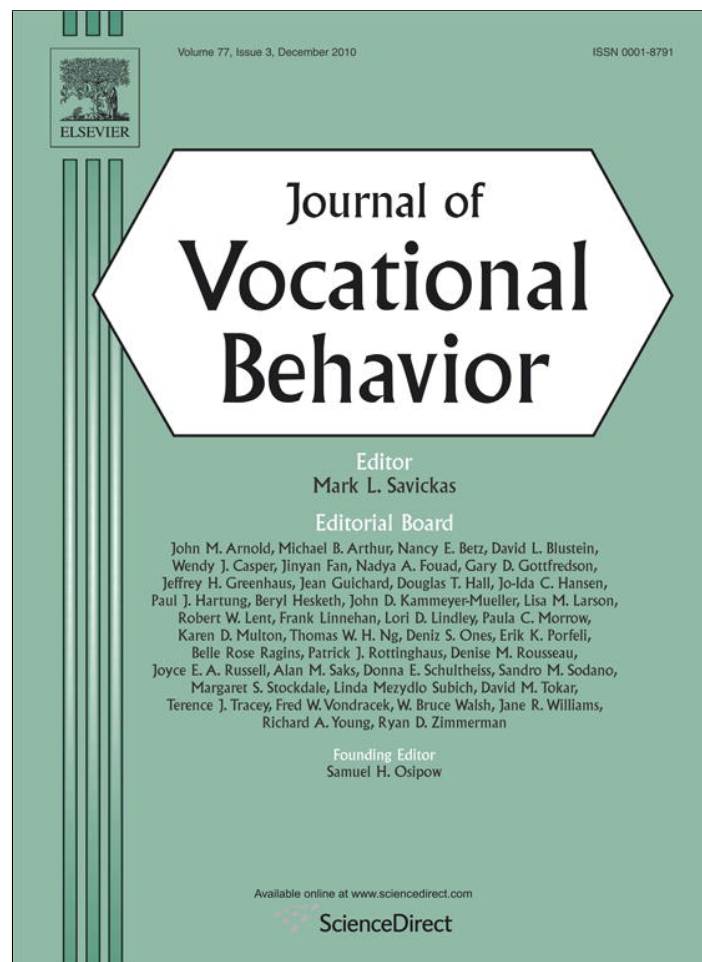


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Contextual supports and barriers to academic choices: A policy-capturing analysis

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ABSTRACT

In this study, we use an experimental methodology called policy capturing to examine the effects of contextual barriers and supports on students' decisions to change academic majors. Consistent with Social Cognitive Career Theory (SCCT), we found that information about family supportiveness, peer supportiveness, financial status, and job market outlook all had unique effects on participants' decisions, as did choice self-efficacy. Further, we found that trait negative affectivity moderated the relationship between choice self-efficacy and choice decisions. Exploratory analyses also indicated that the relations of family and peer supportiveness to choice decisions were weaker for non-European-American participants than European-American participants. Implications and directions for future research are discussed.

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Vocational psychologists have long examined the influences of contextual affordances (i.e., experiences with supports and barriers) on educational and career development (e.g., Brown, Fukunaga, Umemoto, & Wicker, 1996). Contextual barriers are situational conditions that inhibit career progress, whereas contextual supports are those conditions that facilitate career progress (Lent, Brown, & Hackett, 2000). Although barriers and supports are integral components of Social Cognitive Career Theory (SCCT: Lent, Brown, & Hackett, 1994), a sophisticated understanding of the mechanisms by which they operate simultaneously remains unclear, probably because of complications inherent in attempting to tease the two apart. For example, some barriers act as impediments for some individuals while acting as facilitators for others (Lent et al., 2000). The existence of intrapersonal, interpersonal, and environmental supports and barriers also adds to the complexity in understanding their effects.

In this study, we examine the consequences of perceptions of supports and barriers on students' decisions to change college majors using an experimental design called policy capturing. Policy capturing allowed us to manipulate information about a set of four contextual affordances and to examine the extent to which these manipulations influenced participants' hypothetical choices about whether or not to change their major. Our objective was to examine the relative impacts of a set of within-person (i.e., family supportiveness, peer supportiveness, financial status, job market outlook, and self-efficacy estimate) and between-person (i.e., negative affectivity, demographic variables) constructs on the decision to switch a college major.

