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Exploring Adolescents' Occupational Possible Selves: The Role of Gender and Socioeconomic Status

Yaoran Li
University of San Diego, liyaoran@gmail.com

Hanxiang Du
Western Washington University

Ian Martin
University of San Diego, imartin@sandiego.edu

Edward Hidalgo
Cajon Valley Union School District

Yang Jiang
University of San Diego

See next page for additional authors

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ARTICLE

Exploring adolescents' occupational possible selves: The role of gender and socioeconomic status

Yaoran Li[1] | **Hanxiang Du**[2] | **Ian Martin**[1] | **Edward Hidalgo**[3] | **Yang Jiang**[1] | **Wanli Xing**[4] | **Vitaliy Popov**[5]

[1]The Jacobs Institute for Innovation in Education, University of San Diego, San Diego, California, USA
Email: liyaoran@gmail.com

[2]Department of Computer Science, Western Washington University, Bellingham, Washington, USA

[3]Cajon Valley Union School District, San Diego, California, USA

[4]School of Teaching and Learning, University of Florida, Gainesville, Florida, USA

[5]Department of Learning Health Sciences University of Michigan, Ann Arbor, Michigan, USA

Correspondence

Vitaliy Popov, Department of Learning Health Sciences, University of Michigan Medical School, Ann Arbor, MI 48109, USA.
Email: vipopov@umich.edu

Abstract

Adolescence is an important stage in forming one's identity and developing career inspirations. The current empirical study aims to investigate gender and socioeconomic status (SES) differences in adolescents' occupational possible selves. A total of 3336 sixth- to eighth-grade students participated in the survey research and reported (1) hoped-for occupation, (2) desire for the hoped-for occupation, (3) likelihood of attaining the hoped-for occupation, and (4) whether and what actions were taken toward the hoped-for occupation. A series of regression models and advanced natural language processing techniques were applied to the survey data. Results revealed evident gender differences and some nuanced SES differences in the named occupational possible selves with a significant interaction between gender and SES on adolescents' career-related actions. However, this study did not find gender or SES differences in adolescents' desire to pursue their occupational possible selves.

KEYWORDS

adolescence, career development, gender, possible self, socioeconomic status

INTRODUCTION

"What do you want to be when you grow up?" This is one of the most popular questions children are asked. During the teenage years in particular, adolescents begin to move from fantasy notions about their future to tentative views of themselves as workers. As Eccles characterizes the stage of adolescence when "adult roles are still being chosen and one's future life is still flexible" (1987, p. 256),

investigating the emerging occupational possible selves of middle school students and the actions they take to pursue their pathways is instrumental in our understanding of the adolescents' identity development. Insights into the potential subgroup differences and similarities regarding gender and socioeconomic status (SES) will advance our understanding of youth career choices and inform the design of targeted career development programs.

Possible selves as a psychological theory is defined as "representations of the self in the future" (Markus & Nurius, 1986; Meara et al., 1995, p. 954). These representations capture our hopes, fears, and dreams and can be a source of motivation (e.g., the academic possible self: "I hope to get good grades" or occupational possible self: "I will become a videogame designer in the future") (Meara et al., 1995; Packard & Nguyen, 2003; Strauss et al., 2012). During adolescence, increasing exposure to and embodiment of social roles and social activities help individuals begin to solidify the basis of their self-concepts in relation to their place in the world of work (Bardick et al., 2006; Dunkel, 2000; Markus & Nurius, 1986). For example, the social self is referred to as one's perception of oneself in relation to others, how one interacts with others, how one behaves, and how one is perceived in social situations (Cameron, 1999). It embodies the roles one assumes in different groups, as well as the beliefs, values, and perceptions formed from their social experiences. The social self is a dynamic, future-oriented self-concept that motivates present and future social interaction and adaptation. Another form of possible selves is health self that refers to the self-concept related to one's personal health and overall well-being (Corte et al., 2022). It encompasses how a person perceives their current health status, expectations about future health, and the strategies they plan to implement in maintaining or improving their health. The health self motivates behaviors such as physical exercise, dietary habits, and routine check-ups, shaping decisions toward living a healthier life. A number of studies have specifically focused on educational self (Corte et al., 2022; Schlegel et al., 2019), which includes how individuals perceive themselves as students or learners, their academic aspirations, their strengths and weaknesses in educational contexts, and their academic success in the future. This concept motivates current actions related to learning, study habits, course, and career choice, driving the pursuit of knowledge and intellectual growth.

