LINKING ENTREPRENEURIAL INTENTION AND OPPORTUNITY RECOGNITION: ROLE OF SELF-EFFICACY

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ABSTRACT

Opportunity recognition is at the heart of the entrepreneurial process. Without an opportunity being recognized as worth pursuing, there is unlikely to be any entrepreneurial activity. Prior research indicates that enterprising individuals intentionally recognize new opportunities, thus highlighting the importance of the relationship between entrepreneurial intention and opportunity recognition. Furthermore, entrepreneurial self-efficacy is seen as a moderator of this vital relationship and is examined in four different entrepreneurship functions: searching, planning, marshaling, and implementing. The research hypothesis is empirically tested using data collected from 309 men and women in the USA. The results underscore the moderating effect of self-efficacy in the searching and planning functions of entrepreneurship—thus strengthening the association between the two cornerstone concepts of entrepreneurial intention and opportunity recognition. Predictions were tested to show that the ability to generate ideas, competency in understanding markets, and capability to convert ideas into feasible and comprehensive business plans lead to opportunity recognition. This is predicated on individuals having high entrepreneurial intentions. These results further reveal that though self-efficacy is evident in the searching and planning functions of entrepreneurship, it is not apparent in the marshalling and implementing functions. Implications and directions for future research are also discussed in this study.

Keywords: Self-efficacy, entrepreneurial intention, opportunity recognition, planning, searching

INTRODUCTION

Entrepreneurship research has been fragmented and various constructs including entrepreneurial intention and opportunity recognition have been studied as components of the entrepreneurship process without a clear understanding of how the concepts relate to each other (Thomas & Mueller, 2000). While some researchers emphasized the role of entrepreneurial opportunities as central to the entrepreneurial process (e.g. Shane & Venkatraman, 2000), others contend that the entrepreneurial process is driven by the entrepreneur's intentions (e.g. Mishra & Zachary, 2015). Researchers have drawn attention to the fact that entrepreneurship is a complex process starting with intentions and ending in venture creation with many components in between (Gielnik et al., 2014).

Although the relationship between intention and entrepreneurial behaviors in general has been empirically verified across studies (Ajzen et al., 2009; Krueger & Brazeal, 1994; Krueger et al., 2000), the nature of the link between entrepreneurial intentions and opportunity recognition is not clear. It is maintained that without intentions, opportunities are not recognized and

business opportunities that individuals come across do not result in venture creation (Krueger, 2007; Qureshi & Mahdi, 2014). However, research to date suggests that although individuals may have entrepreneurial intentions, they do not always recognize the opportunities that exist (Jarvis, 2016). An important question remains; What factors affect the relationship between entrepreneurial intentions and the entrepreneur's recognition of opportunities?

Extant literature suggests that entrepreneurs gather information about possible outcomes of exploiting entrepreneurial opportunities. Entrepreneurs conduct feasibility analyses and evaluate their chances of success. Their intentions turn into opportunity recognition when they see potential for success (Shamsudeen, Keat, & Hassan, 2017). In response to calls to incorporate more psychological perspectives into entrepreneurship research (Baron, 2008; Jarvis, 2016; Shook et al., 2003), we examine the role of self-efficacy, as "a psychological state generally defined as possessing self-confidence in performing a specific task" (Mueller & Dato-On, 2007, p. 4), as a moderator of the relationship between entrepreneurial intention and opportunity recognition.

Entrepreneurial self-efficacy represents an entrepreneur's confidence in his or her ability to successfully perform entrepreneurial roles or tasks, reflects perceived competence of the entrepreneur (Chell, 2013; Krueger & Dickson, 1994) and the perceived feasibility of the opportunity (Douglas, 2013). Entrepreneurial self-efficacy is expected to affect whether the individual's entrepreneurial intentions lead to recognition of opportunities.

In this study, it is proposed that self-efficacy in the searching, planning, marshaling, and implementing functions of entrepreneurship moderate the relationship between entrepreneurial intention and opportunity recognition. We expect individuals who have entrepreneurial intentions and believe in their abilities to successfully perform various functions of entrepreneurship to be more likely to recognize entrepreneurial opportunities. We test our hypotheses with a sample from the United States collected using Amazon Mechanical Turk (MTurk). Research shows that MTurk is a powerful tool when the right procedures and checks are followed as in this research (Hunt & Scheetz, 2019). Our results provide partial support for the moderating effect and suggest that when individuals have high self-efficacy in search and plan functions of entrepreneurship, their entrepreneurial intentions are more likely to result in opportunity recognition.