Policy capturing methodology

Policy capturing is a methodology developed in the judgment and decision-making literature that is commonly used to study decision-making processes. This method involves asking participants to make decisions (the dependent variable) in response to a series of scenarios in which key pieces of information are manipulated (the independent variables). Decisions are then regressed

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on the independent variables and any covariates to determine the relative weight assigned to each type of information when making the decision (Aiman-Smith, Scullen, & Barr, 2002). As an experimental methodology, policy capturing increases the internal validity of results and can complement findings from qualitative and correlational methodologies.

There are several advantages to using this method to study the impacts of barriers and supports on career choices within the SCCT framework. First, as Lent and colleagues (2000) discussed, self-reported perceptions of barriers and supports reflect a number of underlying constructs that cannot be easily separated. For example, a response concerning disapproval from peers involves some combination of the objective existence of disapproval, the subjective perception and evaluation of the importance of the disapproval, and a qualification of the impact of this disapproval based on one's self-efficacy to deal with it. Second, self-report research on career choices requires access to a sample of participants who are all faced with the same decisions and the same options and is inherently limited by the inability to control for these factors. Policy capturing allows the researcher to hold the decision, options, and available information constant in order to control for these potential confounds. Lastly, self-report measures make the identification of the unique influence of a particular contextual barrier or support difficult when affordances may be interrelated for some participants, but not for others. For example, family support may be entwined with financial status for some students who are fiscally dependent on their caregivers, whereas these affordances are completely unrelated for other students. An experimental approach allows us to manipulate a set of common barriers and supports independently so that the unique effect of each affordance can be determined.

Within-person variables

We examined four within-person contextual affordances (i.e., family supportiveness, peer supportiveness, financial status, and job market outlook) that are relevant to career development (e.g., Lent et al., 2002; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003). We also measured participants' choice self-efficacy as a within-person covariate given the documented importance of self-efficacy to career development (Betz, 2007).

Contextual affordances

Research has demonstrated the relations of family support to a variety of vocational and educational outcomes for undergraduate students. For example, parental support has been demonstrated to be related to career choice prestige and career aspirations (Flores & O'Brien, 2002); career certainty (Constantine, Wallace, & Kindaichi, 2005); and vocational exploration and commitment (Leal-Muniz & Constantine, 2005). Siblings also play an important role in supporting career development through role modeling and providing career information, emotional and esteem support, encouragement, and feelings of security (Schultheiss, Palma, Predragovich, & Glasscock, 2002).

Although examined to a lesser extent, peer support is also related to career development outcomes. For example, peer social support is positively related to higher levels of school engagement, aspirations, and expectations (Kenny et al., 2003), and negatively related to adjustment difficulties and lower GPAs for first-generation college students from underrepresented ethnic groups (Dennis, Phinney, & Chuateco, 2005). Further, Ali, McWhirter, and Chronister (2005) found that parental, sibling, and peer support related differentially to vocational constructs such that peer and sibling support (but not parental support) predicted self-efficacy expectations for low-income 9th grade students.

Constructs related to financial status, such as social class, SES, and social status, have also been the focus of a number of recent studies. For example, social class (as measured by sociological indices such as self-identified social class category and parental education and income) is related to educational expectations of family members and individuals (Hanson, 1994), career aspirations (Aries & Seider, 2007), and occupational goals (Seider, 2008). Relatedly, social status identity (as assessed via an individual's perceived access to economic resources, social prestige, and social power) has been demonstrated to be related to career decision self-efficacy (Thompson & Subich, 2006), career aspirations and expectations (Metz, Fouad, & Ihle-Helledy, 2009), and value for status in one's work (Thompson & Dahling, 2010).

Finally, although examined to a lesser extent in the vocational literature, job market outlook has been demonstrated to influence college students' educational and vocational decision-making processes. For example, several studies have shown that students from Canada and the United States take job market information into account when choosing a major in business or IT-related fields (e.g., Felton, Buhr, & Northey, 1994; McInerney, DiDonato, Giagnacova, & O'Donnell, 2006). Similarly, Tang (2009) found that Chinese students ranked job security and job market status as influential factors that they considered when making career choices. Given the poor economic climate when the data for this study were collected (during the 2009 recession), we anticipated that perceptions of the job market may act as particularly salient barriers or supports to choice of college major.

