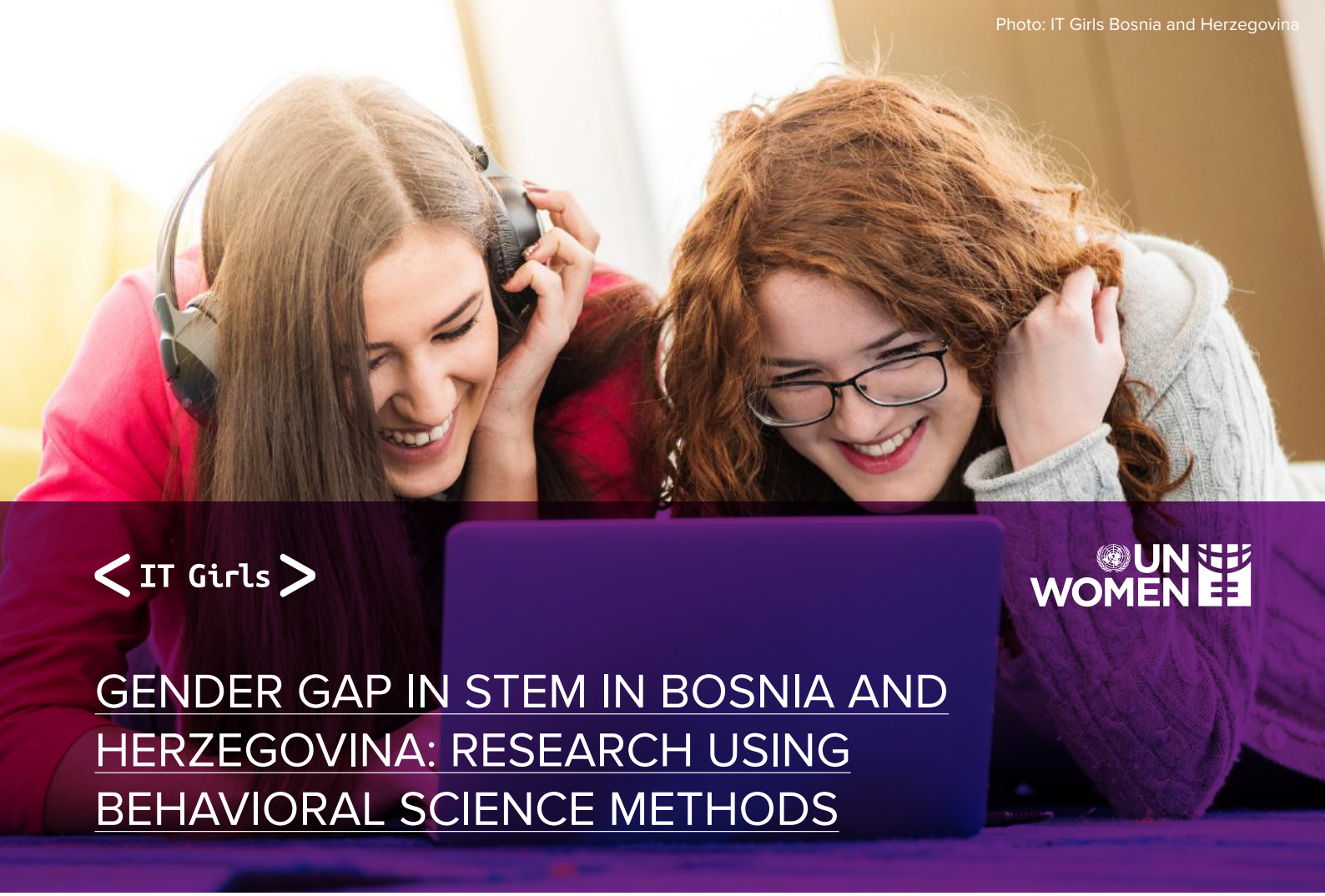
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UN WOMEN