Two foundational concepts of entrepreneurship are examined: entrepreneurial intention and opportunity recognition. In doing so, we seek to advance the scholarly understanding of opportunity recognition and entrepreneurial intention and examine entrepreneurial self-efficacy as a moderator of this relationship (Jarvis, 2015). This study also responds to calls to incorporate more psychological perspectives into entrepreneurship research (Baron, 2008; Jarvis, 2015) and informs educators and policy makers about how to encourage entrepreneurial activity.

THEORETICAL BACKGROUND

Entrepreneurial Intention and Opportunity recognition

The quest to understand the relationship between entrepreneurial intention and the perception of opportunities continues. Entrepreneurial intention has been recognized as a crucial precedent to pursuing opportunities for venture creation in entrepreneurship research (Qureshi & Mahdi, 2014). Intention is considered the best predictor of behavior in general and entrepreneurial behavior in particular (Ajzen, 1991, 2001; Fishbein & Ajzen, 1972). Intention is

a state of mind that directs a person's attention towards specific objectives in order to achieve desired end states. Intentions sustain an individual's efforts despite obstacles (McClelland, 1985). Entrepreneurial intention is a necessary first step in the process of entrepreneurship and venture creation (Fayolle et al., 2006; Kolvereid, 1996; Lee & Wong, 2004). The conscious and voluntary decision to engage in entrepreneurship, the direction that the business takes, and growth aspirations for the business, depend on the entrepreneur's intentions (Bird, 1988; Krueger et al., 2000). Krueger (2007) argues that due to a lack of suitable intentions, not all business opportunities which an individual comes across are converted into new ventures. To quote Qureshi & Mahdi (2014), when opportunities are not converted into new ventures, it is because "the entrepreneur never intended to do the business initially" (p. 148).

According to Keh, Foo, and Lim (2002, p. 125), opportunity refers to "a situation that the decision-makers deem personally desirable and feasible" for profitably bringing a new offering to the market. Understanding how enterprising individuals perceive and evaluate whether opportunities are credible or not is at the heart of the research enterprise in entrepreneurship (Krueger, 2000). A sizable body of research now recognizes that entrepreneurs differ from others in their ability to recognize and evaluate opportunities where others fail to do so (Allinson, Chell, & Hayes, 2000; Douglas & Shepherd, 2000; Kaish & Gilad, 1991; Kirzner, 1973). In effect, entrepreneurs evaluate the various alternatives available to them and make decisions about the costs and benefits of achieving the outcomes associated with each alternative (Haynie, Shepherd, & McMullen, 2009).

The core process of entrepreneurship starts with an intention, when the "entrepreneur's available means are expected to produce effects that are aligned with initial aspirations" (Arend et al., 2015, p. 631). The decision to pursue a business opportunity for venture creation is neither coerced nor random, but an outcome of individuals' intentions and consequent actions (Shook, Priem, & McGee, 2003). While individuals may have intentions to become entrepreneurs, some of them never pursue entrepreneurship. Therefore, intention alone is not a sufficient factor in the pursuit of entrepreneurship.

Whether intentions turn into positive evaluation of opportunities is dependent on the entrepreneur's resources, means, and perceptions of possibility of success (Mishra & Zachary, 2015). A reason why entrepreneurs fail to recognize opportunities (although they may have the intention) may be that the situation is not perceived as feasible. Entrepreneurs focus on selecting the result that is achievable with the available means and exploit the contingencies accordingly (Fisher, 2012; Sarasvathy, 2001). From this perspective, an important factor that facilitates intention to turn recognitions into opportunity is the entrepreneur's self-efficacy in entrepreneurship.

Self-efficacy postulates that intentions of individuals are strongly influenced by their beliefs regarding whether they can effectively complete a given task (Bandura, 1977). In fact, self-efficacy impacts the level of effort in an activity, the choice of goal difficulty, and problem-solving (Chen, Greene, & Crick, 1998). High self-efficacy leads to higher motivation and perseverance in overcoming obstacles (Bandura & Locke, 2003). Several researchers have proposed that self-efficacy plays an important role in motivating individuals to engage in the entrepreneurship process (Boyd & Vozikis, 1994; Scherer et al., 1989; Zhao et al., 2005). One's intention to start a venture is formed, in part, by his or her perception about the outcome anticipated regarding whether the venture will succeed or fail. Individuals are not likely to perceive opportunities as positive if they believe there is a high probably of failure—even though they may have entrepreneurial intentions (Boyd & Vozikis, 1994).

