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## Are Citizens “Receiving the Treatment”? Assessing a Key Link in Contextual Theories of Public Opinion and Political Behavior

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*The theorization and empirical exploration of contextual effects is a long-standing feature of public opinion and political behavior research. At present, however, there is little to no evidence that citizens actually perceive the local contextual factors theorized to influence their attitudes and behaviors. In this article, we focus on two of the most prevalent contextual factors appearing in theories—racial/ethnic and economic context—to investigate whether citizens’ perceptions of their local ethnic and economic contexts map onto variation in the actual ethnic composition and economic health of these environments. Using national survey data combined with Census data, and focusing on the popular topics of immigration and unemployment, we find that objective measures of the size of the immigrant population and unemployment rate in respondents’ county and zip code strongly predict perceived levels of local immigration and assessments of the health of one’s local job market. In addition to demonstrating that citizens are “receiving the treatment,” we show that perceptions of one’s context overwhelmingly mediate the effect of these objective contextual factors on relevant economic and immigration attitudes. The results from our analyses provide scholars with unprecedented evidence that a key perceptual process presumed in various contextual theories of political attitudes and behavior is, in fact, valid.*

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**KEY WORDS:** contextual effects, public opinion, political behavior

The exploration of contextual effects is a long-standing feature of public opinion and political behavior research. As early as Key (1949), scholars have been testing hypotheses about how characteristics of citizens’ surrounding environments shape their policy preferences and vote choices. Contextual effects are defined as the factors operative within a bounded space that lead to casual interactions, observations, and diffuse experiences, capable of influencing the attitudes and behaviors of those commonly residing within such spaces (Hopkins, 2010; Huckfeldt & Sprague, 1995). While the contextual field of behavior research has primarily yielded studies pertaining to individuals’ racial context (Campbell, Wong, & Citrin, 2006), the literature has extended beyond this

domain to explore the impacts of other local environmental factors, such as economic conditions (Kam & Nam, 2008; Schissel, Wanner, & Frideres, 1989), political culture (Campbell et al., 2006), educational composition (Oliver & Mendelberg, 2000), sex norms (Gaines & Garand, 2010), and pollution levels (Blake, 2001).

There are several issues that plague contextual theories and analyses; for example, the selection of the appropriate geographic unit of analysis (e.g., county, MSA, census tract, etc.) (Hopkins, 2010; Oliver & Mendelberg, 2000) and endogeneity induced by residential self-selection (Achen & Shively, 1995; Oliver & Wong, 2003). Aside from these highly discussed problems, one critical issue facing contextual research pertains to the validity of a key theorized causal mechanism linking context to outcomes of interest, specifically, the question of whether individuals *actually perceive* the contextual factors stipulated to influence their attitudes and behaviors. In other words, if contextual factors serve as an environmental stimulus hypothesized to influence an outcome, then a crucial question is: Are citizens “receiving the treatment”? This question is germane to contextual theories, as most are predicated upon the presumption that contextual forces are being perceived. Despite the centrality of this presumption, it represents a hypothesis embedded within contextual theories that is largely untested.

For example, the racial threat hypothesis (Key, 1949) argues that the size of local minority populations will affect Whites’ perceptions of intergroup competition and ultimately their level of support for anti-minority policies and candidates. As noted by Hopkins (2010), one key precondition for this and similar contextual theories to hold is that citizens must perceive their racial context—to be exact, they must be aware of the existence and relative size of minority groups in their surrounding environment. Despite the existence of research assessing citizens’ accuracy in gauging the size of *national* minority populations (e.g., Nadeau, Niemi, & Levine, 1993), there is little research at present directly assessing if, or how well, individuals attend to the size of *local* minority populations. This is particularly true in the case of immigration, where citizens’ awareness of local immigrant populations has been drawn into question (Hopkins, 2010).

