

**THE MULTIPLE DIMENSIONS OF PRIVACY: TESTING LAY
“EXPECTATIONS OF PRIVACY”***

*Jeremy A. Blumenthal***
*Meera Adya****
Jacqueline Mogle†

INTRODUCTION

In *Georgia v. Randolph*,¹ the U.S. Supreme Court saw new Chief Justice John Roberts’s first written dissent.² In somewhat barbed language,³ the Chief Justice challenged the majority’s perspective on what properly characterized the defendant’s, and society’s, expectations of privacy. Forty years of Supreme Court jurisprudence has explicitly relied on gauging such expectations, since Justice Harlan indicated in *Katz v. United States* his “understanding” that “there is a twofold requirement [in determining the scope of Fourth Amendment protection], first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as ‘reasonable.’”⁴ The dispute in *Randolph* turned not only on the reasonableness of the defendant’s subjective expectation of privacy, but also on the reasonableness of society’s relatively more objective understandings of social custom and of what might reasonably constitute an inappropriate interfer-

* We thank Orin Kerr and Christopher Slobogin for very helpful feedback, and Slobogin for sharing the survey and stimuli used in his study. We also appreciate early pointers from Lior Strahilevitz about some background literature.

** Jeremy A. Blumenthal, Associate Professor, Syracuse University College of Law. J.D., University of Pennsylvania Law School; A.B., A.M., Ph.D., Harvard University.

*** Meera Adya, Burton Blatt Institute; Syracuse University Department of Psychology. B.A. with Honors, Queen’s University; J.D., M.A., Ph.D., University of Nebraska-Lincoln.

† Jacqueline Mogle, Syracuse University Department of Psychology. B.A., State University of NY Brockport; M.S., Syracuse University.

¹ 547 U.S. 103 (2006).

² *Id.* at 127 (Roberts, C.J., dissenting).

³ See *The Supreme Court, 2005 Term—Leading Cases*, 120 HARV. L. REV. 125, 166–67 (2006) (stating that the Chief Justice’s dissent “[c]riticiz[ed] the majority’s reasoning as misguided, its rule as arbitrary, and its result as dangerous . . .”).

⁴ 389 U.S. 347, 361 (1967) (Harlan, J., concurring).

ence in that privacy.⁵ As in most Fourth Amendment jurisprudence, both Justice Souter, who wrote for the Court, and Chief Justice Roberts in dissent, made explicit psychological assumptions about perceptions and expectations of privacy, assumptions that are not necessarily supported by empirical findings.⁶

The Court's reliance on assumptions about individuals' and society's expectations, perceptions, and understandings of that nebulous notion of "privacy" highlights the importance of empirical research into such understanding.⁷ As with any body of law, where psychological assumptions can be replaced—or at the very least supplemented—by psychological fact, Fourth Amendment jurisprudence can be challenged or supported, but in any case substantially enriched.

Little relevant empirical research has been conducted on perceptions of privacy, however, most of it by the same few researchers.⁸ Studies have examined, for instance, perceptions of privacy in the context of consent searches,⁹ the degree of intrusiveness that characterizes various searches,¹⁰ differences between the perceptions of observers and consentors in the degree of choice the consentor had to consent to a police request,¹¹ differences between lay and police per-

⁵ Cf. *Rakas v. Illinois*, 439 U.S. 128, 144 n.12 (1978) (noting the importance to Fourth Amendment protection of "understandings that are recognized and permitted by society").

⁶ Indeed, findings from nearly twenty years before *Randolph* show that both Justices' current assumptions were faulty. Dorothy K. Kagehiro & Ralph B. Taylor, *Third-Party Consent Searches: Legal vs. Social Perceptions of "Common Authority"*, 18 J. APPLIED SOC. PSYCHOL. 1274 (1988); see also Christopher Slobogin & Joseph E. Schumacher, *Rating the Intrusiveness of Law Enforcement Searches and Seizures*, 17 LAW & HUM. BEHAV. 183, 198–99 (1993) (collecting data on lay perceptions and arguing as a result that Fourth Amendment doctrine "is based on flawed assumptions about society's perspective on privacy").

⁷ Steven L. Chanenson, *Get the Facts, Jack! Empirical Research and the Changing Constitutional Landscape of Consent Searches*, 71 TENN. L. REV. 399, 437 (2004).