Grade-level differences play a significant role in adolescents' maturity and changes of these self-concepts over time (Parker, 2010; Rinn et al., 2009). As they progress through school, their academic, social, and health self-concepts continue to evolve due to different experiences and challenges they encounter. For instance, as adolescents mature and climb the grade, they encounter more complex and diverse academic disciplines and responsibilities. The adolescent's academic self-concept becomes more refined as they discover their skills and interests in specific areas. This process of differentiation might lead to changes in motivation and effort, affecting their future academic decisions and actions. Although a growing body of literature has demonstrated a strong relation between adolescents' possible selves and a range of social, health, and educational outcomes (Dunkel, 2000; Diemer & Bluestein, 2007), only a few studies explored gender differences of adolescents' occupational possible selves. Empirical studies that examined adolescents' gender-based differences in terms of what careers they hope for, perceive likely, and the strategies/actions they use to attain these careers reported inconclusive and sometimes contradictory findings. For example, the results of some studies revealed that female adolescents listed more possible selves under the category of "family" than male adolescents, while males considered possible selves more relevant to occupations than females (E. R. Brown & Diekman, 2010; Oyserman et al., 1995; Patton et al., 2004). Specifically, "family" in these studies is related to a vision of fulfilling homemaking or familial responsibilities. Males were focused on more "occupational" roles and responsibilities outside of the home and family. M. S. Knox et al. (2000) investigated the 14–19 years old adolescents' possible selves and reported an absence of gender-based differences in frequency of hoped-for selves as well as the likelihood of achieving possible selves. In another study, Perry and Vance (2010) surveyed 216 urban youths of color and found that high school males were more prone to report hoped-for possible selves with lower occupational prestige than high school females.

Even fewer empirical investigations on the SES-based differences of adolescents' occupational possible selves have been reported. However, some theoretical frameworks used to explain gender-based differences could be used to explore potential SES differences. For example, Oyserman and Fryberg (2006) suggested that at least three factors may help explain differences between females' and males' possible selves: self-esteem, sensitivity to social context, and cognitive and emotional maturity levels. They further explained that boys may have higher self-esteem than girls; thus, boys may have greater confidence achieving their hoped-for possible selves (M. Knox et al., 1998; Oyserman & Fryberg, 2006). Furthermore, individuals' social contexts can limit the development of possible selves (Oyserman et al., 2006). If an environment cannot provide relevant and/or successful role models or experiences, an individual may struggle to form a particular possible self. For instance, Shepard (2003) found that rural adolescent girls, who grew up in an environment with a limited range of occupations, reported few occupational and educational selves. In addition, research on low-income adolescents shows girls from low-income families are more likely to develop internalizing symptoms such as depression or withdrawn behaviors compared to boys from low-income families (Grant et al., 2004). In this sense, girls from low-income families might be more vulnerable than boys from low-income families or girls from mid/high-income families. However, previous empirical studies did not examine the potential interactions between gender and SES.

Overall, the existing literature on adolescents' possible selves is primarily theoretical with empirical studies that consist of relatively small sample sizes ($N < 300$). To address the research gap, the current study examined the role of gender and SES and their interaction in adolescents' possible selves using a large sample of self-reported survey data collected from middle school students. We applied a variety of statistical methods including regressions and word frequency analysis on the scaled and open-ended survey items. Furthermore, we deployed a new text mining method, Latent Dirichlet Allocation (LDA) (Blei et al., 2003), to help provide a deeper understanding of the gender and SES differences and commonalities in the adolescents' reported actions related to achieving possible selves. Specifically, we are interested in three research questions below:

1. What are the gender, grade-level, and SES differences and commonalities in adolescents' occupational possible selves?
2. Are there gender and socioeconomic differences in adolescents' desire or perceived likelihood of achieving their occupational possible selves?
3. Are there gender and socioeconomic differences in taking actions toward occupational possible selves, and what are the common actions adolescents take toward their occupational possible selves?

We hypothesized that gender difference in possible selves would be aligned with gender social roles; adolescents from higher SES backgrounds might name a wider set of occupations than adolescents from lower SES backgrounds; and girls from lower SES backgrounds might show no difference in their desire to pursue possible selves but might perceive less likelihood and take less actions toward their possible selves than girls from higher SES backgrounds or boys from lower SES backgrounds.

METHODS

Procedures

As part of a larger longitudinal study of career development conducted in a large urban K-8 public school district in California, a district-wide student survey was disseminated to sixth- to eighth-grade students in spring 2017. The online survey remained open for 2 weeks, and survey participation was optional. The research team isolated the items related to possible selves (see Measures section) from a larger survey that aimed to measure a district-wide career initiative. District teachers were respon-

sible for administering the surveys. Over the survey period, 3336 middle school students from the school district responded to the survey (61% response rate). Students' demographic information and free/reduced lunch status were gathered from the school district.

Participants

The survey participants included approximately one third of each grade level. Of the survey participants, 53% were male, and 68% were receiving free or reduced lunch, and 58% were White, 30% were Hispanic, 7% were Black, and 5% were of other ethnicities. In comparison with the district's population, this sample had the same gender distribution as the district student population but had 10% more White students and 5.7% less Hispanic students as well as slightly less (3%) students receiving free or reduced lunch. Of note, this school district had a large population of refugee students (19% of the total student body). Majority of these refugee students were from Middle Eastern countries (Afghanistan, Iraq, and Syria), and due to state reporting practices, they are classified as White.

Measures

The survey consisted of a variety of measures on career development related constructs. For the current study, we adopted items related to hoped-for occupational possible selves within the possible selves questionnaire (PSQ; Robinson & Davis, 2001; Robinson et al., 2003). The version of the PSQ used was similar to the "open-ended" versions in Cross and Markus (1991) and Hooker (1999). For example, students were asked to write an answer to the following question, "What is a job that you hope to have in the future?". Then, they were also asked to rate the desire for the named occupation, "how much do you hope for this job?" and the likelihood of achieving the named occupation "how likely do you think this job is for you?" on a five-point Likert scale, with higher ratings meaning more desired or perceived higher likelihood. Students were also asked if they have taken any actions toward their hoped-for self, "Are you doing anything right now to help yourself achieve it?" With a binary "Yes" or "No" response option, and if yes, participants were prompted to describe what they were doing in an open-ended question.