When moving to other environmental factors appearing in contextual theories, such as economic conditions, there is no evidence that individuals accurately perceive the degree of local unemployment or other indicators of economic vulnerability or distress. The absence of such evidence constitutes a gap in existing research given that the literature is replete with work exploring the effects of citizens’ economic context, including its impact on racial and immigration attitudes (Campbell et al., 2006; Schissel et al., 1989), welfare policy preferences (Kam & Nam, 2008), beliefs about the causes of poverty (Hopkins, 2009), sociotropic evaluations (Books & Prysby, 1999; Hansford & Gomez, 2011; Weatherford, 1983), and economic voting more generally (Johnston et al., 2000).

In short, while the contextual effects research has grappled with issues such as geo-unit selection and residential self-selection, the literature has yet to directly test and confirm that citizens do perceive the variety of forces operating within their local environments. In this article, we take this issue to task. We focus upon two local environmental factors—ethnic and economic context, as they are most prevalent in research—and address two highly prominent corresponding issues, namely immigration and unemployment. In the following sections, we present data and analyses that assess (1) whether citizens perceive their ethnic and economic context and (2) the degree to which the effect of contextual variables on attitudinal outcomes is mediated by the perception of these environmental factors. In the first portion, we seek to determine whether citizens receive the treatment; in the second part, we assess the degree to which this connects context (i.e., the stimulus) to an attitudinal outcome (i.e., the response). We view the second part of our analysis as vital given that contextual theories stipulate perception of one’s context, and subsequent cognitive processes (e.g., the perception of threat), as the path through which objective contextual factors influence policy preferences and political behavior.

### Data and Methods

To perform our analyses, we rely upon a national survey of adult Americans conducted by the Pew Research Center for the People & the Press and the Pew Hispanic Center. This poll was conducted by telephone between February 8 and March 7, 2006, and contains a total sample size of  $N = 6,003$ .<sup>1</sup>

#### Measurement

To measure citizens' awareness of the amount of immigrants in their local contexts, we rely upon the following question: "How many recent immigrants would you say live in your area?" There are four ordered response options for this question: (1) "None," (2) "Only a few," (3) "Some," and

(4) "Many." This item, labeled *Perceived Immigration*, will serve as the main perceptual dependent variable for our analyses of immigration context. To measure citizens' awareness of their local economic context, and specifically, the level of unemployment, we use the following item: "Thinking now about job opportunities where you live, would you say there are plenty of jobs available in your community or are jobs difficult to find?" This item has three response options: (1) "Plenty of jobs available," (2) "Lots of some jobs, few of others," and (3) "Jobs are difficult to find." This item, labeled *Perceived Jobs*, will serve as the main perceptual dependent variable for our analyses of economic context. We should note that although these ordinal variables are not as fine grained as continuous percentage-point estimates of ethnic populations and unemployment rates, research has demonstrated that many citizens suffer from innumeracy (e.g., Nadeau et al., 1993; Sigelman & Yanarella, 1986), revealing that such estimates tend to be difficult for citizens to provide and are error prone. Given this, we believe that these ordinal items, while coarse, may better map onto the relatively imprecise nature in which citizens perceive gradations in the ethnic and economic characteristics of their context.

To measure objective levels of local immigration, we relied upon the 2000 Decennial Census<sup>2</sup> to obtain measures of the percent foreign-born<sup>3</sup> in each respondent's county and zip code of residence. Within our data, the correlation between county and zip-code immigrant populations is relatively high ( $r = .67$ ), suggesting that respondents residing in immigrant-heavy counties will also likely have larger immigrant populations in their more immediate neighborhood. To measure actual unemployment, we use the 2000 Census to obtain measures of the percent of unemployed individuals residing within each respondent's county and zip code. The correlation between county and zip-code unemployment is much weaker ( $r = .45$ ), which suggests that there are many respondents living in neighborhoods that are more (or less) economically distressed relative to their county as a whole.

Our analyses included a variety of controls: education, income, age, gender (1 = male), race (1 = black), ethnicity (1 = Hispanic), and homeownership (1 = homeowner). To control for the potential role of personal economic concerns in shaping attention to immigrant populations and

<sup>1</sup> This survey contains an oversample of respondents from five major metropolitan areas (Chicago, Las Vegas, Phoenix, Raleigh-Durham, and Washington, DC). While our analyses include these oversamples, the results from our analyses remain unchanged when excluding these oversamples.