Hypothesis 1. Family supportiveness, peer supportiveness, financial status, and job market outlook will each have significant and positive effects on choice scores. Specifically, as these affordances become more supportive, participants will report a greater willingness to change majors.

Given the lack of previous research regarding the relative weight of various contextual affordances on decision-making, we evaluated which contextual affordances had the strongest impact on choice decisions in an exploratory capacity rather than posing a formal hypothesis.

Self-efficacy

An individual's self efficacy (i.e., perceived confidence that one can perform certain tasks) is a central component of SCCT (Lent et al., 1994) and stems from Bandura's (1986) social cognitive theory. Self-efficacy is considered to be one of three "cognitive-person variables ... that enable people to exercise agency (i.e., personal control) within their own career development" (Lent et al., 2000, p. 36). Self-efficacy has been applied to research on diverse populations (see Lindley, 2006, for a review) and has been demonstrated to be related to many aspects of career decision-making, including persistence intentions in college (Torres & Solberg, 2001), choice of major and persistence toward that major (Lent, Brown, Schmidt, Brenner, Lyons, & Treistman, 2003), and interests, choice goals, and outcome expectations (e.g., Lent et al., 2005). As such, self-efficacy was included as a covariate in the analysis and the following hypothesis was proposed:

Hypothesis 2. Self-reported self-efficacy for a change-of-major decision will have a significant and positive effect on choice scores.

Between-person variables

Lent and colleagues (2000) urged researchers to consider the role of dispositional negative affect when examining reactions to contextual affordances. Trait negative affectivity represents a propensity to view events in a negative light and to more frequently experience negative emotions, such as irritation, guilt, and anxiety (Watson, Clark, & Tellegen, 1988). Consequently, Lent and colleagues (2000) suggested that individuals with high trait negative affectivity may be likely to perceive more barriers and fewer supports than those with low trait negative affectivity. Consistent with this idea, negative affect is associated with a variety of vocational challenges, including diminished goal pursuit (Schwarz & Bohner, 1996), limited capacity to cope with stress (Watson & Clark, 1984), and decreased ability to overcome career plateaus (Rotondo, 1999). Based on this literature, the following hypotheses were proposed:

Hypothesis 3a. Negative affectivity will have a negative effect on choice decisions.

Hypothesis 3b. Negative affectivity will interact with the contextual affordances to weaken their effects on choice decisions.

Hypothesis 3c. Negative affectivity will interact with self-efficacy to weaken its effect on choice decisions.

Finally, based on SCCT's tenets that person inputs (i.e., race/ethnicity and gender) are critical components that influence career development (Lent et al., 1994), we explored the effects of gender and race/ethnicity on academic major choice and on the weights assigned to the different affordances when making choices. Given that the present study was the first of its kind to use the policy-capturing design to examine the relation of contextual affordances to choice intentions, these analyses were exploratory in nature.

Method

Participants

Participants were 145 undergraduate students (54.3% male) recruited from Psychology courses at a small Mid-Atlantic college. The sample was comprised of participants who self-identified as belonging to the following racial groups: 66.4% European American, 15.1% Asian American, 13% African American, and 5.5% of other races. With respect to ethnicity, Hispanic participants made up 10.3% of the sample. Their average age was 19.63 years ($SD = 1.67$). With respect to academic rank, first, second, third, and fourth-year students made up 19.9%, 35.6%, 29.5%, and 15.1% of the sample, respectively. Students reported having majors in liberal arts (52.9%), physical or natural sciences (17.4%), education (12.3%), business (15.9%), and other disciplines (1.4%). Due to the nature of the stimuli presented to participants (explained in detail below), potential participants with current or past majors in either Communications or Biology were not invited to complete the study based on the possibility that their idiosyncratic experiences might influence their reactions to the scenarios.