⁸ Professor Chanenson characterizes such research as "meager," a better description than "nonexistent," which one commentator he cites uses. See *id.* at 447 & n.297. The commentator there alleged that "[n]o published data currently exist on consent searches . . . [which] leaves a significant gap in the legal and social science literature." *Id.* As sketched below, the literature does (and did) exist—though it is lamentably sparse, a situation we seek to help remedy here.

⁹ See Dorothy K. Kagehiro, *Psycholegal Research on the Fourth Amendment*, 1 PSYCHOL. SCI. 187 (1990) (reviewing some similar research).

¹⁰ Slobogin & Schumacher, *supra* note 6; Christopher Slobogin & Joseph E. Schumacher, *Reasonable Expectations of Privacy and Autonomy in Fourth Amendment Cases: An Empirical Look at "Understandings Recognized and Permitted By Society"*, 42 DUKE L.J. 727 (1993) [hereinafter Slobogin & Schumacher, *Reasonable Expectations*].

¹¹ Dorothy K. Kagehiro, *Perceived Voluntariness of Consent to Warrantless Police Searches*, 18 J. APPLIED SOC. PSYCHOL. 38 (1988).

ceptions of third-party consentors' authority,¹² or potential hindsight biases in the evaluation of such third-party consent searches.¹³ However, such research has itself proceeded from only vague assumptions about what constitutes perceptions of "privacy" in the first place. Despite recent efforts to organize legal understandings of privacy,¹⁴ both research and case law still seem to proceed from a perception of privacy overall as "a unitary concept with a uniform value."¹⁵ Even in the context of Fourth Amendment search and seizure, privacy has been primarily seen as unidimensional, focusing, for instance, on a broad notion of "intrusiveness" or, consistent with doctrinal language but using broad terms, on violations of an individual's "expectations of privacy."

In the present research, however, we present a finer-grained picture of perceptions of privacy. By empirically identifying the multiple dimensions that lay individuals use in determining whether a law enforcement official has interfered with a citizen's privacy in the Fourth Amendment context, we begin to unpack the different elements that go into "reasonable" expectations of privacy. As explained below, we present here an empirical study using the *multidimensional scaling* methodology, identifying the dimensions that laypeople use in evaluating "privacy."¹⁶ By articulating those dimensions we are able to go further than previous empirical research in understanding percep-

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- 12 Dorothy K. Kagehiro et al., *Social Perceptions of Third-Party Consent and the Reasonableness Test of Illinois v. Rodriguez*, 29 J. RES. CRIME & DELINQ. 217 (1992). *But cf.* Lior Jacob Strahilevitz, *A Social Networks Theory of Privacy*, 72 U. CHI. L. REV. 919, 934 n.35 (2005) ("[I]n the Fourth Amendment context, the law deems the government agents' expectations of the plaintiff's privacy irrelevant. Rather, the law focuses only on what the subject of the search expected, and whether those expectations were reasonable.").
- 13 Dorothy K. Kagehiro et al., *Hindsight Bias and Third-Party Consentors to Warrantless Police Searches*, 15 L. & HUM. BEHAV. 305 (1991).
- 14 Daniel J. Solove, *A Taxonomy of Privacy*, 154 U. PA. L. REV. 477 (2006) [hereinafter Solove, *Taxonomy*]; Daniel J. Solove, *Conceptualizing Privacy*, 90 CAL. L. REV. 1087 (2002).
- 15 Solove, *Taxonomy*, *supra* note 14, at 480. That is, to the extent there is agreement on its scope in the first place. *See id.* at 479–80 ("Privacy is a chameleon-like word . . . [It] is vague and evanescent, protean, and suffer[s] from an embarrassment of meanings. Perhaps the most striking thing about the right to privacy, philosopher Judith Jarvis Thomson has observed, is that nobody seems to have any very clear idea what it is." (internal quotation marks omitted) (footnotes omitted)); *see also* Orin S. Kerr, *Four Models of Fourth Amendment Protection*, 60 STAN. L. REV. 503, 505 (2007) ("The Court's handiwork has been condemned as distressingly unmanageable, unstable, and a series of inconsistent and bizarre results that [the Court] has left entirely undefended." (alteration in original) (internal quotation marks omitted) (footnotes omitted)).
- 16 In ongoing studies, we experimentally manipulate the dimensions identified here in different ways to further investigate perceptions and expectations of privacy, individual differences therein, and the malleability of such perceptions.

tions of privacy; we are able to assess the psychological validity of the Court's assumptions about individuals' subjective privacy expectations, as well as those about society's views of those perceptions. As a result, we are able to evaluate and inform existing Fourth Amendment doctrine. We also identify areas and methods for further empirical research. In part, we hope, our research is thus a step in addressing recurring lamentations about the difficulty of identifying what is considered "reasonable" in the privacy context,¹⁷ a step in avoiding what some see as indeterminate and arbitrary Fourth Amendment decision-making,¹⁸ and a step toward a fuller empirical picture of Fourth Amendment jurisprudence.