The concept of self-efficacy indicates feasibility. It is derived from Social Learning Theory and refers to a person's belief in his or her capability to perform a particular task (Teece, 2014, p. 328). Entrepreneurial self-efficacy is defined as "a useful measure of the strength of an individual's belief that he or she is capable of successfully performing the tasks of an entrepreneur" (Mueller & Data-on, 2008, p. 8). Therefore, entrepreneurial self-efficacy captures the sense of capacity regarding the achievement of entrepreneurial activities (Linan & Chen, 2009).

Individuals with high self-efficacy in a specific area possesses self-confidence in performing the related tasks (Mueller & Dato-on, 2008, p. 4). Self-efficacy affects an individual's beliefs about whether specific goals are attainable or not (Bandura, 1977; Gist & Mitchell, 1992). If an individual's self-efficacy in a specific field is low, her or his perceived capability will be low, and the individual will not act (Boyd & Vozikis, 1994). When entrepreneurs perceive that they are competent in entrepreneurial activities and capable of achieving results, they recognize opportunities as feasible (Mishra & Zachary, 2015). We expect that entrepreneurs who have self-efficacy in entrepreneurial functions, will act upon their aspirations and their intentions will result in opportunity recognition. Therefore, entrepreneurial intention leads to opportunity recognition when entrepreneurial self-efficacy is high. This leads to the following hypothesis:

H1: Entrepreneurial self-efficacy moderates the relationship between entrepreneurial intention and opportunity recognition.

H1a: When self-efficacy in the planning function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.

H1b: When self-efficacy in the search function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.

H1c: When self-efficacy in the marshaling function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.

H1d: When self-efficacy in the implementing function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.

METHODOLOGY

Sample

The primary procedure for collecting data for this study was an online survey. We recruited the sample from Amazon Mechanical Turk (MTurk), a paid web service that offers a large online workforce to complete human intelligence tasks (HITs) (Stewart et al., 2015). MTurk reports having 500,000 registered workers (Stewart et al., 2015) and claims to provide a sample representative of the population at low cost (Behrend et al., 2011; Huber, & Lenz, 2012; Buhrmester et al. 2011). Recent studies have demonstrated the benefits of using Amazon M-Turk as a reliable source of data for experimental research (Crump et al., 2013; Stewart et al., 2015).

Amazon allows survey participation to be restricted to people from a specific country, so researchers can maintain a homogeneous sample. We invited only US-based individuals to participate in this research study. Amazon M Turk allows for rejection of work that does not meet expected standards or requirements. We required the workers to have a minimum of 98%

approval rating to eliminate respondents who have not shown good performance in the past. We considered responses from only those participants who completed the entire survey, met our time controls, and correctly answered our manipulation check question. The respondents were given 15 minutes to complete the survey.

Of the 309 respondents who completed the survey satisfactorily, about 45% were male and average age was 35 years. The average work experience for our participants was about 13.4 years, with 31% working in the public sector, 34% in the private sector, 17% having self-owned businesses, and with 18% unemployed. Among the respondents, 63% had an associate degree or higher, 75% percent was Caucasian, and 54% resided in the Eastern Time Zone and 23% in the Central Time Zone.

Procedure and Measures

Demographic characteristics including gender, age, education, and work experience may have an impact on opportunity recognition, so they were included as control variables in the study (Gupta, Goktan, & Gunay, 2014; Keh, Fo, & Lim, 2002; Huggins, Prokop & Thompson, 2016). Other independent variables included were entrepreneurial intentions and entrepreneurial self-efficacy. The dependent variable was opportunity recognition, which was measured using a scenario-based approach. All scales are discussed below and presented in Appendix 1.

Entrepreneurial intention was measured using a five-item, five-point Likert scale adopted from Liñán and Chen (2009) who developed an entrepreneurial intention questionnaire. This instrument was based on Ajzen's Theory of Planned Behavior and analyzed its psychometric properties by testing it on samples from Spain and Taiwan. Their study confirmed the validity of the entrepreneurial intention scale across different groups. The scale had five items and responses were on a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Higher scores on the scale items indicated higher entrepreneurial intentions. The scale had good reliability in our sample (Alpha =0.97).