We believe that the use of free and reduced lunch can serve as a good SES measure for our sample because (1) it is a measure that was directly retrieved from student records, so it had little researcher bias or survey respondents' reporting error; (2) for a typical household size of 4, students with an annual household income lower than $34,060 and $48,470 are qualified for free or reduced-priced lunch, respectively (California Department of Education, 2021), while the median household income in the city the study implemented is $79,673 (US Census Bureau, 2019) which is 2.3 times and 1.6 times of the income of the families qualified for free lunch and reduced lunch, respectively.

Data analysis

Statistical analysis and textual data mining techniques were employed on numerical responses and open-ended responses, respectively, to answer our research questions. Figure 1 details the textual data mining process. Textual data preprocessing structures the open-ended responses—in the form of text—so that the responses can be used as an input to machine-learning-based language models. Specifically, word count was used for the first research question, and a series of multiple regressions and logistic regression were used for the second question. LDA, a topic modeling method, was used for the third question.

Multiple Regressions and Logistic Regression were used to examine the gender and SES differences in students' reported level of desire for the possible self, perceived level of likelihood of achieving

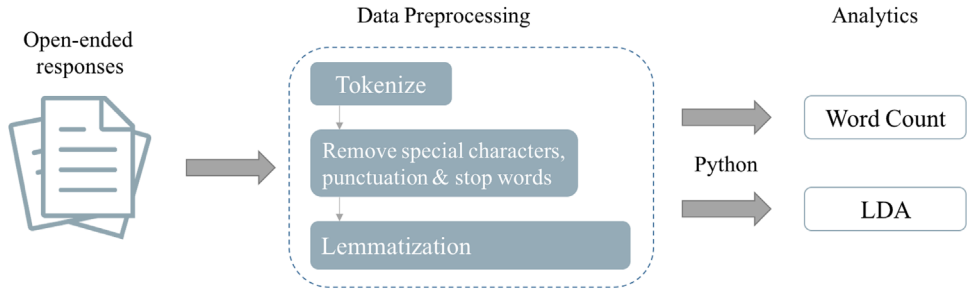

FIGURE 1 Textual data mining process.

the possible self, and actions toward the possible self. The level of desire and the perceived level of likelihood are continuous variables, so multiple regression models were employed. Since desire and perceived likelihood are continuous variables, multiple regression models were employed; action taking is a binary variable, so logistic regression was used. Given that we were also interested in the gender and SES interaction effects, interaction terms were added to the models. We included grade level as a covariate in these models to control for the maturity-based differences. The analyses were conducted using R, a statistical analysis software.

Textual Data Preprocessing techniques (Vijayarani et al., 2015) were used to structure the open-ended response. First, we tokenized the open-ended responses, which means dividing sentences into substrings. Then, special characters (e.g., @, #, etc.), punctuation, and stop words (e.g., a, the, this, of, etc.) were removed to eliminate irrelevant texts. Finally, to deal with different tenses or the plural forms of a word, we used the lemmatization technique which means grouping words having the same meaning so that different forms of a term could be analyzed as one same word. For example, the term *dogs* is lemmatized as *dog*, and *want*, *wanting*, and *wanted* are lemmatized as *want*. After these procedures, the textual data are considered structured and ready to be further analyzed. Python 2.7 and the "nltk" package were used to implement tokenization, stop words, and lemmatization. To visualize the most frequently mentioned jobs from students' answers, we also removed some commonly used general words in students' responses which are "want," "hope," "like," "become," "professional," "pro," "players," and "co."

Word Count calculates the total frequency of a word that appears in each document. The input is a set of documents, and the output is a list of words and its associated frequency in whole numbers. Sorting by frequency, word count can present the most and least frequently used words in given documents. Importantly, textual data preprocessing is essential to word count. If applied to raw data, or un-processed data, word count would consider *dogs* and *dog* as two different words and assign a frequency one for each. In addition, the words with a high frequency are likely to be *the*, *of*, *a*, among others. Word count was implemented in Python 2.7 using the "collection" package.

Latent Dirichlet Allocation is a topic modeling method that uses unsupervised machine-learning-based natural language processing technique to extract latent topic information from textual data (Blei et al., 2003; T. H. Chen et al., 2016). This method allows a document to have multiple topics and can identify latent topics that are mixed in the documents. This process also reduces researchers' bias and increases analytic efficiency (Shen & Ho, 2020). It takes several structured texts as the input and clusters them into different topics through co-occurrence networks and factor analytic technique (Yan et al., 2012). The results represent each document as a probability distribution over topics, and each topic, over several words. In other words, a few words will be chosen by the algorithm to represent each topic, and a few topics, for each document. Similar to word count, LDA topic modeling does not create words but only picks words from the given documents that it identifies as important and representative. Due to its capability to summarize a corpus, LDA has been widely used to retrieve key features or common themes for large amount of textual data, such as social media study (Zhao et al.,

TABLE 1 Regression models predicting youth's desire and likelihood of possible self.

