

Factors Influencing Interest in Research among Criminal Justice Students

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This study explores factors influencing research interest (RI) among criminal justice students. The participants were 328 students at a mid-western university. Results of a path analysis indicated that quantitative and computer skills and writing skills were significant predictors of RI. Statistics anxiety was a significant negative predictor of research design skills, practical research skills, and quantitative and computer skills. It also indirectly predicted RI via quantitative and computer skills. Statistics self-efficacy was a significant predictor of research design skills, practical research skills, quantitative and computer skills, and writing skills, and also indirectly predicted RI via quantitative and computer skills as well as writing skills.

Introduction

As the criminal justice system moves toward being a scientifically oriented field, research methodology will provide valuable tools enabling criminal justice professionals to assess the needs of the developing direction of the field (Hagan 2010); having quality research could keep the field up to date with the changing society. Therefore, it is essential that criminal justice students receive effective training in research to gain sufficient knowledge and acquire adequate skills in research methodology throughout their professional development. However, many studies have found that students in social science and psychology fields tend to have very low interest in research (Blischak and Cheek 2001; Gelso 1993; Tinsley, Tinsley, Boone, and Shim-Li 1993), even after they have completed doctoral training (Brems, Johnson, and Gallucci 1996; Gelso and Fretz 2001). One possible explanation might be that many students in social science and psychology programs, including criminal justice majors, may have chosen their major with the expectation that their coursework would tend to focus on practical dimension learning, and there would be fewer quantitative-related courses in their curriculum (Baer and Jewell 1979; Hosticka 1980; Leming 1979). As a consequence, they might often view research and

statistics-related courses with more anxiety than any other courses (Baloğlu 2001; Blalock 1987; Gaydos 1990; Schacht and Stewart 1990, 1991; Zeidner 1991). However, while research courses have been made required courses for criminal justice majors, to our knowledge, few empirical studies have been published in this area to date. Therefore, the purpose of this study was to explore the levels of research interest (RI) among criminal justice students and whether statistics anxiety (SA), statistics self-efficacy (SSE), and research self-efficacy (RSE) could predict the RI of undergraduate and graduate students with criminal justice majors.

Literature Review

Many social science and psychology programs in universities have strong emphasis in research training; the goal of this training is not only to produce effective scientist-practitioners but also to enable them to apply their findings in their practice (Gelso and Fretz 2001). To reach these goals, it is essential, during the training, to motivate students' interest in research (Gelso and Lent 2000), including interest in reading articles from journals, designing research projects, and analyzing data (Bieschke 2006), because students' interest in research is the first milestone in their scientific development (West, Kahn, and Nauta 2007). With that interest, students will have greater motivation to appreciate, to read, and to conduct further research (Gelso and Lent 2000). Moreover, interest in research seems to be strongly associated with students' motivation to demonstrate improvement in research skills and to master research tasks (Deemer, Martens, and Podchaski 2007).

To maximize the development of students' interest in research, it is important to investigate what factors might be predictors related to RI so that educators in this field can incorporate these factors into their training programs. In the following, we will review each factor and explore how each factor relates to RI.

Statistics Anxiety, Statistics Self-Efficacy, Research Self-Efficacy, and Research Interest

Self-efficacy has been defined as individuals' belief in their abilities of organizing and carrying out actions to attain specific goals they have set up (Bandura 1991). Self-efficacy belief is also called self-efficacy expectation; that is, when individuals believe they have the ability to succeed in a specific task, they are more likely to engage in action related to the task (Bandura 1977). Scholars believe this is the most crucial element determining whether and how much effort individuals will expend on a specific task (Bandura 1986, 1991; Bandura and Adams 1977). Finney and Schraw (2003) were the first to develop an SSE inventory to measure whether students' self-efficacy for statistics had

increased after a statistics course; their results indicated that students' self-efficacy for statistics did increase after the statistics class.