<sup>2</sup> Given that our survey data is from 2006, we would have preferred to have used Census data from that same year; however, the 2006 American Community Survey only provides data for roughly 800 counties with large populations and, more importantly, does not provide zip-code-level estimates for our variables of interest. While the 2005–2009 and 2006–2010 American Community Surveys do overlap in time with our Pew survey and provide more complete data for counties and zips, these estimates are based upon five-year data collections and thus include data collected after 2006. Our key contextual results from the 2000 Census do not change when using 2005–2009 ACS data.

<sup>3</sup> Given that the question wording for our *Perceived Immigration* item refers to "recent immigrants," we reran our models at the county and zip level substituting percent foreign-born in 2000 for percent of *recent* foreign-born (foreign-born that entered the United States in the year 2000 or later). The results in Table 1 hold when reestimating our models with this alternative measure.

**Table 1.** The Effect of Objective Ethnic Context on Perceived Amount of Local Immigration

	County Level	Zip Level
<b>Contextual Level</b>		
Percent foreign-born	2.38*** (.326)	3.89*** (.252)
<b>Individual Level</b>		
Education	.316*** (.098)	.311** (.116)
Income	-.021 (.133)	.056 (.130)
Age	-.008*** (.002)	-.007*** (.002)
Gender	-.040 (.044)	-.083 (.053)
Black	-.482*** (.127)	-.464*** (.089)
Hispanic	-.2338 <sup>†</sup> (.144)	-.415*** (.102)
Homeowner	-.072 (.067)	-.059 (.077)
Unemployed	.3298 <sup>†</sup> (.175)	.406* (.207)
Pocketbook evaluations	.139 (.110)	.061 (.115)
Ideology	.176 (.111)	.160 (.116)
<b>Thresholds</b>		
Cut 1	-2.48 (.200)	-2.52 (.186)
Cut 2	-.539 (.180)	-.553 (.174)
Cut 3	.795 (.172)	.807 (.172)
N	6,003	5,369
Number of clusters	928	2,350
<b>Effect Size</b>		
Pr (Y = “Many Recent Immigrants”) due to inpercent foreign-born		
Min→Max	.525	.675
1 <sup>st</sup> →99 <sup>th</sup>	.391	.516
5 <sup>th</sup> →95 <sup>th</sup>	.279	.401

*Note.* Entries are unstandardized coefficients from ordered logistic regressions using clustered standard errors. Reported effect sizes are based upon postestimation analysis of predicted probabilities using CLARIFY (King, Tomz, and Wittenberg, 2000) in Stata®. Reported effects represent the change in the probability of perceiving “Many Recent Immigrants” associated with 0 to 1, 1<sup>st</sup> to 99<sup>th</sup> percentile, and 5<sup>th</sup> to 95<sup>th</sup> percentile, changes in percent foreign-born.

<sup>†</sup>  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Significance levels based upon two-tailed hypothesis tests.

unemployment rates, all models include measures of employment status (1 = unemployed) and pocketbook evaluations. Last, to control for a possible effect of respondents’ political leanings, all models include controls for ideological self-identification. For ease of interpretation, all variables were recoded to range from 0 to 1.<sup>4</sup> Given the ordinal nature of the perceived immigration and unemployment dependent variables and our use of county-level demographic predictors, we estimate ordered logistic regression models with clustered standard errors.

## Results

Tables 1 and 2 report the results from our analysis of the impact of objective measures of individuals’ local context on their perceptions of their context. Beginning with immigration, Table 1 reveals that the percent foreign-born in respondents’ county and zip both exerted significant effects on their perceptions of the amount of immigration in their local area. Moving from minimum to maximum immigrant-population size in respondents’ county (i.e., from .24% to 46%) and zip (i.e., 0% to 73%) was associated with a significant increase in the probability of reporting “many” immigrants in one’s local area. While the coefficient for the percent foreign-born is larger for zip

<sup>4</sup> For more information about variable measurement and question wording, please see Appendix A.