	Model 1A. Desire		Model 1B. Likelihood	
	Estimate	**STD**	**Estimate**	**STD**
Grade level	−0.03	0.02	−0.07***	0.02
Gender (male)	−0.05	0.03	−0.11***	0.03
SES (FR)	−0.06	0.03	−0.01	0.28

Abbreviations: FR, free or reduced lunch; SES, socioeconomic status. standard Errors (STD).
***$p < 0.001$.

2011), Tweets classification (Egger & Yu, 2022; Hong & Davison, 2010), and article recommendation (Wang & Blei, 2011). Recently, more educational researchers started to use this method to analyze students' responses for open-ended questions (e.g., Buenaño-Fernandez et al., 2020; Xing et al., 2020), as well as to identify emerging topics in existing literatures such as computer science education (Du et al., 2022). Python 2.7 and the "nltk" package were used for these analyses.

RESULTS

The hypothesis for the first research question was that gender differences in possible selves would be aligned with gender social roles; adolescents from higher SES backgrounds might name a wider set of occupations than adolescents from lower SES backgrounds. Figures 2 and 3 show the top 10 words used in the students' responses by gender and by SES and the percentage a word emerged in a subgroup's responses. Results revealed more evident gender differences than SES differences. Three out of the 10 top words were the same in the top word list of the female group and male group, and they were "doctor," "engineer," and "lawyer." Top words in the female group but not in the male group were "teacher," "artist," "nurse," "designer," "actress," "vet," and "veterinarian," while top words in the male group but not in the female group were "soccer," "football," "game," "police," "basketball," "nfl," and "nba." If we combine "vet" and "veterinarian," the next word appears on the top words list in female group is "surgeon"; if we combine "football;" and "nfl" and "basketball" and "nba," the two words appear on the top words list in male group are "computer" and "officer."

The top 20 words for the free or reduced lunch group (FR) are doctor, engineer, teacher, lawyer, soccer, police, artist, football, designer, game, nurse, basketball, officer, nfl, nba, surgeon, scientist, computer, actor, and engineering. The top 20 words for the paid lunch group (P) are doctor, engineer, lawyer, teacher, soccer, designer, artist, game, actor, actress, vet, scientist, football, surgeon, computer, nurse, veterinarian, video, nba, and youtuber. The two groups shared 15 common top words. The top words in the FR group but not in P group were basketball, officer, police, nfl, and engineering. The top words in the P group but not in FR group were actress, vet, veterinarian, youtuber, and video. In addition, specific occupational words such as "veterinarian," "surgeon," "actor," and "designer" appeared higher on the list of the P group than in the FR group. These results are in alignment with our hypotheses.

With regard to the second research question, Model 1 A of Table 1 shows the regression models for desire for the occupational possible selves with gender and SES as the predictor and gender level as a covariate. This model aims to test our hypothesis that girls from lower SES backgrounds might show no difference in the desire for their possible selves compared with girls from higher SES or boys. Because the interactions between gender and SES were not significant, we did not include them in the final models. The results indicate that there was no gender ($b = -0.05$, $p > 0.05$) or SES differences ($b = -0.06$, $p > 0.05$) regarding adolescents' desire for their hope-for possible selves. These findings are aligned with our hypothesis.

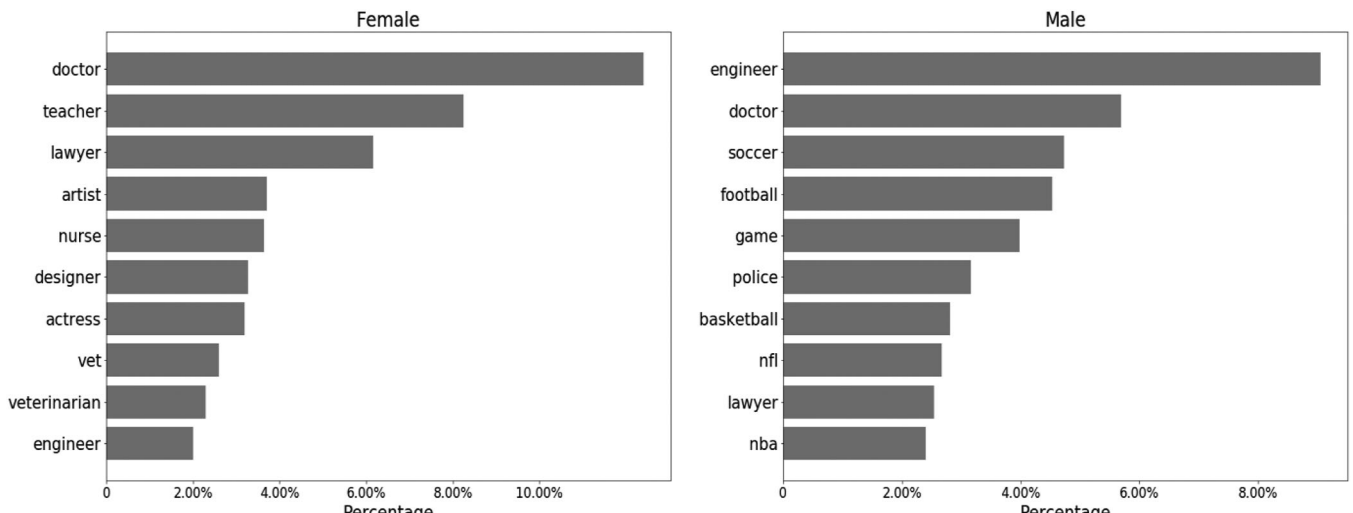

FIGURE 2 Word count for possible selves by gender.