I. BACKGROUND

A. *Randolph and Perceptions of Privacy*

In *Randolph*, police arrived at the residence of a married but estranged couple in response to a domestic dispute. In discussion with one of the policemen, the wife, Janet Randolph, mentioned drug use by her husband, Scott, and volunteered that there was drug paraphernalia in the house.¹⁹ When asked by the policeman for permission to search the house, Scott Randolph "unequivocally refused."²⁰

After Scott's refusal, the policeman asked Janet's permission to search the house, which she "readily gave," and led the policeman into a room she described as Scott's bedroom.²¹ There, the policeman observed material he believed was cocaine. The policeman left the house and contacted the local district attorney, who instructed him to obtain a search warrant; after obtaining a warrant and returning to search the house again, police obtained drug-related items that led to an indictment of Scott Randolph for drug possession.²²

17 *E.g.*, Kerr, *supra* note 15, at 504 ("[N]o one knows when society might opt to 'recognize' or 'permit' [an understanding]. Who is 'society,' and how do Supreme Court Justices know what it thinks?"); *see also* ROBERT M. BLOOM, SEARCHES, SEIZURES, AND WARRANTS 46 (2003) ("How do we know what society is prepared to recognize as reasonable?").

18 *2005 Term—Leading Cases*, *supra* note 3, at 168–69 (criticizing a focus on "social expectations of privacy" as allowing judicial outcomes to depend on judicial assumptions about those expectations, and suggesting that such "indeterminacy" leads to "instability and unpredictability").

19 *See Georgia v. Randolph*, 547 U.S. 103, 107 (2006).

20 *Id.*

21 *Id.*

22 *Id.*

Scott Randolph's efforts to suppress the evidence at trial were unsuccessful. Although he argued that his wife did not have authority to consent to a search over his express refusal, the trial court ruled that she had common authority over the house which authorized her to consent to a search even over his refusal. State appellate courts disagreed, however, and reversed the trial court's ruling, emphasizing that "the consent to conduct a warrantless search of a residence given by one occupant is not valid in the face of the refusal of another occupant who is physically present at the scene to permit a warrantless search."²³

The U.S. Supreme Court agreed. Justice Souter's opinion for the majority turned in part on consensually held conceptions regarding expectations of privacy. Although not always explicitly, the analysis moved between *Katz's* two features: the reasonableness of a consent search—here, when the consent given is by a third party—derives in part from an occupant's expectations of privacy,²⁴ and in part from society's understanding of the consentor's authority to do so.²⁵ Throughout, Justice Souter appealed to "common understand[ing]s,"²⁶ "social practice,"²⁷ "the authority recognized by customary social usage,"²⁸ and "social custom"²⁹ regarding such expectations, using his understanding of such custom to buttress his assertions about how individuals would behave in various social situations—and consequently his ruling that such understandings precluded one co-occupant from granting permission to search over the objection of another physically present co-occupant.

To Justice Souter, this was hardly a novel approach; he asserted that a central feature of evaluating whether a search is reasonable under the Fourth Amendment "is the great significance given to widely shared social expectations" about privacy.³⁰ Chief Justice Roberts, joined by Justice Scalia, disagreed. In particular, the Chief Justice objected to the majority's assumptions about social custom, both its relevance and its content.³¹ First, the dissent expressly rejected the

²³ *Id.* at 108 (citing *Georgia v. Randolph*, 278 Ga. 614 (2004)).

²⁴ *Id.* at 112 (reviewing expectations of tenant or hotel guest regarding landlord's or hotel manager's authority to admit others over occupant's objection).

²⁵ *Id.* at 111; *see also id.* at 112 ("[N]o one would reasonably expect . . . a child to . . . authorize anyone to rummage through his parents' bedroom.").

²⁶ *Id.* at 114.

²⁷ *Id.*

²⁸ *Id.* at 121.

²⁹ *Id.* at 120.