**Table 2.** The Effect of Objective Economic Context on Perceived Health of Local Job Market

	County Level	Zip Level
<b>Contextual Level</b>		
Unemployment rate	1.77 <sup>†</sup> (.105)	3.94*** (.0793)
<b>Individual Level</b>		
Education	-.181 (.122)	-.200 (.126)
Income	-1.02*** (.122)	-.992*** (.139)
Age	.001 (.002)	.002 (.002)
Gender	-.173*** (.047)	-.154** (.056)
Black	.658*** (.102)	.588*** (.095)
Hispanic	-.032 (.107)	-.120 (.107)
Homeowner	.106 <sup>†</sup> (.058)	.214** (.078)
Unemployed	1.24*** (.255)	1.27*** (.270)
Pocketbook evaluations	1.60*** (.123)	1.66*** (.125)
Ideology	-.822*** (.154)	-.821*** (.136)
<b>Thresholds</b>		
Cut 1	.263 (.234)	.256 (.207)
Cut 2	.662 (.252)	.646 (.206)
N	6,003	5,369
Number of clusters	928	2,350
<b>Effect Size</b>		
Pr (Y = “Jobs Difficult to Find” due in unemployment rate)		
Min→Max	.385	.621
1 <sup>st</sup> →99 <sup>th</sup>	.268	.246
5 <sup>th</sup> →95 <sup>th</sup>	.182	.145

*Note.* Entries are unstandardized coefficients from ordered logistic regressions using clustered standard errors. Reported effect sizes are based upon postestimation analysis of predicted probabilities using CLARIFY (King, Tomz, and Wittenberg, 2000) in Stata®. Reported effects represent the change in the probability of perceiving “Jobs Difficult to Find” associated with 0 to 1, 1<sup>st</sup> to 99<sup>th</sup> percentile, and 5<sup>th</sup> to 95<sup>th</sup> percentile, changes in the unemployment rate.

<sup>†</sup>  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Significance levels based upon two-tailed hypothesis tests.

code than county, these values cannot be directly interpreted for magnitude. The bottom row of Table 1 presents the size of the effect of objective immigrant-population size on perceptions; the listed effect sizes are the change in the probability of reporting “many” immigrants in one’s local area associated with minimum to maximum, 1<sup>st</sup> to 99<sup>th</sup>, and 5<sup>th</sup> to 95<sup>th</sup> percentile changes in county and zip-code immigrant-population values.

As can be seen, for each range of movement in objective values, zip-code measures exerted larger effects on perceptions than county-level indicators. This finding essentially indicates that citizens’ perceptions of their context are more responsive to their more immediate versus distal residential context. This result also reinforces the concern among the contextual research community that scholars should strive to use smaller geo-units to capture contextual effects, at least when such units correspond to theoretical processes presumably operative at the neighborhood level, such as intergroup contact. Aside from these differences in effect size across contextual measures, what is important to note is the overall large magnitude of effects observed for objective immigration context on perceived immigration. For example, citizens residing in the most immigrant-heavy zip code (33174; Miami, FL; 73% foreign-born) were nearly 68% more likely to report living among “Many” immigrants than those residing in zips with no immigrants.

Turning to economic context, Table 2 reports the effect of county- and zip-code-level unemployment on perceptions of the health of one’s local job market. The results reveal that an increase in unemployment rates in both of these geographic units was associated with a significant increase in the probability of perceiving jobs as difficult to find; however, in the case of county, the effect was

only marginally significant. The magnitude of the effects for each geo-unit is presented in the bottom row and reveals that moving from minimum to maximum values of contextual unemployment increases perceptions of job scarcity and that this effect was substantively larger for zip-level indicators than for county-level unemployment by nearly 24%. However, when we restrict our focus to the effects of moving from the 1<sup>st</sup> to 99<sup>th</sup> and 5<sup>th</sup> to 95<sup>th</sup> percentile in unemployment, the magnitude of the effects for county and zip code are roughly equivalent in size. The results from these two models indicate that contextual unemployment exerted substantively large effects on perceptions of one's local job market. For example, citizens residing in the zip code experiencing the highest degree of unemployment (20006; Washington, DC) were roughly 62% more likely to report local jobs being difficult to find than those residing in zips with virtually no unemployment. Such a difference in probabilities indicates a strong tracking of variation in contextual perceptions with variation in actual contextual conditions.