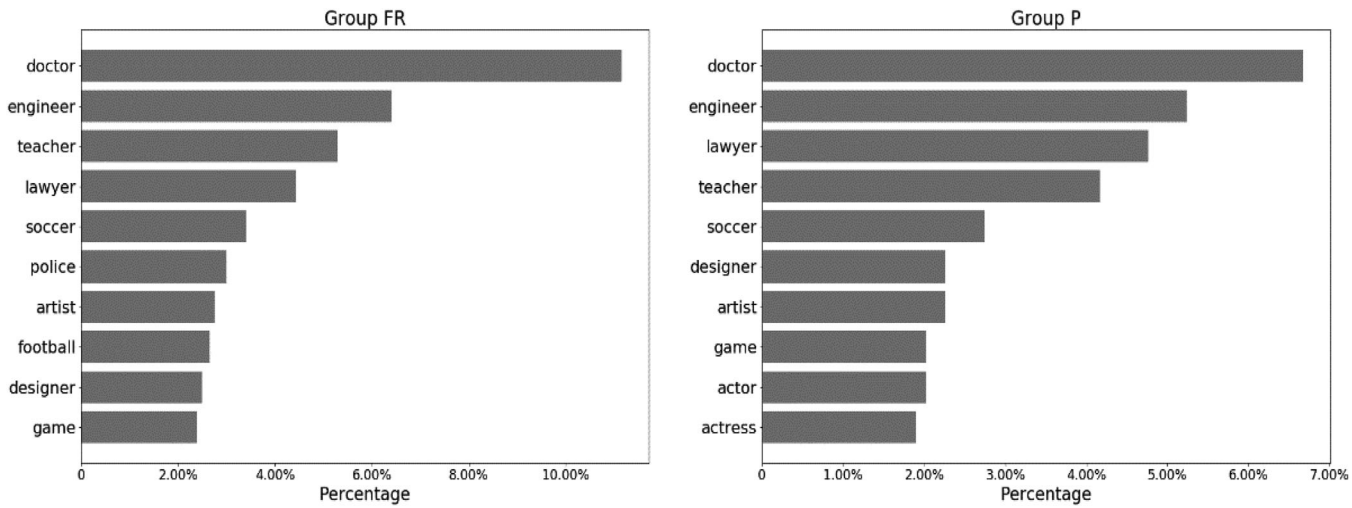

FIGURE 3 Word count for possible selves by socioeconomic status (SES).

TABLE 2 Logistic regression model predicting youth's actions toward possible self.

	Model 2A: Actions		Model 2B: Actions	
	Estimate	**STD**	**Estimate**	**STD**
Grade level	−0.25***	0.05	−0.26***	0.05
Gender (male)	0.26**	0.09	−0.04	0.17
SES (FR)	−0.45***	0.10	−0.65***	0.14
Gender (male)* SES (FR)	–	–	0.41*	0.20

Abbreviations: FR, free or reduced lunch; SES, socioeconomic status. standard Errors (STD).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Model 1B of Table 1 shows the regression models for the likelihood of achieving the possible self. This model aims to test the hypothesis that girls from lower SES backgrounds might perceive less likelihood of achieving their possible selves than girls from higher SES backgrounds or boys from lower SES backgrounds. Because the interactions between gender and SES were not significant, we did not include them in the final models. The results indicate significant gender differences in the perceived likelihood of achieving the hope-for possible self ($b = -0.11$, $p < 0.001$), with male students reported lower perceived likelihood than female students. There were no significant SES differences in the perceived likelihood of achieving the hope-for possible self ($b = -0.01$, $p > 0.05$). These findings are different from our hypothesis.

For the third research question, we examined differences by gender and SES in adolescents' actions toward their occupational potential. In our sample, 2627 students responded to the question asking about the action question, and 1904 students (72.5%) reported "Yes." Table 2 shows the logistic regression models for whether actions were taken toward the possible self. This model aims to test the hypothesis that girls from lower SES backgrounds might take less actions toward their occupational possible selves. The results indicate that there were significant main effects of both gender and SES, with males or students from a higher SES background more likely to take actions toward their occupational possible self than females or students from a lower SES background ($b = 0.26$, $p < 0.01$, $b = -0.45$, $p < 0.001$ for gender and SES, respectively). Notably, the model 2B shows that there was a significant interaction effect between gender and SES ($b = -0.41$, $p < 0.05$). Post hoc analysis shows that male students from a lower SES background were more likely to take actions than female students from a lower SES background, while there was no significant gender difference in the probability of taking actions in students from a higher SES background.