Procedure

All data were collected under supervised conditions using computer-based surveys. Participants were instructed that they would read a series of scenarios describing a situation in which a decision must be made concerning a change of major from Communications to Biology. All participants were provided with a practice scenario to minimize start-up effects (Aiman-Smith et al., 2002) and then started with the sequence of experimental scenarios. Participants were instructed to attend to four pieces of information provided after the stem to help them make their decision; these were the within-person manipulations of family supportiveness, peer supportiveness, financial status, and job market outlook. Appendix A reports the stem and cues associated with the scenarios. We utilized a full-factorial design that fully crossed all combinations of each contextual affordance cue. As such, each participant reacted to 81 experimental scenarios (i.e., a 3 [low, medium, and high family supportiveness] \times 3 [low, medium, and high peer supportiveness] \times 3 [low, medium, and high financial status] \times 3 [low, medium, and high job market status] design) presented in a fully randomized sequence.

After the presentation of each scenario and cues, participants responded to four questions (two measuring choice and two measuring choice self-efficacy). Due to the demanding nature of this design, participants were reminded at several points to take their time, read carefully, react honestly, and to take a break if needed. We emphasized that each scenario would be different and that careful attention should be paid to each one despite their facial similarity.

Measures

Major change choice and choice self-efficacy (within-person; level 1)

Because participants must respond to the within-person measures after each experimental scenario (81 times in this study), a critical design element of policy capturing is to keep these measures as short as possible (Aiman-Smith et al., 2002). Consequently, we measured major change choice and self-efficacy for the choice with two-item measures, yielding a total of four questions after each scenario. Prior to responding to these items, participants received the following instruction “Try hard to imagine how *confident* you would feel and what you would *decide to do* based on the information presented to you about your status.” The items measuring choice were, “I would choose to change my major to Biology” and “I would choose to remain enrolled as a Communications major” (reverse-scored). The items measuring choice self-efficacy read, “I believe I would be successful as Biology major” and “I believe I could have a good career if I switched majors to Biology.” Participants responded on a scale of 1: “strongly disagree” to 5: “strongly agree.” Across the 81 scenarios, coefficient alpha for the two-item choice measure and two-item choice self-efficacy measure ranged from $\alpha = .74$ –.95 and $\alpha = .69$ –.88, respectively.

Negative affect (between-person; level 2)

Trait negative affect was measured with the 10-item measure ($\alpha = .85$) from the PANAS (Watson et al., 1988). The PANAS is the most widely-used measure of trait affect and has demonstrated excellent psychometric properties in over two decades of use (Tuccitto, Giacobbi, & Leite, 2010). Participants were instructed to respond based on how they generally felt; sample items include “nervous” and “scared.” Responses were on a five-point scale ranging from “strongly disagree” to “strongly agree.”

Demographic information (between-person; level 2)

Participants were asked to respond to questions regarding their age, class rank, gender, race/ethnicity, and college major.

Results

Data treatment and evaluation

We tested our hypotheses using hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) which allows for the simultaneous testing of both within- and between-person hypotheses (Aiman-Smith et al., 2002). Each contextual affordance had three levels (low, medium, and high) which were dummy coded as -1 , 0 , and 1 , respectively. We centered responses on the level-1 covariate of choice self-efficacy, but did not center the contextual affordance manipulations because the levels were experimentally controlled and centering would complicate their interpretation without influencing the obtained values. Missing level-1 responses were dropped from the analyses that follow ($< 0.9\%$ of all data) and mean imputation was used for any missing level-2 data ($< 0.5\%$ of data) in order to calculate scale scores for negative affectivity.

We ran initial analyses prior to testing our hypotheses to test for the possibility of any fatigue effects on responses. We built a check for fatigue into our study design by repeating the presentation of one scenario to provide an index of test-retest reliability (as recommended by Rotundo & Sackett, 2002). The repeated scenario was randomly placed into the sequence of experimental scenarios and increased the total number of scenarios presented to participants up to 82. We found adequate test-retest reliability for both level-1 measurements (for choice, $r = .75$, $p < .001$; for choice self-efficacy, $r = .71$, $p < .001$) which suggests that our participants did attend carefully to the scenarios and that fatigue did not distort responses.

Tests of Hypotheses 1 and 2: level-1 analysis

We first ran a fully unconditional, intercept-only null model to calculate the intraclass correlation coefficient, which reflects the proportion of variance in the dependent variable that is attributable to between-person variables (Raudenbush & Bryk, 2002). The results of this model indicated that 26.61% of the observed variance in the choice dependent variable was between-person (level 2), and the remaining 73.39% of the variance was within-person (level 1).