As Hagan (2010) pointed out, most published research articles in criminal justice and the social sciences use quantitative methodology; therefore, it would be impossible to become involved in research in these areas without some knowledge of statistics. However, many research results have shown that approximately 75-80% of graduate students with social sciences majors indicate a high level of SA (Onwuegbuzie, Slate, Paterson, Watson, and Schwartz 2000; Onwuegbuzie and Wilson 2003), which was defined by Cruise, Case, and Bolton in 1985 as "the feelings of anxiety encountered when taking a statistics course or doing statistical analysis[,] that is, gathering, processing, and interpret[ing]" (cited from Baloğlu 2001, p. iv). Onwuegbuzie, DaRos, and Ryan (1997) defined SA as "a state-anxiety reaction to any situation in which a student is confronted with statistics in any form and at any time" (p. 28).

Unfortunately, SA not only has a negative impact on their learning (Onwuegbuzie and Seaman 1995), but may also cause many students to develop a mental block in this area of study (Brown 1982). As a result, statistical analysis has become the poorest skill of many graduate students in the social sciences, and many students' self-efficacy for statistics has decreased (Huntley, Schneider, and Aronson 2000).

Since an important component of a quantitative research project is the data analysis section, which includes the use of statistical analysis to test the hypotheses and answer the research questions, one would expect that for individuals with more SA and less self-efficacy for statistics, the self-efficacy and interest in research might tend to be lower. Although to our knowledge only a few empirical research studies to date have focused on exploring the relationships among SA, SSE, RSE, and RI, findings from a study by Onwuegbuzie (1997) may serve as evidence supporting this notion. Onwuegbuzie found that many students experience increasing anxiety during research proposal writing due to lack of skills in doing library research, lack of statistical concepts, and lack of confidence in developing a proposal for research. Other studies have suggested that students who have a higher level of self-efficacy in math have better skill in solving math problems, better math concepts, a better attitude toward math, more math experience, more general mental ability, and greater self-efficacy for self-regulation (Pajares 1996; Pajares and Kranzle 1995; Pajares and Miller 1994). Since both mathematical and statistics disciplines share a quantitative nature, Finney and Schraw (2003) suggested that the above findings could apply to the statistics field as well and that the same relationship between SSE and RSE could be expected.

Research Self-Efficacy and Research Interest

Scholars have defined RSE as individuals' belief in their ability to carry out actions to conduct and complete a research project (Bishop and Bieschke 1998). They have found a positive relationship between RSE and productive research (Phillips

and Russell 1994), while it has been suggested that inadequate self-efficacy in research might lead to avoidance activities in relation to research (Betz 1986). Since RSE carries the power to energize students' involvement in the research process, scholars maintain that an effective research training program should place strong emphasis on strategies to strengthen students' belief in their research ability (Gelso and Lent 2000) and that increasing RSE among students would be likely to have the result of promoting students' RI (Gelso et al. 1988; Love, Bahner, Jones, and Nilsson 2007). Furthermore, studies have found that students' interest and confidence in research could predict their scholarly activities not only during their time as students (Kahn and Scott 1997), but also after they graduate (Royalty and Reising 1986).

Overview of Present Study

Previous literature has revealed some evidence of a negative relationship between SA and SSE (Brown 1982; Huntley et al. 2000; Onwuegbuzie and Seaman 1995) in studies exploring relationships among SSE, RSE (Finney and Schraw 2003), and interest in research (Onwuegbuzie 1997). Further, many studies have provided some evidence to support the notion of a positive relationship between RSE and interest in research (Betz 1986; Gelso et al. 1988; Love et al. 2007; Phillips and Russell 1994). Along this line, hypothesized paths have been created to test factors influencing interest in research among criminal justice students. Our model assesses the direct contribution(s) of SA, SSE, and RSE to RI. Figure 1 displays the model of RI we tested.