Entrepreneurial self-efficacy measure was adopted from Mueller and Dato-on (2008) who adopted 20 out of the 60 items in the Sequeira et al.'s original self-efficacy scale (2005). Following Mueller and Goic (2003), they assigned each one of the 20 items to one of four categories of entrepreneurial tasks including searching, planning, marshaling and implementing. Searching relates to idea generation and searching for opportunities, planning pertains to the development of a business plan, marshaling refers to the gathering of resources and implementing involves managing the business via directing and decision-making.

Altogether, they measure self-efficacy in various functions of entrepreneurship. Mueller and Dato-on (2008) reported the scale's reliability for searching, planning, marshaling, and implementing dimensions of entrepreneurial self-efficacy to be $\alpha = .82$, $\alpha = .85$, $\alpha = .84$, $\alpha = .82$ respectively. Our findings were similar for the respective dimensions; $\alpha = .87$, $\alpha = .91$, $\alpha = .89$, $\alpha = .84$. Entrepreneurial self-efficacy was measured on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with higher scores indicating higher entrepreneurial self-efficacy.

Opportunity recognition. Respondents were given the following business scenario adopted from Highhouse et al. (2002):

Imagine you are on the Board of Directors of a large manufacturing company. You are one of the finalists for a government order that would ensure business throughout the decade. Such a contract would discourage potential competitors from entering into your unique product area. The government order would begin soon.

This scenario illustrates a strategic issue and have been shown to clearly represent an opportunity. Participants were asked to provide a general evaluation of this business opportunity using a four-item, five-point Likert scale ranging from 'strongly disagree' to 'strongly agree' (see Appendix 1: $\alpha = .88$). The average of the four items was calculated, with higher scores indicating more favorable evaluation of the opportunity, compared to lower scores.

ANALYSES AND RESULTS

We started with basic data cleaning to avoid problems in later analyses. Less than 3 percent of the observations had missing data, so no data points were removed. The data was visually inspected using histograms and scatter plots to test for normal distribution. As an additional check, numeric tests for kurtosis and skewness were conducted. The skewness measures ranged from -1.429 to 0.976, kurtosis ranged from -1.82 to 1.73 and were found to be within acceptable limits (Huck & Cormier, 1996). Variance Inflation Factor (VIF) values ranged from 1.00 to 6.16, which were well below the upper limit of 10, so that multicollinearity was not a problem in the data (Hair et al., 1998).

Table 1 presents the descriptive statistics including the means and standard deviations for all measures as well as the correlation matrix. The correlation matrix provides bivariate correlations (Pearson product-moment correlations) between all-control, independent, and dependent variables in the study.

TABLE 1
Correlation Table (N= 302)

	Mean	St. Dev.	1	2	3	4	5	6	7	8	9	10
Gender Male 1, Female 0 (1)	.45	.498	1									
Age (2)	34.77	12.35	-.131*	1								
Education (3)	2.27	1.143	.080	.133*	1							
Work Experience (4)	13.38	11.189	-.082	.907**	.089	1						
Intention (5)	2.974	1.266	.080	-.115*	.018	-.062	1					
SE_Search (6)	3.46	.902	.017	-.027	-.019	.011	.379**	1				
SE_Plan (7)	3.50	1.114	.026	.040	-.015	.083	.259**	.528**	1			
SE_Marshal (8)	3.16	1.00	.085	-.192**	-.025	-.136*	.318**	.649**	.484**	1		
SE_Implement (9)	4.134	.95	-.053	.089	.002	.126*	.099	.546**	.475**	.510**	1	
Opportunity recognition (10)	4.058	.760	-.050	.086	.064	.085	.090	-.032	-.047	-.074	.073	1

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

We tested our predictions using hierarchical regression, which makes it possible to enter one predictor at a time to see how each additional variable contributes to explaining the variance. Control variables were added as the first step (Model 1), followed by the independent variable of entrepreneurial intention in the second step (Model 2), the moderator is entered in the third step (Model 3) and the interaction term is added last (Model 4).

H1 predicted that self-efficacy will moderate the relationship between entrepreneurial intentions and opportunity recognition. Results revealed a significant interaction, and the hypothesis was supported ($p < .05$). (See Table 2). Figures 1-4 in Appendix 2 depict the interaction effects for H1a, H1b, H1c, and H1d.