The level-1 hypotheses (within-person manipulations of contextual affordances and choice self-efficacy as a covariate) were tested using a random-coefficients regression model (Raudenbush & Bryk, 2002). These results, with robust standard errors, are shown in Table 1. The coefficients in Table 1 can be interpreted as the average values for these elements of the regression equation across all 145 participants (e.g., the b-weight for family support was, on average, 0.20 across participants). In support of Hypothesis 1, all four contextual affordances had significant, positive effects on choice scores; as these affordances increase (i.e., become more supportive), participants agree more strongly that they would change majors. Table 1 shows that Hypothesis 2 was also supported; choice self-efficacy had a significant, positive effect on choice scores. The results from this regression model allowed a comparison of the magnitude of all five level-1 coefficients; results demonstrated that choice self-efficacy has the largest effect on choice scores, followed in descending order by financial status, family supportiveness, job market outlook, and peer

Table 1

Level-1 predictors of change of major choice scores.

Predictor variable	DV: choice score			
	Coefficient	SE	t	Variance ^a
Intercept, β_0	3.19***	0.042	75.90	0.250***
Family supportiveness, β_1	0.20***	0.018	11.18	0.041***
Peer supportiveness, β_2	0.10***	0.011	9.07	0.012***
Financial status, β_3	0.36***	0.024	14.83	0.080***
Job market outlook, β_4	0.16***	0.017	9.26	0.030***
Choice self-efficacy, β_5	0.51***	0.026	19.32	0.073***
Total effect size (R^2)				64.39% ^b

Note: $N = 145$ participants.*** $p < .001$.^a Variance in level-1 parameter estimates and test of significance of the variance using chi-square.^b Total percentage of within-person variance in the choice score dependent variable that is accounted for by all within-person predictors.

supportiveness. The total effect size reported in Table 1 was calculated using Raudenbush and Bryk's recommendations (the total variance observed in the null model minus the unexplained variance from the level-1 model, divided again by the total variance) and indicates that the five level-1 predictors in aggregate explain 64.39% out of the total of 73.39% of the variability in choice scores at level 1 (within-person).

Tests of Hypotheses 3a–3c: level-2 analysis

We next adopted an intercepts- and slopes-as-outcomes model that elaborates on the results in Table 1 by adding specific level-2 variables (between-person individual differences variables) thought to influence the observed variability in the level-1 intercept and slopes (Raudenbush & Bryk, 2002). The results of this model, which added negative affectivity, gender, and race/ethnicity, are shown in Table 2. Gender was coded such that 0 = male and 1 = female, and race/ethnicity was coded such that 0 = European American participants and 1 = non-European American participants. Hypotheses 3a and 3b, which stated that negative affectivity would have a direct, negative effect on choice decisions and would interact with the level-1 contextual affordances to weaken their effects on choice decisions, were unsupported. However, consistent with Hypothesis 3c, we found a significant cross-level interaction between choice self-efficacy and trait negative affectivity on the choice decision ($\gamma_{53} = -.10$, $p < .05$). We plotted this interaction (Fig. 1) using a program developed by Preacher, Curran, and Bauer (2006). As expected, the shape of this interaction illustrates that the effect of choice self-efficacy on the decision to change majors was weaker for individuals with higher trait negative affectivity.

We also explored the influence of demographic characteristics (gender and race/ethnicity) on the choice decision to change majors. As shown in Table 2, we found no significant direct effects of demographic characteristics on the choice decision. However, we found two cross-level interactions between (a) family supportiveness and race/ethnicity on choice, and (b) peer supportiveness and race/ethnicity on choice. Both interactions had a similar form; Fig. 2 shows the cross-level interaction of family supportiveness and race/ethnicity on choice decisions to illustrate the effect. The interaction shows that the relationship was weaker for non-European American participants, who had higher choice scores when presented with an unsupportive family and lower choice scores when presented with a supportive family.

Discussion

The present study sought to answer the calls of theorists and researchers (e.g., Lent et al., 2000, 2003, 2002) to examine the influence of contextual affordances on individuals' educational and career decision-making in a more sophisticated manner. Results supported the value of using experimental designs like policy capturing to begin to parse out the relations of various within-person (contextual affordances and self-efficacy estimates) and between-person (negative affectivity, demographic variables) variables on these decisions.