³⁰ *Id.* at 111.

³¹ *Id.* at 127–32 (Roberts, C.J., dissenting).

claim that those “widely shared social expectations” are an important feature in evaluating *whether a search is reasonable* under the Fourth Amendment.³² Someone who shares ownership or occupancy of property might expect a co-owner to behave in certain ways, in particular against third parties, but those expectations do not involve *privacy*—for the dissent, privacy as to that shared property has already been abandoned.³³ Thus, the Chief Justice rejected the assertion that those social expectations played an appropriate role in Fourth Amendment doctrine. Second, he suggested, the majority’s understanding of the *substance* of those expectations—regardless of their relevance—was likely incorrect.³⁴ Social custom may shape expectations about co-owners’ or co-occupants’ interactions and behavior, but there was no reason to think that the majority’s perspective on those expectations and interactions was any more correct than the dissent’s, and thus even less reason to conform constitutional procedure to them.³⁵

Both majority and dissent—though in very different ways—thus focused on “social custom [and] its reflection in private law,”³⁶ but disagreed sharply over the importance of grounding Fourth Amendment jurisprudence in customary perceptions of what constitutes privacy (and therefore of invasions of privacy). Importantly for present purposes, at least part of the disagreement turned on the substance of the Justices’ assumptions about perceptions and expectations of privacy. Again, the focus on custom has been a recurring focus of search-and-seizure doctrine at the very least since *Katz*. But again, there has been surprisingly little empirical research into the content of individuals’ and society’s understanding of what “privacy” comprises. Further, the previously conducted research proceeded from a priori assumptions about how people perceive privacy, assumptions that we seek here to evaluate empirically. That is, in helping to lay the groundwork for an updated, more thorough empirical investiga-

³² *Id.* at 131.

³³ *Id.*

³⁴ *Id.* at 130 (discussing the futility of basing a constitutional rule on varying degrees of expectations due to an unlimited number of scenarios).

³⁵ There are thus faint echoes in the Chief Justice’s dissent of Justice Scalia’s reluctance to privilege public opinion (in the form, for instance, of opinion polls) in the context of Eighth Amendment capital jurisprudence. *See, e.g., Roper v. Simmons*, 543 U.S. 551, 616–18 (2005) (Scalia, J., dissenting) (explaining that courts are “ill-equipped” to interpret measurements of public opinion). One might speculate whether any aspect of these echoes supported Justice Scalia’s decision to join the Chief Justice’s dissent.

³⁶ *See Randolph*, 547 U.S. at 120.

tion into perceptions of privacy, we begin by examining the underlying features or dimensions that constitute those perceptions.

B. Previous Empirical Research

Above, we sketched—quite roughly—the doctrinal basis for courts' focus on psychological perceptions of and expectations about privacy. After now briefly reviewing some of the existing empirical research on such perceptions, we turn to a more detailed account of our present study.

Although *Katz* identified the importance of insight into real-world understandings regarding privacy and intrusions thereon, it took two decades before research investigated those understandings empirically. Early work applied attribution theory and speech-act theory from social psychology, investigating whether different participants in a consent request situation might attribute acquiescence differently. In particular, consistent with attribution theory, consentors might attribute any consent given to a perceived coercive nature of the situation, while observers—e.g., judges—might attribute consent dispositionally, that is, to the actor giving consent.³⁷ Consistent with speech-act theory, consentors might perceive their freedom to deny an official request differently based on its phrasing; for instance, more perceived freedom when the request was phrased interrogatively (“May I come in?”) than when phrased declaratively (“I am coming in.”).³⁸ In empirical tests, both of these hypotheses were supported, suggesting to the researcher that in the context of suppression hearings, a judge might inaccurately assess the defendant’s understanding of the situation, his intent, and his perceptions of coercion, and thus be more likely to rule particular evidence admissible.³⁹

Subsequent research by that researcher and her colleagues examined perceptions close to the *Randolph* circumstances.⁴⁰ Kagehiro and Taylor noted a jurisdictional split as of 1988 regarding consent authority as to a shared residence, and tested lay perceptions of the “common authority” identified in *Matlock* as necessary for validating a co-occupant’s consent to search the shared residence when the other resident was present or absent—that is, whether joint consent was necessary under such circumstances. In their study, when the co-

³⁷ Kagehiro, *supra* note 11, at 40.

³⁸ *Id.*

³⁹ See Kagehiro, *supra* note 9, at 189 (reviewing this research).