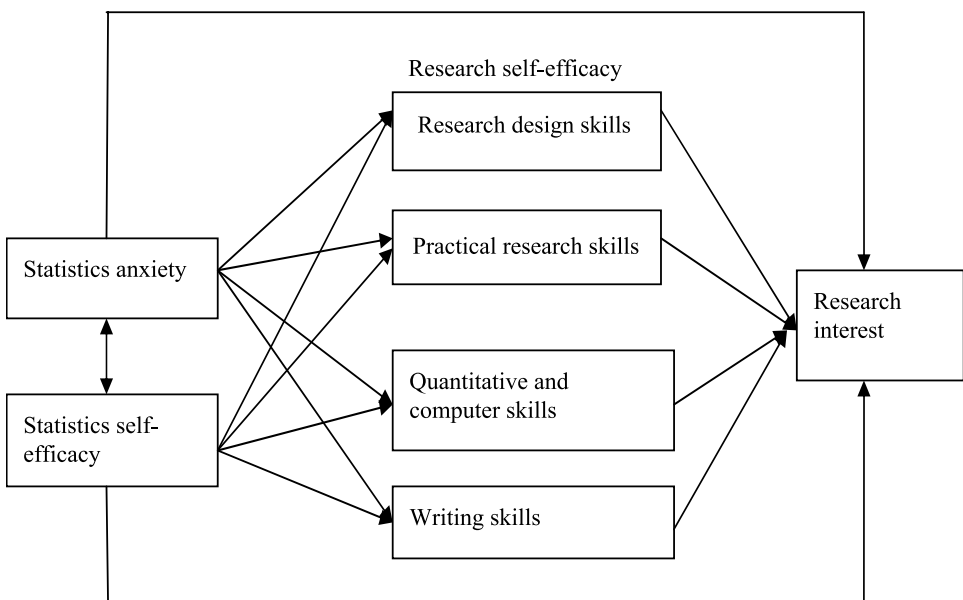


Figure 1 Hypothesized paths of factors affecting interest in research.

Method

Participants

The sample consisted of 328 students (98 male and 230 female) from the School of Criminal Justice at a mid-western university with 199 (61%) undergraduate students and 129 (39%) graduate students. Ages ranged from 18 to 59 years with a mean of 24.93 years and a standard deviation of 7.26. The ethnic backgrounds represented were as follows: 74% Caucasian, 15% African-American, 4% Hispanic, 2% Asian, and 5% other.

Assessment Instruments

Demographic background questionnaire

Participants were asked to provide the following information: gender, age, ethnicity, and graduate or undergraduate students.

Statistics anxiety (SA)

The statistical anxiety scale (SAS) used in this study to assess participants' SA level was revised from a scale developed previously by Guo and Law (2005). Thirty questions of this inventory were adopted from the original scale, which was based upon the theoretical structure of previous research studies (Cruise et al. 1985; Onwuegbuzie et al. 1997), and a factor analysis was conducted to test the construct validity. Ratings were made on a variation of a Likert-type scale, with responses ranging from 1 (never), 2 (sometimes), 3 (usually) to 4 (always). A sample item is "Seeing numbers and graphics makes me feel nervous." To test the validity and reliability of this scale, 193 students (77 male and 116 female) with criminal justice majors at a mid-western university, including 95 undergraduate students and 89 graduate students, participated, serving as the sample for the pilot run. Their ages ranged from 18 to 52 years with a mean of 24.37 years and a standard deviation of 6.68. The ethnic backgrounds represented were as follows: 86% Caucasian, 11% African-American, and 3% Hispanic. A factor analysis on this inventory found that a one-factor solution could account for 47.692% of the variance; the factor loading of each item was between .362 and .825. The Cronbach's alpha coefficient of the scores from this inventory was .945, indicating strong reliability for this scale. The Cronbach's alpha coefficient in this study was .96.

Statistics self-efficacy (SSE)

The current statistics self-efficacy (CSSE; Finney and Schraw 2003) was used in this study to assess the participants' SSE level. It is a 14-item scale asking

participants to rate their confidence in their current ability to successfully complete the statistics tasks. Ratings are made on a variation of a Likert-type scale, with responses ranging from 1 (no confidence at all), 2 (a little confidence), 3 (a fair amount of confidence), 4 (much confidence), 5 (very much confidence) to 6 (complete confidence). A sample item is "Identify the scale of measurement for a variable." Finney and Schraw determined that the Cronbach's alpha coefficients for the CSSE items completed during the second and the last weeks of the class were .907 and .935 ($n = 138, 130$). The factor analysis on this inventory found a one-factor solution that was related positively to two measures, statistics performance of specific statistics problems and overall course performance. The Cronbach's alpha coefficient in this study was .95.