Within-person hypotheses

Four contextual affordances were included in the present study based on previous research demonstrating their relations to educational and career decision-making (e.g., Kenny et al., 2003; Schultheiss et al., 2002; Tang, 2009). Results were consistent with Hypothesis 1 and demonstrated that, as individuals' perceptions of these affordances increased, their likelihood of choosing to change their major also increased. As hypothesized, results also supported the significant and positive effect of self-efficacy on the choice to change majors. This finding fits within the larger body of research on career-related self-efficacy (Betz, 2007; Lindley, 2006) and points to the continued need for practitioners to focus on self-efficacy in career interventions.

Our methodology also allowed us to examine the relative weights assigned to each of the contextual affordances and self-efficacy. We found that the order of the effects (from strongest to weakest) was choice self-efficacy, financial status, family supportiveness, job market outlook, and peer supportiveness. Further research is needed in order to understand why, and under

Table 2

Level-2 predictors of level-1 intercepts and slopes.

Predictor variable	DV: choice score		
	Coefficient	SE	<i>t</i>
Intercept 1, β_0			
Intercept 2, γ_{00}	3.19***	0.04	77.48
Race/ethnicity, γ_{01}	0.00	0.09	−0.02
Gender, γ_{02}	0.12	0.08	1.44
Negative affectivity, γ_{03}	−0.12	0.07	−1.60
Effect size ^a			1.30%
Family supportiveness, β_1			
Intercept 2, γ_{10}	0.20***	0.02	11.53
Race/ethnicity, γ_{11}	−0.10**	0.04	−2.80
Gender, γ_{12}	0.03	0.04	0.88
Negative affectivity, γ_{13}	0.04	0.02	1.82
Effect size ^a			4.60%
Peer supportiveness, β_2			
Intercept 2, γ_{20}	0.10***	0.01	9.24
Race/ethnicity, γ_{21}	−0.05*	0.02	−2.34
Gender, γ_{22}	−0.01	0.02	0.29
Negative affectivity, γ_{23}	−0.01	0.02	−0.79
Effect size ^a			2.22%
Financial status, β_3			
Intercept 2, γ_{30}	0.36***	0.02	14.91
Race/ethnicity, γ_{31}	−0.02	0.05	−0.48
Gender, γ_{32}	−0.02	0.05	−0.46
Negative affectivity, γ_{33}	−0.03	0.03	−1.00
Effect size ^a			0.01%
Job market outlook, β_4			
Intercept 2, γ_{40}	0.16***	0.02	9.35
Race/ethnicity, γ_{41}	−0.02	0.04	−0.54
Gender, γ_{42}	−0.03	0.03	−0.98
Negative affectivity, γ_{43}	−0.02	0.03	−0.93
Effect size ^a			0.02%
Choice self-efficacy, β_5			
Intercept 2, γ_{50}	0.50***	0.03	19.82
Race/ethnicity, γ_{51}	0.01	0.06	0.25
Gender, γ_{52}	0.00	0.05	−0.03
Negative affectivity, γ_{53}	−0.10*	0.04	−2.35
Effect size ^a			3.48%

* $p < .05$; ** $p < .01$; *** $p < .001$.^a Percentage of possible level-2 variance (26.61% maximum total) in choice scores accounted for by level-2 predictors.

which conditions, certain contextual affordances are more or less impactful. One possible explanation is that contextual affordances that can be more easily substituted (e.g., finding a new network of supportive peers) may be less important than those that cannot be easily replaced (e.g., suddenly acquiring large amounts of money or gaining family support). Another potential explanation relates to the importance of financial status on decision-making processes. Financial status may have had the strongest impact because it is the most versatile resource that we studied; high financial status can be used to gain access to additional supports and mitigate some of the potentially negative impacts of certain barriers. In this sense, financial status is the only affordance that we studied that can be freely exchanged for other affordances.