For LDA analyses, the coherence score indicates the LDA model fit, and it was calculated for each model to decide the appropriate topic number. For each topic model, the first peak coherence score that was higher or equal to 0.30 was chosen, and the corresponding value became the topic number for this model. Based on this criterion, the final topic numbers for male, female, FR, and P subgroups' response topics were 3, 4, 6, and 4, respectively. To minimize the inconsistency in topic modeling training, each model was trained at least three times, and the results were taken as a pool. If any result contained a word that only appears once in the pool, it was not considered. Only if all the topic words of a model had shown up at least twice in the pool, that model and its result were taken. While viewing topic assignment, each document was exclusively assigned to one topic only based on its highest probability.

Table 3 shows the LDA topic model results for actions related to attaining possible self by gender and by SES, respectively. To better view the topic results for each category, a few samples for each topic are listed. Examples were copied directly from the collected data without grammar or spelling corrections. The results show that all youth groups reported practice, school, and learning as a major theme of the actions toward possible selves. However, males reported more technology- and sports-related actions (male topics 1, 2, and 3), while females reported more language-, art-, and care-related actions (female topics 1, 2, and 4). The topics of group FR and group P showed less differences.

TABLE 3 Latent Dirichlet Allocation (LDA) topic modeling model topics, distribution, and examples by subgroups.

Number of occurrences	Examples
Possible self actions for male	
#1 Soccer/play/work/video/make/get/training/game/youtube/better	
227	• I'm training really hard to become a really good soccer player. • I am training my hardest, playing in leagues, and going to trainers. I do whatever it takes to become an NBA player. • I usually watch YouTube videos that give me tips on how to become a actor. I also get tips from my friend that kinda is a professional at it.
#2 Practice/playing/school/going/get/basketball/working/football/better/play	
354	• I practice every day to get better at basketball, and I play for a basketball team. • I play football all most ever day. • I am playing lacrosse right now and I'm ganna play football in high school and lacrosse.
#3 Good/learning/try/grade/get/school/class/coding/computer/getting	
267	• I'm Trying hard to bring my grades up every chance I get. • I am taking computer literacy and later on other classes for it. • I am starting to go to the tutoring center after school to help my grades.
Possible self actions for female	
#1 Doctor/know/also/like/take/care/people/learn/animal/need	
182	• I am helping kids that are getting injured. • Helping parent to remind them to take their meds. (but they already know). • I'm volentering at an animal shelter every weekend.
#2 Soccer/play/work/video/make/get/training/game/youtube/better	
219	• working hard in school and math. • Ask my dad to help me learn what to do. • Drawing fashion, practicing makeup, and more.
#3 Good/get/try/grade/practice/help/teacher/school/getting/college	
235	• I am trying to get good grades. • practicing playing teacher • I am trying to get good grades to get into a college good for getting a good degree.
#4 Learning/writing/singing/studying/practice/go/lesson/story/skill/read	
159	• Writing short stories and writing for school. • Playing an instrument and singing. • i am learning how to read better.
Possible self actions for group FR	
#1 Practice/help/also/class/need/care/everyday/learning/drawing/love	
165	• I love helping people and love to make them feel better. • I am practicing both drawing and animating. • I am researching on how to take care of animals and I am going to go to a community class to watch how to take care of a animal.
#2 Practice/helping/every/dad/learning/thing/day/writing/others/achieve	
108	• I am currently writing multiple books and improving my writing skills. • i go truck driving with my dad on school brakes. • I practice to a nearby park with my friends so I can be better at this Job I want to Achieve
#3 School/hard/work/going/practice/soccer/working/play/yes/like	
328	• By doing research and doing best in my school. • I play club soccer and practice really hard. • I am going to soccer practice.

(Continues)

TABLE 3 (Continued)

Number of occurrences	Examples
#4 Get/try/good/grade/school/learn/practice/getting/doctor/help	
271	• trying to keep my grades up. • Learning about science and the body so I can become a doctor or surgeon. • I am going to learn about how to doctor and I will go to doctor school and I research if someone is hurting or if im hurting. I also try to help people as much as I can.
#5 Playing/lot/game/practice/video/make/taking/picture/singing/lesson	
123	• singing lessons. • playing games for practice and making videos • I am already taking picture and uploading them on my Instagram which is only dedicated for the picture I takae.
#6 Learning/play/team/sport/computer/math/always/playing/best/want	
136	• To be in a soccer team I am practicing in a team right now so when I am older I can be in a perfectional team. • doing good in math • I am doing a computer science class.
Possible self actions for group P	
#1 Like/get/learn/work/help/stuff/game/want/video/drawing	
115	• Playing video games. • I like to read and watch informational videos and articles for astronomy and I like to occasionally look at the stars. • I am working on stuff that involves stuff like computer work and metal work.
#2 Practice/play/writing/make/football/baseball/story/also/playing/soccer	
142	• I have played soccer ever since I was 3 years old and it's been my dream forever. • I am practicing and playing for a couple basketball leagues. • I am writing my own music and I help make beats for my cousin who is a rapper.
#3 Get/good/school/working/grade/hard/try/better/getting/practice	
155	• I am working out every day after school, working very hard in practice and keeping my grades up. • get good grades so I can get into good math classes in high school.
#4 Learning/school/help/class/coding/every/day/practice/also/need	
162	• Taking computer coding classes in school. • I am learning skills that will help me achieve this goal. • I am practicing every single day.