Research self-efficacy (RSE)

The self-efficacy in research measure (SERM; Phillips and Russell 1994) was also used for this study. It is a 33-item scale to assess students' confidence in completing research tasks or belief that they have research skills. Phillips and Russell established the SERM based on suggestions of Bandura and literature related to self-efficacy in other areas. Ratings are made on a variation of a Likert-type scale, with responses ranging from 0 (no confidence), 1 (a little bit confidence), 2 (a little bit more confidence), 3 (some confidence), 4 (moderate confidence), 5 (a fair amount of confidence), 6 (much confidence), 7 (strong confidence), 8 (very strong confidence) to 9 (total confidence), to rate their confidence in completing the research tasks that are listed in the statement. A sample item is "Selecting a suitable topic for study." Phillips and Russell determined that the Cronbach's alpha coefficient for the total score of the SERM items was .96. This instrument consists of four subscales, and the reliability for each of them was determined as follows: research design skills (RDS; .90), practical research skills (PRS; .83), quantitative and computer skills (QCS; .93), and writing skills (WS; .94). The Cronbach's alpha coefficient in this study for each subscale was as follows: RDS (.89), PRS (.85), QCS (.90), and WS (.93).

Research interest (RI)

The interest in research questionnaire (IRQ; Bishop and Bieschke 1994) was used for this study. It is a 14-item scale designed to assess the degree of students' interest in a variety of research activities. Ratings are made on a five-point Likert-type scale ranging from 1 (very disinterested), 2 (disinterested), 3 (indifferent), 4 (interested) to 5 (very interested). A sample item is "Reading a research journal article." The Cronbach's alpha coefficient for the total score of IRQ items was .89. The Cronbach's alpha coefficient in this study was .93. The positive correlation between results of the IRQ and measures assessing

interest in investigative occupations, RSE, and perceptions of the academic research training environment support good validity for this instrument (Phillips, Szymanski, Ozegovic, and Briggs-Phillips 2004).

Procedure

Prior to data collection, this research was approved by the first author's Institutional Review Board. To match with the nature of the research topic, the researchers drew the sample from among those students who were currently taking statistics or research courses. An informed consent form with a detailed explanation of the research purpose, anonymity and confidentiality of their responses and the data as well as the voluntary nature of participation was first distributed to the students along with an oral announcement regarding the above issues. After the students had signed consent forms and turned them in to indicate their agreement to participate, they were given packets consisting of the SAS, CSSE, SERM, and IRQ. Such precautions were taken to guard against the possibility of a favorable bias of their responses with the desire to impress their professors. The questionnaires were completed in a classroom setting in approximately 20-30 minutes.

Data Analysis

The key variables of this research were SA, SSE, RDS, PRS, QCS, WS, and RI. The definitions of the key variables and the associated measure instruments are summarized in Table 1.

Table 1 Definition, abbreviation, and measure instrument of key variables in current research

Key variable	Definition	Measure instrument
Statistics anxiety (SA)	A state-anxiety reaction to any situation related to statistics.	SAS
Statistics self-efficacy (SSE)	Confidence with the ability to successfully complete the statistics tasks	CSSE
Research design skills (RDS)	Confidence with the ability in designing research methods.	SERM
Practical research skills (PRS)	Confidence with the practical ability in conducting a research.	SERM
Quantitative and computer skills (QCS)	Confidence with the ability and knowledge in collecting and analyze data.	SERM
Writing skills (WS)	Confidence with the writing ability in presenting research results.	SERM
Research interest (RI)	Interest in a variety of research activities.	IRQ

A recursive (unidirectional) path analysis model with ordinary least squares for the regression equations was used for this study. Thus, we conducted five sequential regressions with each dependent variable estimated in a separate regression and with all predictors of each dependent variable entered simultaneously. The significant alpha level set up for this study was .05.

Results

The correlation matrix, mean and standard deviation for each variable used in the path analysis are shown on Table 2. The path analysis consisted of five regressions, with the first four regressions assessing indirect effects on RI and the final regression assessing direct effect on RI. In the first regression, the dependent variable RDS was regressed on the SA and SSE variables. In the second regression, the dependent variable PRS was regressed on the SA and SSE variables. In the third regression, the dependent variable QCS was regressed on the SA and SSE variables. In the fourth regression, the dependent variable WS was regressed on the SA and SSE variables. In the fifth regression, the dependent variable RI was regressed on the six variables—SA, SSE, RDS, PRS, QCS, and WS. Beta weights representing the standard coefficient were used for the path coefficients. Figure 2 presents the resulting model and the path coefficients for only those paths that were significant.