Between-person analyses

We answered previous calls (e.g., Lent et al., 2000; Rotondo, 1999) to include dispositional affect in examinations of individuals' interpretations of supports and barriers. Contrary to expectations, negative affectivity did not significantly affect participants' reported likelihood to change majors, nor did it significantly interact with any of the four contextual affordances. Consistent with Hypothesis 3c, however, the relationship between choice self-efficacy and decision to change majors was weaker for individuals with higher trait negative affectivity than for those with lower trait negative affectivity. Specifically, individuals with high negative affect (low optimism and more anxiety and fear) may be reluctant to make certain educational or career decisions even when they feel that they are capable of succeeding at them.

We also explored the relation of participants' race/ethnicity and gender to the relative weight assigned to each of the within-person variables. Results demonstrated no significant direct effects of gender or race/ethnicity on the choice dependent variable. However, we found two significant interactions among race/ethnicity and family and peer supportiveness indicating that European American and non-European American participants reacted differently to the presence of barriers and supports related to family and peers. Specifically, non-European American participants had higher choice scores in the presence of limited peer and family support and lower choice scores in the presence of more peer and family support. These results should be regarded as

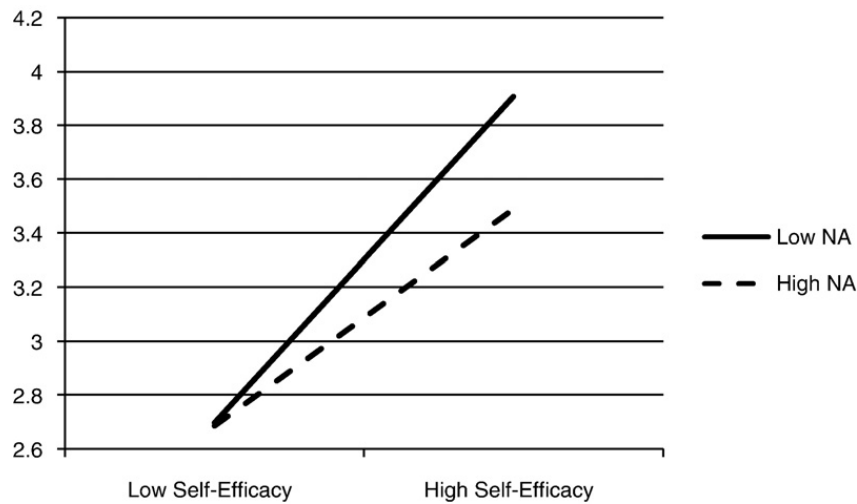


Fig. 1. Cross-level interaction of choice self-efficacy and trait negative affectivity on decision to change majors.

preliminary, but the finding that non-European American participants had higher choice scores in the presence of barriers may fit within a larger body of literature demonstrating that individuals from non-majority racial and ethnic backgrounds may have more experience dealing with and overcoming barriers than their European American counterparts (e.g., Pearson & Bieschke, 2001). Clearly, further research with more diverse samples is needed to understand why non-European American participants in this study had lower choice scores in the presence of more support. One possible explanation is that individuals from underrepresented racial/ethnic backgrounds may experience more hesitation than their European American counterparts even in the presence of supportive conditions.

Taken together, these findings highlight the need to consider individuals' dispositional affect, demographic characteristics, and perceived access (or lack thereof) to various contextual affordances when engaging in career counseling or implementing vocational guidance interventions. For example, assisting clients in understanding their current financial situation and the impact of this on their educational and vocational decision-making may be critical.

Limitations and implications for future research

Despite these promising findings and the usefulness of policy capturing methodology in vocational psychology, these results should be interpreted in light of several limitations. First, the obvious limitation of policy capturing is its reliance upon scenarios to study decisions; participants were asked to react as they would if the scenarios were real. Our findings consequently depend upon the extent to which participants were actually willing to put themselves in the position of the character described in the vignette and imagine facing the scenarios that are presented, which, like all experimental research, may threaten external validity.

Second, although the sample was diverse in terms of gender and self-identified race/ethnicity (i.e., 54% male; 66% European American), the relatively small sample sizes of individuals representing specific racial/ethnic groups prevented us from examining separately the experiences that may be unique to each group. Instead, we followed the procedures used by others by dichotomizing the two groups (e.g., Luzzo & McWhirter, 2001). Thus, future research examining the decision-making processes for individuals who are all members of a specific group (e.g., African American women) is needed.