Abbreviation: FR, free or reduced lunch.

Some unique topics that exist in the group FR are "team," "math," and "computer," and some of the unique topics that exist in the group P are "story" and "coding."

DISCUSSION

This current study extends previous works by examining adolescents' occupational possible selves and current actions toward attaining possible selves based on a large sample of urban middle school students. The results revealed several important findings. First, there were evident gender differences regarding what adolescents named as their occupational possible selves. Aligned with the social role perspective (Eagly et al., 2000), the top occupations named by female adolescents but not named by male adolescents possessed feminine traits such as caregiving and art, while the top occupations named

by males but not named by females possessed masculine traits such as sport and competition. But it is also worthy to notice that the three words that appeared on both top 10 lists are "lawyer," "doctor," and "engineer", which are all considered high-status occupations with high salaries. This implied that although gender-normative roles may influence adolescents' occupational possible selves, both a high percentage of male and female adolescents took other factors into consideration when forming their possible selves. Research suggests that while younger children primarily emphasize gender roles, prestige becomes important during the ages 9–13, and specific fields of work, such as, lawyer, doctor, and engineer, become important from 14 onward (McManus et al., 2015). One possible explanation for the top three career options among the top 10 "lawyer, doctor, engineer" could be related to the student's perception of job attainment, feasibility, or prestige based on the compatibility of certain careers with their social attributes (S. D. Brown & Lent, 2004).

Another explanation for these findings may have to do with the exposure to relevant information and opportunities (Bergin, 2016; Renninger et al., 2015). Possible selves act as a frame for evaluating the meaning of current actions and situations (Markus & Nurius, 1986; Oyserman et al., 2006). These three careers could be more visible in the media, their families, or the community. Media nowadays is often an important source of socialization and information about possible selves for teenagers (Behm-Morawitz & Mastro, 2008; Dong, 2012; Packard & Conway, 2006). Through media, youth can interact with contexts and people that are not available to them in their immediate environment (Bandura, 2001). For instance, though many children have never met an engineer or a lawyer, they can describe one based on media representations (Stinke et al., 2009). Although one study using a sample of fictional series for the three major networks and Fox during 1996–1997 television season found that male characters were more likely to be professionals such as lawyers, doctors, and judges, while female characters were mostly portrayed as nurses, secretaries, and waitresses (Glascock, 2001).

Second, we did not find gender or SES differences in the adolescents' desire for the occupational possible selves. This finding confirmed our hypothesis but still worthy to be highlighted given some research showed gender differences in desires to pursue specific careers (e.g., Fox & Lawless, 2014) and the frequently found gender differences in career aspirations as discussed in the first finding. However, our finding is consistent with some other research studies that examined the desire for careers in general. For example, one study conducted on middle school gift students showed no differences in males' and females' desire to work hard or desire for intellectual challenge, although they found that boys had significantly more desire to outperform others than girls (Mendez & Crawford, 2002). In addition, Ashby and Schoon (2010) found no differences in the importance 16 year male and female placed on moving up or advancing in a career.

Third, male adolescents rated lower likelihood of achieving the occupational possible selves than female adolescents. We found it is contradictory to our hypothesis which was based on Oyserman and Fryberg's (2006) theory that boys may have a higher sense of self-esteem than girls, leading them to have increased confidence they can achieved their hoped-for possible selves. However, our findings are related to Perry and Vance's (2010) findings that high school males reported occupational possible selves with lower prestige. It is possible that the perceived lower likelihood of achieving the possible selves in middle school leads to them adjusting their hope for selves to more realistic ones and result in hoping for ones with less prestige in high school. According to social cognitive career theory (SCCT; Lent et al., 2002), learning experiences shape self-efficacy beliefs which in turn influence goals and actions. If adolescent boys lack sources of mastery experiences, vicarious learning, social persuasion, and emotional arousal to bolster their career confidence, they may scale back their ambitions (Perry & Vance, 2010). In addition, in a recent study conducted by Perry and Raeburn (2017) on the developmental differences and stability in possible selves with high school students, they did not find any developmental differences; however, in our study, we found that higher grade level students reported significantly lower confidence in achieving their goal, which suggests that middle school could be an important stage adolescent identifying and adjusting their occupational possible selves.

In addition, of the studies Oyserman and Fryberg (2006) reviewed, gender differences were not found on hope-for possible self and only on fear-for possible self. So, it is also possible that the self-esteem factor is more influential for the fear-for possible self than for the hope-for self, which was not investigated in the current study. Another relevant factor contributing to gender difference proposed by Oyserman and Fryberg (2006) is sensitive to contextual feedback that female adolescents are more likely and started earlier to adjust their possible selves based on social observations. Researchers also found that girls at this age have more understanding of the occupation requirements than boys in general (Hill et al., 2003). In line with this theory, female adolescents may propose more realistic hope-for possible selves earlier than male adolescents. In the current study with a focus on hoped-for possible selves, a large percentage of male adolescents listed becoming a professional athlete as an occupational possible self. It is possible that they were aware that the labor market for professional athletes is highly competitive and the career trajectory to pursue an occupation related to sports may not be as viable through available educational pathways (Stinson, 2006), but not yet willing to assimilate this information into their possible self which may result in high desire but lower confidence in achieving the career goal. All these factors may together contribute to girls' higher perceived expectancy in achieving the hoped-for career possible selves than boys in the middle school.