TABLE 2
Self-Efficacy as the Moderator of the Relationship
Between Intention and Opportunity Recognition (N=302)

Variables	Model 1 (controls only)	Model 2 (intention)	Model3 (moderator)	Model 4 (interaction)
Control Variable				
Gender (1 male, 0 female)	-.087	-.096	-.072	-.059
Age	.003	.005	.004	.005
Education	.026	.026	.022	.025
Work Experience	.002	.001	.000	-.001
Independent Variables (centered)				
Intention		.059+	.100**	.090*
Self-efficacy searching			-.068	-.045
Self-efficacy planning			-.056	-.059
Self-efficacy marshalling			-.095	-.104+
Self-efficacy implementing			.154**	.122*
Interaction (Intention X Search)				.127*
Interaction (Intention X Plan)				.076*
Interaction (Intention X Marshall)				.014
Interaction (Intention X Implement)				-.019
F	.96	1.329	1.877*	4.186***
R^2	.013	.022	.055	.161
Adjusted R^2	-.001	.006	.026	.122
Change in R^2	.013	.009	.033	.105
Number of Observations	293	292	288	284

Unstandardized coefficients are shown
Significant levels: +p<.1, *p<.05, **p<.01, ***p<.001

CONCLUSION

In this study, we examined how self-efficacy in four different functions of entrepreneurship affect the relationship between entrepreneurial intentions and opportunity recognition. We expected individuals who had entrepreneurial intentions and believed in their

abilities to successfully perform entrepreneurial functions to be more likely to recognize entrepreneurial opportunities. Of the four dimensions of entrepreneurial self-efficacy, we found support for the moderating effect of self-efficacy in the search and planning functions of entrepreneurship. Specifically, those who had the intention to start a business were more likely to recognize opportunities if they believed in their abilities to generate ideas, products and services and if they felt competent in their understanding of the markets (i.e. search). Similarly, those entrepreneurs who had self-efficacy in planning, and believed in their ability to develop comprehensive business plans (and their ability to convert ideas into feasible plans) were more likely to recognize opportunities.

Our results did not provide support for the moderating role of marshaling and implementation dimensions of self-efficacy on the relationship between entrepreneurial intention and opportunity recognition. Marshaling refers to the entrepreneur's ability to gather the necessary resources including capital, labor, customers, and suppliers—whereas implementation refers to the entrepreneur's ability in managing and directing organizational activities. It is possible that self-efficacy in marshaling and implementation functions of entrepreneurship affect later stages of the entrepreneurial process.

Gielnik et al. (2014, p. 755) claim that "the road from intentions to actions and new venture creation is long" drawing attention to how complicated the process of entrepreneurship is, and the various components involved therein. Opportunity recognition is an early activity in the entrepreneurial process. It is possible that the entrepreneurial intention and opportunity recognition relationship may be followed by the opportunity recognition and venture creation relationship. It is also possible that this second step from opportunity recognition to venture creation is moderated by self-efficacy in marshaling and implementation. Recruiting, supervising, and motivating employees are managerial functions which take place once the venture is created. Therefore, self-efficacy in these functions is likely to motivate individuals who recognize opportunities to act on them and create the venture. Future studies should examine the role of entrepreneurial self-efficacy in different phases of the entrepreneurial process.

Research to-date suggests that education enhances entrepreneurial activity through increasing self-efficacy in entrepreneurship, even in non-business fields such as nursing (Jahani, Babazadeh, Haghighi, & Cheraghian, 2018). Our results support the role of self-efficacy in increasing opportunity recognition and informs educators and policy makers that entrepreneurship can be enhanced through education. We find the positive effect of confidence in recognizing the need for a product or a service, and confidence in one's ability to understand the financial aspects of starting a business, on opportunity recognition. Therefore, entrepreneurship education should equip students with the tools to feel competent in entrepreneurship and increase their self-efficacy.

This study is not without limitations. Data was collected in the United States and, therefore, the generalizability of our results is limited. Future studies should examine the role of entrepreneurial self-efficacy in the relationship between entrepreneurial intention and opportunity recognition, as well as the relationship between opportunity recognition and venture creation, both in the United States, and in other countries. In addition, other psychological variables, such as fear of failure, should be examined as moderators to yield a more holistic picture of entrepreneurial self-efficacy and the related concepts of entrepreneurial intention and opportunity recognition.