GENDER GAP IN STEM IN BOSNIA AND HERZEGOVINA: RESEARCH USING BEHAVIORAL SCIENCE METHODS

Introduction

- Referring to the available statistics indicating that there are **gender differences in the involvement in STEM fields** (Science, Technology, Engineering and Mathematics), a study was conducted with the overall aim to examine male and female students' interest in STEM fields.
- At the same time, the research examined at what age the gender differences emerge in education and career preferences. A sample of teaching staff was surveyed to examine gender stereotypes and teachers' roles in defining the students' educational and career goals.
- The research focused largely on students' perceptions of self-efficacy in STEM and non-STEM related courses. Self-efficacy is defined as a person's belief about their own abilities required to achieve specific goals. Some sources of self-efficacy include **personal experience** (prior experiences with the performance of various tasks), **vicarious experience** (learning by observing others, e.g. parents, teachers), and **verbal persuasion** (judgements, feedback and support we get from others).
- Also, the research includes examining attitudes about the STEM area, self-concept in the STEM area, belongingness to certain career areas, stereotypes and sensitivity to the stereotypes threat, evaluation and expectations of success in different career areas, perception of intelligence as a changing or unchanging attribute, and family and career orientation.

Research problems

1. Examining gender differences in the STEM area
2. Examining the factors that influence career choice
3. Identifying the barriers that women face in an area traditionally dominated by men
4. Examining gender stereotypes in a sample of teachers

Research methodology

1. Secondary data collection and desk research on barriers for girls and women in STEM
2. Primary data collection on factors that potentially affect the under-representation of women in the STEM field, beliefs and self-efficacy among students.
3. A total of 974 students from BiH at primary, secondary school and university level took part in the research through rigorous sampling
4. 171 teachers reached through an online questionnaire
5. Recommendations for future interventions

Key findings

Family support

- Most of the respondents of all ages and education levels report that they would support their sister or female cousin to build a career in STEM fields. Family's support to enroll in STEM domains is even higher for both primary and secondary school female students.
- 91.1% female and 89.7% male primary school students report that they would support their sister or female cousin to pursue a career in STEM.
- 33% of girls think that their family **would not** encourage them to take up university studies in a field belonging to STEM domains.

Teachers

- 94% of teachers believe that girls should be allowed to study as long as they want to.
- 73% of teachers think that female students would be encouraged by their families towards **non-STEM** areas.
- Implicit bias testing of teachers showed that when given the same scenario of a psychology student with remarkable performance, in case of a male student 52% of teachers recommend a research career, whereas in case of a female student 41% of teachers recommend a job in in preschool education.

Proposed intervention strategies

- Interventions that test the impacts of an inclusive norms campaign on social inclusion perceptions amongst elementary school children (with separate tracks for girls and boys).
- Interventions that test the impacts of female role model engagement on STEM aspirations and uptake (targeting girls at high school/pre-college level).
- Interventions testing the effects of social normative messaging on biased parental and teacher perceptions, as these groups represent key decision-makers who can strongly impact outcomes for girls in the field of STEM and inclusive economic growth.

STEM

- The research results show that the female primary and secondary school students show a higher interest and have more positive general attitudes toward natural science subjects, while the male students show a higher interest in the subject of computer science.
- In general, boys assess their abilities required for the fields of engineering and computer science as being higher compared to the assessments given by the girls.
- Higher average of high school girls report wanting to work on finding a new cure, whereas more boys prefer creating computer applications.
- 75.4% of male primary school students would prefer to pursue a career in programming as opposed to 54.6% of female students.

Career

- Male students are convinced that marriage is stressful when both husband and wife are employed, that the family suffers when the mother works, that the mother should be present at home when her children come back from school, that mothers should put their careers on hold when they start having families.
- Results show that girls in BiH have a more positive view of school and believe more in effort to achieve success compared to boys.
- Primary school students in BiH believe that men are better programmers, mechanical engineers, astronomers, civil engineers and electrical engineers, while women are better psychologists and journalists.
- 52.6% of male primary school students think that it is more appropriate for men to have a successful career, but only 8.9% of the girls agreed.

"I always practiced math with my dad. He used to buy me new books in mathematics and my mom encouraged me to be creative. We talked a lot, she encouraged me and said that only the sky was the limit. They never let me think I could not do something."

Focus group female participant

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