Finally, the finding of the interaction between gender and SES is particularly important. This finding is interesting because our third finding indicated that although female adolescents perceived a higher expectancy to achieve their possible selves; however, they did not report more immediate actions toward their possible selves, which can be seen as non-intuitive based on motivation theories. From an SCCT perspective, this disconnect suggests that potential contextual barriers may dampen girls' career aspirations despite having positive outcome expectations. Gender role socialization emphasizing family responsibilities over career may be one contextual factor at play (McHale et al., 2003). For example, previous research shows that adolescents with higher self-efficacy set higher outcome expectations (Lent et al., 2017) free from gender expectations and other perceived barriers (Cronkel-Ziebell et al., 2019). One potential explanation of this finding is that females are traditionally expected to take on more family responsibilities than focusing on one's career (Diekman & Eagly, 2000) according to a social role perspective, and this culture may be more prominent for females from a lower SES background (McWhriter et al., 2013). Although female adolescents have a higher outcome expectation, the social and family expectations and the limited access to role models may discourage them to transform these thoughts into concrete and immediate actions than male adolescents. Providing opportunities for female students to engage with female role models who have achieved success in various careers while also meeting family obligations could help strengthen their self-efficacy and outcome expectations while also conveying that such careers are possible for women. Future research that investigates the relations between expectation of career-family priorities, self-efficacy beliefs, sources of self-efficacy, and career-related actions may help test this hypothesis and deepen our understanding of this interaction effect (see Jiang et al., 2021; Mejia et al., 2019).

Another alternative explanation for this finding is that many male adolescents named sport-related careers as their hope-for possible self. Sports are usually accessible for adolescents in this age through school or afterschool activities even for low-income students, and thus those activities may be perceived as making actions toward their career goals. This is evident in the topics of male-reported actions that sport-related practice was commonly mentioned. However, for the top careers named by female adolescents, it is hard for the students to get access to opportunities to directly learn the skills or to participate in a simulation of the job during regular school or afterschool activities during middle school years, such as being a nurse or a veterinarian. In addition, this may have a bigger impact for females from low-income families who may sense lack of role models and resources and thus reported less actions. This is also evident in the topics of the female-reported action that general educational efforts such as getting good grades and attending college were commonly mentioned.

IMPLICATIONS AND LIMITATIONS

This study was primarily focused on the broad influences of both gender and SES on urban middle school students' hoped-for occupational possible selves. The results hold several important implications for those interested in school-based career development. For example, because gender was seen as influential to hoped-for possible selves, it would be important to offer targeted career exploration activities that pay close attention to gender roles and provide access and examples of non-gender conforming role-models. Possible interventions may include presenting careers that contain information about how specific careers impact familial responsibilities, having students role play their possible selves, talk to diverse professionals about how they achieved career success, and develop step-by-step plans for pursing their goals. Furthermore, because possible self is so focused on envisioning the future, creative, visual, or experiential implications are important. Providing greater opportunities for student agency may help increase actions taken by female students from lower SES backgrounds and allow for more realistic or attainable possible selves for male students.

The interaction between gender and SES also highlights the need to consider contextual intersectionality in career development. Students navigating multiple marginalized identities likely face heightened barriers. SCCT underscores the importance of support systems in promoting positive career outcomes for all youth. Career education efforts should provide access to social capital and material resources that economically disadvantaged students may lack at home. Mentorship programs, job shadowing, school–employer partnerships, and targeted funding for extracurricular activities could help level the playing field.

Because of the broad focus mentioned above, details related to culture, ethnicity, language, and disability were beyond the scope of this investigation. Generalizations based on this student population should be interpreted with caution. For example, it was known that a potentially large number of refugee students were present within our research sample, but it was not feasible for us to identify these students. There is evidence that refugee students view educational attainment as a pathway to a better life (Correa-Velz et al., 2013; Nunn et al., 2014), and therefore we speculate their hoped-for possible selves and immediate actions would be also influenced by those perspectives and cultural factors. We recommend future research focus specifically on refugee students' possible selves. For these reasons, the findings may not be completely transferable to students living in other parts of the United States as well as to students from other countries.

Furthermore, our findings may be somewhat limited by the exploratory nature of the research which inhibits an ability to make definitive conclusions about the study findings. For example, our study might be the first large-scale investigation on the interaction effects of general and SES, and thus our understanding and interpretation of these new findings can benefit from future replications and further tests on the possible explanations. Going deeper into the similarities and differences amongst these categories may help paint a more nuanced picture of students' possible selves. Additionally, this study only focused on hoped-for occupational possible selves. Future investigation of possible selves such as the feared possible self and educational possible self may provide a fuller view of the development of possible selves in adolescents.

Overall, findings point to the value of fostering hope-based possible selves while also enhancing self-efficacy beliefs and providing support to turn possible selves into reality. Aiming to make career education experiential, personalized, strengths-based, and responsive to students' social contexts will help dreams become achievable futures.

ORCID

Vitaliy Popov https://orcid.org/0000-0003-2348-5285

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