As revealed in Figure 2, in predicting RI, the direct effects of two factors were significant: QCS (standardized coefficient, $\beta = .252$, $p < .01$) and WS (standardized coefficient, $\beta = .165$, $p < .05$). The indirect effects of several variables were also significant in predicting RI. Support was found for an indirect effect of SA on RI mediated by QCS. The total effect coefficient for SA was $-.0504$ (from $-.200 \times .252 = -.0504$). Support was also found for an indirect effect of CSSE on RI mediated by QCS. The total effect coefficient for SSE was $.139$ (from $.552 \times .252 = .139$). An indirect effect of SSE on RI was mediated by WS. The

Table 2 Intercorrelations, means, and standard deviations among variables in path analysis of predictors of research interest

Variables	SA	SSE	RDS	PRS	QCS	WS	RI
Statistics anxiety (SA)	—						
Statistics self-efficacy (SEE)	-.490**	—					
Research design skills (RDS)	-.399**	.510**	—				
Practical research skills (PRS)	-.296**	.396**	.806**	—			
Quantitative & computer skills (QCS)	-.471**	.650**	.800**	.713**	—		
Writing skills (WS)	-.264**	.453**	.776**	.788**	.673**	—	
Research interest (RI)	-.250**	.392**	.512**	.497**	.537**	.501**	—
Mean	1.92	3.39	5.25	5.94	4.60	5.67	2.97
SD	0.61	1.16	1.78	1.59	1.86	1.90	0.96

** $p < .01$.

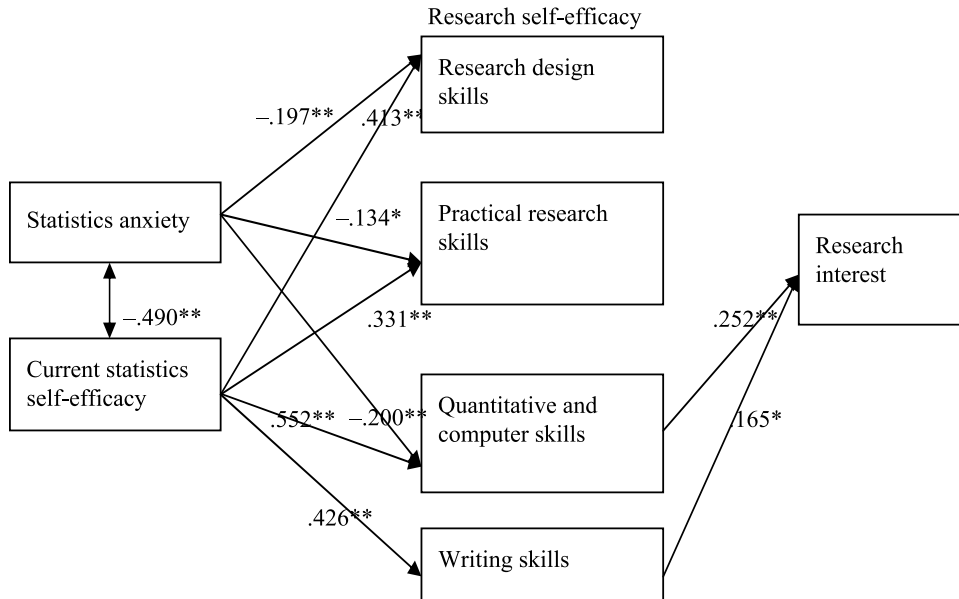


Figure 2 Final path diagrams indicating only those paths found to be significant in predicting interest in research.

* $p < .05$ ** $p < .01$.

Note. The numbers around the arrows are the beta weights.

total effect coefficient for SSE was .070 (from $.426 \times .165 = .070$). In addition, SA was a significant predictor of RDS (standardized coefficient, $\beta = -.197$, $p < .01$), PRS (standardized coefficient, $\beta = -.134$, $p < .05$), and QCS (standardized coefficient, $\beta = -.200$, $p < .01$). Further, SSE was a significant predictor of RDS (standardized coefficient, $\beta = .413$, $p < .01$), PRS (standardized coefficient, $\beta = .331$, $p < .01$), QCS (standardized coefficient, $\beta = .552$, $p < .01$), and WS (standardized coefficient, $\beta = .426$, $p < .01$). Finally, there was a significant correlation between SA and SSE ($r = -.490$, $p < .01$).