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APPENDIX 1

Entrepreneurial Intention Scale Items

1. I am ready to do anything to be an entrepreneur
2. My professional goal is to become an entrepreneur
3. I will make every effort to start and run my own firm
4. I am determined to create a firm in the future
5. I have very seriously thought of starting a firm
6. I have the firm intention to start a firm some day

Entrepreneurial Self-Efficacy Scale Items

Searching:

1. Identify the need for a new product or service
2. Recognize a business opportunity before others do
3. Invent a new product or service
4. Develop ways to improve a product or service
5. Investigate the market for a new product or service

Planning:

1. Organize and maintain the financial records of my business
2. Accurately estimate the necessary revenues and costs associated with my business
3. Prepare projected (pro-forma) financial statements such as balance sheets, income statements and cash flows for a new business
4. Accurately estimate the amount of start-up funds and working capital necessary to start my business

Marshalling:

1. Persuade professional investors (e.g. venture capitalists) to invest in my business
2. Find individuals with the necessary capital to fund my business
3. Gain the confidence and trust of people who do not know me very well
4. Persuade formal leading institutions (e.g. banks) to loan money to my business
5. Persuade friends or family members to invest in my business

Implementing:

1. Supervise employees
2. Recruit and hire employees
3. Inspire, encourage and motivate my employees
4. Manage the business without guidance or advice from others
5.

Opportunity Recognition Scenario Questions

1. This situation is likely to result in a successful outcome.
2. This situation represents an opportunity.
3. This situation is positive.
4. You may gain in this situation and are unlikely to lose