⁴⁰ Kagehiro & Taylor, *supra* note 6.

resident was described as absent, subjects saw the present occupant as more authorized to allow a law enforcement official to enter⁴¹ and to search common areas (e.g., a dining area) than when the co-resident was present and protested.⁴² However, that authorization did not extend to more personal domains of the other resident, such as his bedroom, or a personal container in the bedroom, or even in a common area.⁴³ Thus, lay perceptions of such common authority were more nuanced than either opinion in *Randolph* might suggest.

Such nuance in one sense supports the Chief Justice's point that the different situations that might be presented to a potential consentor are quite varied, undercutting the majority's broad claim about social custom.⁴⁴ But the psychological assumptions underlying his rebuttal to the majority also seem flawed; for instance, in the same study, the researchers examined the very privacy that the Chief Justice discussed.⁴⁵ In addition to asking subjects whether an occupant could grant permission to someone else to enter and/or search, the researchers asked whether that occupant could in fact search and examine the bedroom or the personal container. Contrary to the Chief Justice's doctrine-based assertion that the owner of the bedroom or container "has given up his privacy with respect to his roommate,"⁴⁶ subjects presumed that the occupant had virtually no right to do so.⁴⁷

Subsequent refinement of this third-party consent research varied the identity of the third-party consentor, presenting a range of experimental vignette conditions to both undergraduates and law enforcement officials (detectives from the Philadelphia Police Department).⁴⁸ Undergraduate perceptions of consent reasonableness—and, surprisingly, those of detectives—differed from that which courts would tend to approve: both students and detectives tended to approve of third-party consent only when the third party seemed to

41 The researchers also varied the identity of the individual requesting permission to enter and/or search: in different experimental conditions the "intruder" was a friend, a repairman, a housing inspector, or a police officer. See Kagehiro, *supra* note 9, at 190. The different identities did not seem to affect the results. *Id.* at 191.

42 This seems consistent with *Matlock*. See *United States v. Matlock*, 415 U.S. 164, 171 n.7 (1974) (noting a co-inhabitant's assumption of the risk that another inhabitant might "permit [a] common area to be searched").

43 Kagehiro & Taylor, *supra* note 6.

44 *Georgia v. Randolph*, 547 U.S. 103, 130 (2006) (Roberts, C.J., dissenting) ("The possible scenarios are limitless, and slight variations in the fact pattern yield vastly different expectations about whether the invitee might be expected to enter or to go away.").

45 *Id.* at 131.

46 *Id.* (quoting *United States v. Jacobsen*, 466 U.S. 109, 117 (1984)).

47 Kagehiro & Taylor, *supra* note 6.

48 Kagehiro et al., *supra* note 12.

have both a high degree of social intimacy (e.g., a co-resident versus an interior housepainter) and a high degree of "place control" (e.g., a mutual friend hired to housepainter versus a weekend guest, or the friend of the consentor; but not the suspect). Courts, in contrast, tend to focus less on social intimacy and more on place control.⁴⁹

Despite calls for "continued empirical exploration of the basic tenets" of search and seizure law,⁵⁰ little such investigation followed. One legal scholar with Fourth Amendment expertise⁵¹ investigated lay perceptions of the "intrusiveness" of different types of conduct by law enforcement officials.⁵² Emphasizing the relevance of community values not only to expectations of privacy, but also to perceptions of intrusiveness, Slobogin and Schumacher asked subjects to rank the intrusiveness of fifty different examples of police conduct taken primarily from Supreme Court and other federal case law. Building on the research by Kagehiro and colleagues outlined above, they expected to find a disconnect between lay perceptions and black letter law.⁵³ Their results were both consistent with and divergent from Fourth Amendment doctrine. First, their respondents considered several types of conduct that the Court would subject to heightened scrutiny to be relatively intrusive. They also considered certain conduct that the Court would deem less objectionable to be relatively un-intrusive.⁵⁴ But except at these relatively clear extremes, there appeared to be strong disagreement with existing case law over the degree to which certain conduct violates expectations of privacy. For

49 See Kagehiro, *supra* note 9, at 191.

50 *Id.* at 192.

51 See Christopher Slobogin, *The World Without a Fourth Amendment*, 39 UCLA L. REV. 1 (1991); see also CHARLES WHITEBREAD & CHRISTOPHER SLOBOGIN, *CRIMINAL PROCEDURE* (1993).