The regression of all variables entered to predict RI either directly or indirectly explained 33.2% of the variance. Indirect effects on RI were assessed by examining the variables SA and SSE to predict RDS, PRS, QCS, and WS; 28.9% of the variance in predicting RDS, 17.1% of the variance in predicting PRS, 45.3% of the variance in predicting QCS, and 20.8% of the variance in predicting WS were accounted for by the variables SA and SSE.

Discussion

Since the criminal justice field has developed in a quantitative-oriented direction in recent years, it is important for future criminal justice professionals to prepare themselves with a strong foundation in research-related knowledge and foster their interest in research to match with the requirements of the future

market. Unfortunately, a number of studies have indicated a tendency toward low interest in research among students in social sciences fields (Blischak and Cheek 2001; Gelso 1993; Tinsley et al. 1993). Therefore, the purpose of this study was to test hypothesized paths to investigate what factors might influence students' interest in research and to better understand the development of interest in research among criminal justice students.

Based on previous research studies, a hypothesized paths model was created to assess the contribution(s) of SA, SSE, and RSE to RI. The results have partially supported our hypotheses and are consistent with previous findings (Gelso et al. 1988; Love et al. 2007); they reveal that the criminal justice students' confidence in QCS as well as WS could directly predict their interest in research. This study also found that the students' SA could indirectly predict their RI via their confidence in QCS. The students' confidence in statistics ability could also indirectly predict their RI via their confidence in QCS as well as WS. In the following, each element will be discussed more specifically.

Statistics Anxiety and Confidence in Statistics Ability

Although quantitative methodology is the main style used by most scholars in criminal justice and social sciences to conduct their research (Hagan 2010) and statistics education is an essential element during research training, many students experience more anxiety from statistics courses than from any other courses (Baloğlu 2001; Blalock 1987; Gaydosh 1990; Onwuegbuzie and Wilson 2003; Onwuegbuzie et al. 2000; Schacht and Stewart 1990, 1991; Zeidner 1991). The negative impact of such SA leads to many students having poor skills in statistics (Brown 1982; Huntley et al. 2000; Onwuegbuzie and Seaman 1995). Based on these results, one would expect that students who have higher SA would have lower confidence in their statistics ability. This expectation was fulfilled by the evidence provided in the present study; based on self-report, a significant negative correlation was found between SA and confidence in their statistics ability. This result indicates that when students have more anxiety in learning statistics, they are more likely to have distrusted their statistical ability.

Statistics Anxiety, Confidence in Research Ability, and Research Interest

Along the same line as our previous discussion, we would expect that when students feel anxious in learning statistics they might have lower confidence in their research ability and become less interested in research. This expectation was also fulfilled by the evidence provided in the present study; based on self-report, low SA was a significant predictor of greater confidence in their research ability focused on RDS, PRS, and QCS. These findings are consistent with findings of Onwuegbuzie (1997) and indicate that when students feel less anxious in learning statistics they will have more confidence in activities related to research.

Furthermore, in regard to SA and RI, this study found an indirect effect of less SA on RI mediated by confidence in their research ability focused on QCS. This result indicates that although reducing students' anxiety in learning statistics might not be directly related to increasing their interest in research, nevertheless, by improving their confidence in handling data and gaining skill in calculating data through statistical computer software, their RI might be increased. Although applying SA is a new construct in predicting confidence in research ability or RI, these findings may serve to light the way for further research.

Confidence in Statistics Ability, Research Ability, and Research Interest

Similarly to SA, confidence in statistics ability is also a new construct in predicting either confidence in research ability or RI. However, we applied the positive findings from mathematical disciplines, which indicated a positive relationship between students' high math self-efficacy and greater ability in solving math problems as well as better attitudes toward math (Pajares 1996; Pajares and Kranzle 1995; Pajares and Miller 1994), and expected the same relationship between confidence in statistics and research ability, as suggested by Finney and Schraw (2003). This expectation was fulfilled by the evidence provided in the present study; based on self-report, the students' confidence in statistics ability was a significant predictor of their confidence in research ability focused on RDS, PRS, QCS, and WS. These results indicate that when the students had confidence in their statistics ability, they would also have confidence in their abilities related to different aspects of research activities. Furthermore, when testing how the students' confidence in statistics ability could predict their RI, this study discovered an indirect effect of confidence in statistics ability on RI mediated by RSE focused on QCS as well as WS. This means that when students' confidence in their statistical ability, confidence in handling quantitative data, and WS are enhanced, their greater confidence and skill might in turn bolster their interest in research. It is hoped that these findings can also serve to light the way for further research.