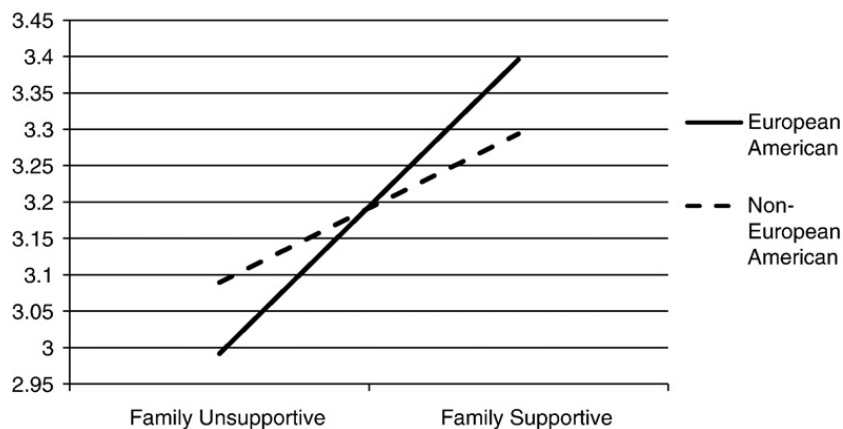


Fig. 2. Cross-level interaction of family supportiveness and race/ethnicity on decision to change majors.

Third, although previous research and theory (e.g., Lent et al., 2002) guided our inclusion of contextual affordances and intrapersonal variables, this study is limited by its reliance upon a two-item measure of self-efficacy created for the present study (with no prior validity evidence for its ability to capture these beliefs) and by its incorporation of only four affordances. Participant fatigue restricts the number of variables and levels that can be included in any full-factorial design (Aiman-Smith et al., 2002). As such, future research efforts could extend the present study by examining other contextual affordances (e.g., experiences with oppression, support from teachers/mentors, or access to college/university social capital) and individual differences (e.g., cognitive style) that may relate to choice decisions. A series of policy-capturing investigations would provide a broader understanding of which experiences most strongly impact career decision-making choices for particular groups of people.

Finally, this study focused specifically on choice decisions regarding the likelihood of changing one's major in college. These results may not be generalizable to decisions regarding other educational and career decision-making processes. For example, students' selections of colleges or universities, decisions regarding whether to attend graduate school, and choices among job offers after graduation represent possible avenues for future research.

Appendix A. Scenario stem and contextual affordance cues

Stem for all scenarios: You are a college student in your junior year. You are currently a Communications major, but you have become dissatisfied and disinterested in this area of study. Recently, you took a Biology class to satisfy a graduation requirement and were surprised at how much you enjoyed the course. After some careful thought, you are considering a change of major and pursuing a career in Biology. As you try to make a decision, you take into account the following information about your personal situation.

Cue Type	Low (Barrier)	Medium (Ambivalent)	High (Support)
Family Supportiveness	Your family is unsupportive of your interest in biology and expresses their disapproval when you suggest exploring careers in this area.	Your family seems ambivalent about your interests in biology; they are neither supportive nor discouraging of your interests and choice of major.	Your family is supportive of your new interest in biology and is excited to see you explore careers in this area.
Peer Supportiveness	All of your friends think that switching majors would be a bad idea and they are trying to dissuade you from doing so.	Your friends are divided in their support for your change of major; some think it is a good idea and support you, but others think it is a bad idea and are trying to discourage you.	You have a large and encouraging network of close friends who think switching majors is a good idea and support your interest.
Financial Status	You are financially underprivileged. You have very little money available for college and realize that switching your major to biology will result in taking on high personal debt to pay for extra semesters of college.	Your financial status is average; you are neither wealthy nor underprivileged. You do not have much money set aside for college, but you believe that you could work and pay for extra semesters of undergraduate tuition without accumulating too much debt.	You are financially well-off. You have enough money set aside for your education that you feel confident you could pay for extra semesters of undergraduate tuition to finish a major in biology without taking on any debt.
Job Market Outlook	Your biology professor has commented that most biology graduates are having trouble finding jobs right now, and many are settling for undesirable positions to avoid unemployment.	Your biology professor has commented that some biology graduates have secured good jobs lately, although others have struggled to find engaging work.	Your biology professor has commented on how well biology graduates have done lately on the job market, landing varied and interesting jobs that sound quite appealing.

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