52 See Slobogin & Schumacher, *supra* note 6; Slobogin & Schumacher, *Reasonable Expectations*, *supra* note 10.

53 In this, they reflect other research in the criminal law context that compares lay perceptions to doctrine and discusses the implications of disparities between the two. *E.g.*, PAUL H. ROBINSON & JOHN M. DARLEY, *JUSTICE, LIABILITY AND BLAME* (1995) (comparing lay perceptions of appropriateness of guilt and punishment across a number of different criminal scenarios with guilt and punishment as assigned by the Model Penal Code). For a critical discussion of such work, see Jeremy A. Blumenthal, *Who Decides? Privileging Public Sentiment About Justice and the Substantive Law*, 72 UMKC L. REV. 1 (2003) [hereinafter Blumenthal, *Who Decides?*]. Similar work has recently been conducted examining lay perceptions of the seriousness of crimes. See Paul H. Robinson & Robert Kurzban, *Concordance and Conflict in Intuitions of Justice*, 91 MINN. L. REV. 1829, 1866–90 (2007). For a discussion and development of that work, see Jeremy A. Blumenthal, *Perceptions of Crime: A Multidimensional Analysis with Implications for Law and Psychology*, 38 MCGEORGE L. REV. 629 (2007) [hereinafter Blumenthal, *Perceptions of Crime*].

54 Slobogin & Schumacher, *supra* note 6, at 187–90.

instance, subjects rated several types of conduct intrusive that the Court has ruled do not involve substantial expectations of privacy, such as the use of hypodermic needles and urine samples to test for drug use.⁵⁵ Similarly, subjects rated as intrusive certain conduct that the Court has ruled were not even “searches” within the meaning of the Fourth Amendment, such as dog sniffs, entry into privately owned “open fields,” and boarding a bus and asking passengers to consent to a search of their luggage.⁵⁶

The authors developed three hypotheses to explain their results: the “inference of guilt” theory, where searches and seizures of people who appear guilty are ranked less intrusive than ones of people who appear innocent⁵⁷; the “dangerousness” theory, where perceived intrusiveness varies inversely with the perceived dangerousness of the suspected activity⁵⁸; and the “implied consent” theory, where perceived intrusiveness varies inversely with the protective motivation of the searchers.⁵⁹ As the authors pointed out, only the third is consistent with the values underlying Fourth Amendment doctrine. To the extent that judges ruling on admissibility focus on a defendant’s perceived guilt or dangerousness—as did Slobogin and Schumacher’s subjects—too much evidence might be ruled admissible.⁶⁰ Our present study helps assess whether these factors are ones that laypeople consider when evaluating notions of “privacy.”

Finally, the most recent empirical investigation involved archival research into rates at which consent was given in the context of Ohio traffic stops.⁶¹ The author, Lichtenberg, first found that a substantial majority of those stopped (89%) consented to a search, with about 13% of searches resulting in drugs being found.⁶² Further, he took advantage of the fact that the time period studied crossed the date of the Ohio Supreme Court’s *State v. Robinette* decision, in which that

55 *Id.* at 190.

56 *Id.*

57 *Id.* at 191–92.

58 *Id.* at 193.

59 *Id.* at 194.

60 *See id.* at 195–96. This concern is consistent with findings that observers are subject to the hindsight bias in evaluating consent. *See* Kagehiro et al., *supra* note 13 (demonstrating this point empirically); *cf.* William J. Stuntz, *Warrants and Fourth Amendment Remedies*, 77 VA. L. REV. 881 (1991) (making a similar point).

61 *See* Chanenson, *supra* note 7, at 451–55 (summarizing study by Illya D. Lichtenberg, *Voluntary Consent or Obedience to Authority: An Inquiry into the “Consensual” Police-Citizen Encounter* (1999) (unpublished Ph.D. dissertation, Rutgers University) (on file with author)). We do not discuss here the literature on racial profiling and traffic stops.

62 *See* Chanenson, *supra* note 7, at 452.

court ruled that consent to search could only be requested once an individual was told that she was free to leave the situation.⁶³ He found, however, that *Robinette* did not seem to have a substantial effect on compliance rates.⁶⁴ The most notable finding seemed to combine these two results. That is, Lichtenberg argued that individuals provided consent almost exclusively because they were afraid of the consequences if they refused; he also observed that most individuals reported not knowing that they in fact had a legal right to refuse.⁶⁵ This appears consistent with critics of consent doctrine who argue that formalistic search requests made by law enforcement officials may be construed by suspects quite differently from the way the Supreme Court presumes.⁶⁶ Although there are a number of caveats to and inferences made from the study, again, this seems to indicate a gap in the Court's assumptions about the way real people think and act in the real world, emphasizing the need for more such information and research.