### **Perceived Context as a Mediator of Objective Context**

Having established that citizens are receiving the treatment, the next question of substantive interest is the degree to which this receipt serves as the path through which objective context influences attitudes of interest, such as valence-based judgments regarding immigration and socio-tropic economic evaluations. For example, in moving from asking citizens to make rough judgments about the amount of local immigration to providing evaluations about whether they think immigration is a problem, it is of interest to test whether any observed effect of citizens' ethnic context on such a valence-based evaluation is mediated by perceptions of the amount of local immigration. This issue is of importance because if the objective size of local immigrant populations were found to exert an influence on such an attitude, but perceptions of the size of local immigrant populations were not mediating the effect, then it would raise serious questions about the mechanism underlying the contextual effect.

In this section, we move to assess whether objective context influences two key attitudes through contextual perceptions. In the case of ethnic context and immigration, we focus on whether contextual perceptions mediate the effect of actual context on attitudes concerning whether immigration is perceived to be a problem. We relied upon a four-category item in the Pew survey asking respondents to rate whether immigration is (1) "Not a problem at all" to (4) "A very big problem" in their community. In the case of economic context and unemployment, given that local unemployment has been found to be a useful instrumental variable for sociotropic evaluations (Hansford & Gomez, 2011), we focus on whether the effect of actual local unemployment on sociotropic economic evaluations is mediated by perceptions of the local job market. For this analysis, we used a standard sociotropic item in the Pew survey asking respondents to rate the "economic conditions in this county today," ranging from (1) "Excellent" to (4) "Poor."

To assess the mediated effects of objective context on these two attitudes via contextual perceptions, we rely upon structural equation models (SEMs). For each case—ethnic and economic context—we estimated a SEM that (1) regressed contextual perceptions on objective context and controls and (2) regressed the selected attitude on contextual perceptions, objective context, and controls. In each instance, the SEM enables us to observe the direct effect of objective context on contextual perceptions and the selected attitude of interest, and the indirect effect of objective context on the selected attitude *through* the effect of contextual perceptions on the attitude. Due to the ordinal nature of our perceptual mediators and attitudinal dependent variables, we used ordered probit link functions for these models and estimated the parameters using mean and variance adjusted weighted least squares in the software package Mplus® (Muthén & Muthén, 2007). Given that our prior results found that zip-code-level estimates for both ethnic and economic context exerted the largest effects, we focus our mediational analyses on this contextual level.

**Table 3.** The Effects of Objective Context on Attitudes through Perceived Context

	Effect on Perceptual Mediator		Attitudinal Dependent Variable	
	Perceived Immigration	Absence of Mediator	Immigration a "Very Big" Problem in Local Community	
			Full SEM	
Percent Foreign-born (Zip)	2.248*** (.113)	2.036*** (.268)	.527*** (.135)	
Perceived Immigration			.340*** (.018)	
<b>Mediated Effect of Percent Foreign-Born</b>				
Total effect			1.291*** (.134)	
Indirect effect			.764*** (.056)	
<i>Percent of total effect of objective context mediated by perceived context</i>			59.2	
			<b>Evaluations of National Economy</b>	
	<i>Perceived Jobs</i>	Absence of Mediator	Full SEM	
Unemployment rate (Zip)	2.372*** (.304)	1.432** (.495)	.116 (.308)	
Perceived jobs			.336*** (.020)	
<b>Mediated Effect of Unemployment Rate</b>				
Total effect			.915** (.326)	
Indirect effect			.798*** (.112)	
<i>Percent of total effect of objective context mediated by perceived context</i>			87.2	

*Note.* N = 5,369 (For all Models). Entries in columns 1 and 3 are Mean and Variance Adjusted Weighted Least Squares Estimates (WLSMV) using delta parameterization and 1,000 iterations in Mplus (v.5.21). Because Mplus treats ordinal dependent variables as latent variables, the coefficient estimates for the two structural equation models represent the standard-deviation unit change in the continuous latent variable underlying the ordinal-response dependent variable associated with a unit change in the independent variable. Entries in column 2 are unstandardized regression coefficients from ordered logistic regression models that exclude the perceptual mediator from the equation.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Significance levels based upon two-tailed hypothesis tests.