APPENDIX 2

FIGURE 1
H1a

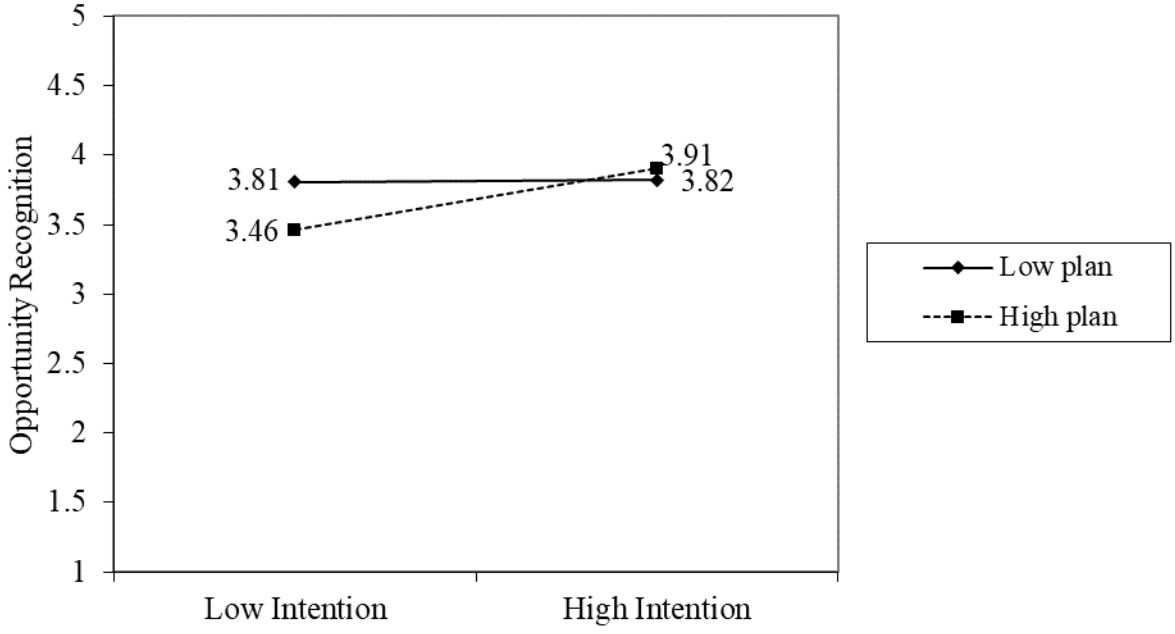

FIGURE 2
H1b

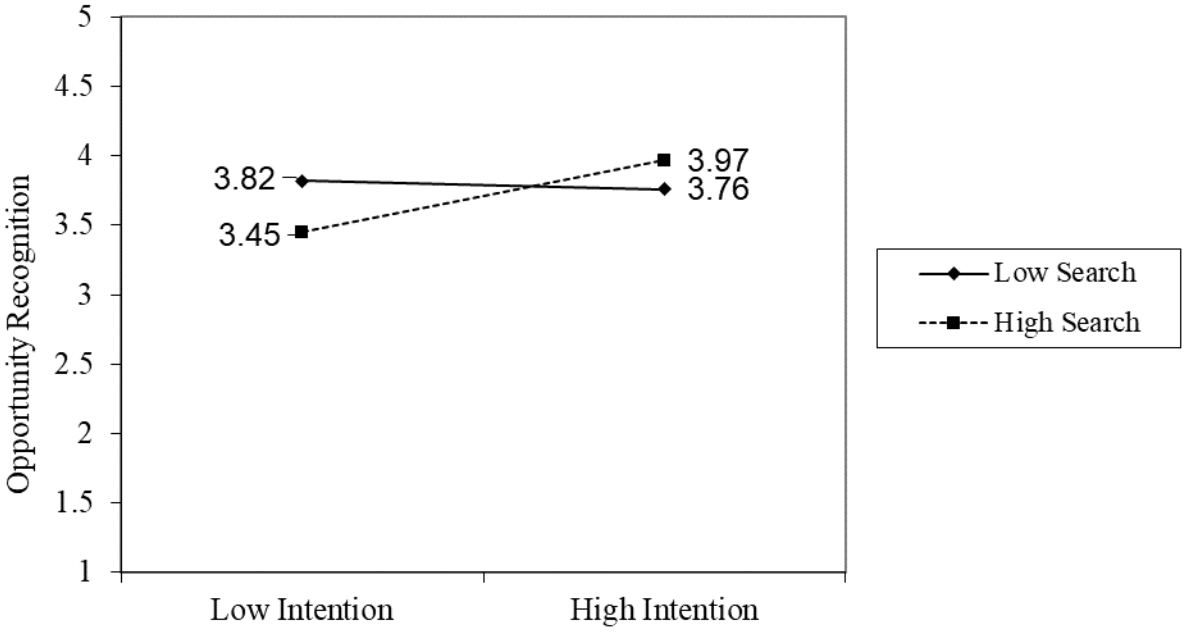

FIGURE 3
H1c

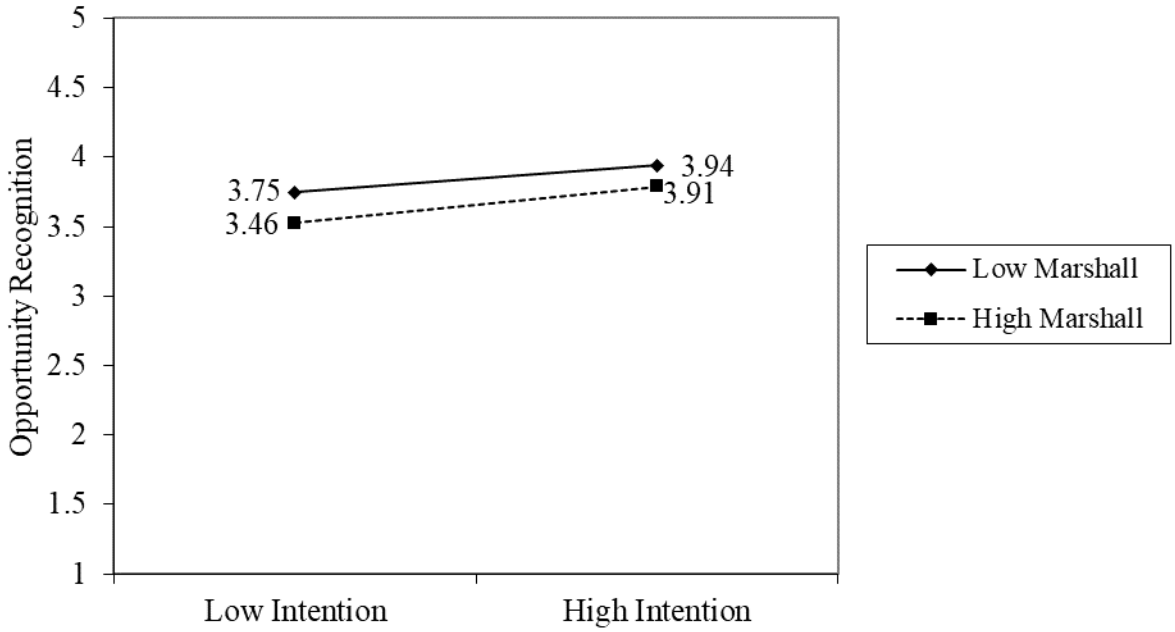

FIGURE 4
H1d