Confidence in Research Ability and Research Interest

In contrast to SA and confidence in statistics ability, there are more empirical studies available that show a positive relationship between students' confidence in research ability and scholarly productivity (Khan and Scott 1997; Phillips and Russell 1994; Royzltz and Reising 1986) as well as RI (Gelso et al. 1988; Love et al. 2007). Based upon the evidence discussed above, we expected that students who had higher confidence in research ability would also have more interest in research. This expectation was fulfilled by the evidence provided in the present study; based on self-report, the students' confidence in research ability focused on QCS and WS could directly predict their RI. That is, when

students have confidence in their ability in working on quantitative data, calculating data through statistics computer programs, and writing, they will tend to be more interested in becoming involved in activities related to research.

Conclusion

This study is a beginning effort to understand the factors influencing RI for students in criminal justice majors. However, there are some limitations of this study worth mentioning. First, to our knowledge, no studies to date have empirically investigated or focused on this area in criminal justice professional research so that the framework of this study mainly relied on empirical evidence from counseling psychology, social work, and education fields. Although the results of the present study serve as a starting point, we account for only 33.2% of the variance in RI. Further studies examining this construct in the criminal justice field will be useful, especially in regard to the role of SA and confidence in statistics ability in predicting the RI of criminal justice students. In addition, the researchers of this study suggest the inclusion of grades in statistics and research courses as well as students' grade point average or quality point average, etc., in further studies to allow the examination of other variables that might affect the RI of criminal justice students. The second limitation is in regard to the sampling. The sample of this study was from a single institution where the majority of the student body is comprised of Caucasian-American students. For this reason, our research results may not be generalizable to criminal justice majors of other institutions with a more diverse student population. Thus, for further research, we strongly encourage the collection of data from different types of institutions and recruitment of participants from various cultural backgrounds with a larger sample size to further test the hypothesized paths of this study. Finally, due to the cross-sectional design, the results of the current study were limited to exploration of a truly recursive relationship among the variables. Therefore, a true-experimental design should be utilized in further research to test the causal order at work among variables in the other direction.

If the results are confirmed by future studies, our findings have the following implications for educators in the criminal justice field in regard to enhancing students' RI. First, educators should be aware that students' confidence in their research ability will directly influence their RI. Phillips and Russell (1994) discovered a positive relationship between the research training environment and confidence in research ability, and stressed the importance of improving the research training environment based on self-efficacy theory, focusing especially on providing training in QCS as well as WS.

Secondarily, educators should be aware that students' anxiety in learning statistics is associated with their confidence in their statistical ability and should be aware as well that these two variables will directly influence the students' confidence in their research ability and might have an indirect

impact on their RI. Therefore, it is important to have well-designed statistics training in the program to help students in criminal justice build a solid foundation in statistics. During the actual teaching, educators should also be aware that the students' anxiety might be negatively associated with their learning outcome and take advantage of statistical computer software (e.g., SPSS, SAS) as well as provide some additional assistance to reduce students' anxiety as needed. Further, it is also essential to incorporate statistics knowledge and research methodology in quantitative research methodology courses and to teach students how to apply statistics techniques in their research practice. With this, we recommend that when teaching statistics and research courses, the instructor should put more emphasis on application-oriented methods than on mathematical aspects. Rather than focusing on formulae and demonstrating calculating skills, students should be guided in how to develop their interest in a topic, formulate questionnaires, collect data, use computer software to analyze data, and write reports. Through this interpretive process with instructor's feedback in both process and results presentation, it is likely that criminal justice students' confidence in statistics would be built up, and with the evidence from our research findings, we then can predict that students' confidence in research would be enhanced and a greater interest in research would be instilled in them.

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