For each contextual SEM analysis (see Table 3),<sup>5</sup> we present the direct effect of the zip-level indicators on contextual perceptions (column 1) and outcome attitudes (column 3), the direct effect of perceived context on outcome attitudes (column 3), and the effect of context on attitudes in the absence of contextual perceptions (column 2). As for mediated effects, we present the total effect of context on attitudes, the indirect effect of context on attitudes via perceived context, and the percent of the total effect of context on attitudes that is mediated by perceived context. This last value provides a measure of the degree to which receipt of the treatment from one's context serves as the intermediary through which context exerts its effect on these attitudes of interest.

Beginning with the mediational analysis for ethnic context, the top half of Table 3 presents several important results. Starting with the direct effects, we see that percent foreign-born significantly influences the perceived amount of local immigration (column 1) and that an increase in the perceived amount of local immigration was associated with a significant increase in the probability of believing immigration to be a very big problem in one's community (column 3). Turning to the indirect effects, the results reveal that the size of immigrant populations exerted a significant and

<sup>5</sup> For ease of interpretation, we have excluded presentation of the estimates for the control variables.



positive indirect effect on the probability of perceiving immigration as a very big problem in one's community through its effect on the perceived amount of immigration in one's local area. Moreover, the results reveal that of the total effect of actual immigration context on perceptions of immigration as a problem, nearly 60% of the total effect is mediated by perceptions of the amount of local immigration in one's area. This finding indicates that not only are citizens receiving the treatment, this receipt accounts for well over half of the effect that the contextual treatment is exerting on citizens' valence-based attitudes concerning the impact of immigration in their local community.<sup>6</sup>

Moving on to the mediational analysis for economic context (bottom half of Table 3), the results indicate that the unemployment rate in respondents' zip code significantly influences their perceptions of the local job market (column 1) and that perceiving jobs in one's local community as difficult to find significantly increases the probability of perceiving the national economy as doing poorly (column 3). Moving on to the estimated mediated effects, the results reveal that an increase in the unemployment rate indirectly increases the probability of perceiving the national economy as doing poorly through its effect on perceived jobs. Moreover, the results reveal that slightly over 87% of the total effect of actual unemployment on sociotropic evaluations is mediated by perceptions of the health of one's local job market. Thus, consistent with the findings for ethnic context, not only are citizens aware of their context, this awareness overwhelmingly serves as the mechanism linking context to broader attitudes.

### Conclusion

The findings from this article represent an important resource for scholars interested in contextual effects. Across two contextual domains, we offer evidence that citizens are indeed "receiving the treatment" and that this receipt stands as an important intermediary through which context influences broader attitudes. Future research could build upon our work by assessing citizens' perception of other contextual factors, such as partisanship and political culture, or additional economic characteristics, such as income inequality. Upon analyzing these additional contextual domains, it is of substantive interest not only to determine whether citizens perceive their context but also whether some contextual forces exert stronger treatment effects over others. Additionally, scholars could analyze whether there is heterogeneity in citizens' perception of their environment, such that important differences across citizens (e.g., personality traits, economic situation, or prejudice) condition their attentiveness to various environmental conditions.

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<sup>6</sup>One potential concern with this analysis is the possibility of endogeneity induced by reciprocal causality between perceived immigration and the attitudes concerning whether immigration is a problem in one's local community. To address this issue, we estimated a nonrecursive path model (see Kaplan, 2009) in which we specified a feedback loop between the mediator and outcome endogenous variables (i.e., perceived immigration ↔ perceptions that immigration is a problem). The results from this model leave the key findings presented in Table 3 virtually unchanged.

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### Supporting Information

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#### Online Appendix: Question Wording from 2006 Pew Research Center Poll