	-0.14	0.51	0.41	-0.02	-0.14
SC2	0.52	0.49	-0.10	0.01	0.06	-0.11	0.55	0.41	-0.01	-0.17
SC3	-0.06	-0.03	0.06	0.00	-0.01	0.07	0.85	0.91	0.00	0.03
SC4	-0.05	-0.04	0.03	0.00	-0.03	0.07	0.82	0.84	-0.04	0.04
SC5	-0.19	-0.04	0.05	0.05	0.00	-0.01	0.72	0.80	0.06	0.05
TS1	0.20	0.14	0.55	0.59	0.03	0.02	0.09	0.08	0.01	-0.04
TS2	0.00	0.05	0.84	0.82	0.06	0.05	0.03	0.02	0.04	-0.01
TS3	-0.05	-0.04	0.85	0.83	0.00	0.01	-0.05	-0.02	0.02	-0.03
TS4	0.07	0.02	0.75	0.78	-0.03	-0.04	-0.02	-0.02	-0.05	-0.03
TS5	-0.02	-0.11	0.75	0.78	-0.02	-0.03	0.02	0.02	-0.02	0.02

### Medical Student Curiosity vs. National Population (Kashdan, 2018)



All differences between medical students and national population are significant p<0.01

### Averages of Five Dimensions Across Medical School



### Cognitive Interview Results

- Questions from JE, DS, and ST aligned well with medical student experiences and made sense to students when reading them
- High scores for JE and ST and a low score for DS were seen as a strength for professional identity formation
- While SC was seen as an important attribute for medical students, SC3 and 4 were seen as intrusive and unrelated to the field
- All TS items were identified as irrelevant to the medical school experience and more representative of personality

## Methods

### Cross-sectional Survey

- Kashdan's five-dimensional curiosity scale contains 25 questions on a 7-point Likert scale with 1 being "Strongly Disagree" and 7 being "Strongly Agree"
- Administered to all students at the University of Colorado, School of Medicine in years 2020-21 (N=676) and 2021-22 (N = 648)

### Analysis

- Evaluated the scale's structure and properties with confirmatory and exploratory factor analysis
- Domain averages compared across the different years of medical school
- Conducted cognitive interviews with students (N = 6) to understand students' interpretation of questions

## Discussion

- Curiosity is a multi-factorial trait, not unidimensional as previously described
- Professional identity formation in medical school may be reflected by JE, ST, and DS
- Medical students are more curious than the national average
- Curiosity is stable over the course of medical school and higher than the national comparison

## Implications

The study provides preliminary evidence for a scale that can be used to determine the impact of curricular changes on medical student curiosity.

### Next Steps

- Follow a single cohort over time
- Determine whether high levels of curiosity correlate with other markers of academic success in medical school
- Further investigate the Social Curiosity domain and appropriateness of the items for medicine is warranted
- Examine the validity evidence for new items in this domain

### References

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