C. Present Study

Taken together, this small body of empirical research on consent and perceptions or expectations of privacy documents that gap, suggesting that lay perceptions in fact differ from Supreme Court doctrine—at times substantially. But that research itself begins from a priori assumptions about such perceptions that themselves have not been fully examined—for instance, that there is consensus about what is meant by “privacy,” even if that consensus is articulated with difficulty.⁶⁷ To take privacy as a unitary concept with a uniform value⁶⁸ may be to operate at too high a level of abstraction, giving rise to the sort of indeterminacy and arbitrariness decried by commentators. Efforts to taxonomize types and notions of privacy are an important step in parsing what is meant by privacy, but these particular recent efforts focus on description and categorization, trying to make sense of existing doctrine.⁶⁹ A complementary approach is the empirical

⁶³ *State v. Robinette*, 653 N.E.2d 695 (Ohio 1995), *rev'd*, 519 U.S. 33 (1996).

⁶⁴ *See* Chanenson, *supra* note 7, at 452–53.

⁶⁵ *Id.* at 454 (quoting Lichtenberg, *supra* note 61).

⁶⁶ *See, e.g.*, Daniel L. Rotenberg, *An Essay on Consent(less) Police Searches*, 69 WASH. U. L.Q. 175, 187–90 (observing the extent to which the authoritative presence of police officers influences consent); William J. Stuntz, *Terry's Impossibility*, 72 ST. JOHN'S L. REV. 1213, 1215 (1998) (noting the varied application of the *Terry* reasonable suspicion standard).

⁶⁷ *See supra* notes 14–15.

⁶⁸ Solove, *Taxonomy*, *supra* note 15, at 480.

⁶⁹ *Id.*; Kerr, *supra* note 15.

one we take here, focusing on lay perceptions of what constitutes privacy and thus violations of privacy. Our efforts here are closest to Slobogin and Schumacher's approach, but we expand upon their work in a number of ways.

First, their research was published in 1993, and it may thus be useful to examine whether, and the extent to which, expectations of privacy have changed. Especially in the post-9/11-reform atmosphere of legislative and media attention to government incursion into individuals' private lives, there is a very real possibility that such expectations may differ from over a decade ago. Second, Slobogin and Schumacher focused only on one variable, "intrusiveness," which—though suggested by doctrine—might itself be overly broad. Although they present interesting possibilities for factors subjects may have considered in interpreting that variable,⁷⁰ the methodology they selected constrained them to evaluate their stimuli across only one dimension. Accordingly, third, in examining perceptions and expectations of privacy, we used multidimensional scaling ("MDS"), a methodology explicitly designed to help identify underlying factors or dimensions that constitute broader variables, rather than focusing on ranking stimuli along a variable selected *a priori*.

More specifically, by thus working in a "bottom-up" rather than "top-down" fashion, MDS is a procedure that helps researchers uncover "hidden structures" in existing data by graphically plotting respondents' perceptions of perceived similarities (or dissimilarities) among various stimuli.⁷¹ When these stimuli are located on a plot based on such perceptions, underlying dimensions that respondents may have used (consciously or not) can be inferred.⁷² For instance, subjects might be asked to rate the similarity of countries in the world, and a plot made of those similarity rankings. The resulting plot might look like a map of the world. This could suggest that subjects were implicitly or explicitly using dimensions involving distance or direction—in particular, dimensions of north/south and east/west. But the plot might line up the stimuli on a single axis going from largest to smallest, or most to least economically developed, or most to least familiar, or even alphabetical, suggesting that subjects used that single dimension in rating and organizing the countries. Inferring which dimension is important to respondents helps under-

⁷⁰ See *supra* notes 57–59.

⁷¹ Blumenthal, *Perceptions of Crime*, *supra* note 53, at 632.

⁷² JOSEPH B. KRUSKAL & MYRON WISH, MULTIDIMENSIONAL SCALING 5–10 (1978).

stand the way in which they see the world (in this example, literally), and what factors are important to them.⁷³

Finally, by also obtaining explicit ratings of the stimuli on previously selected dimensions, we can also statistically correlate ratings on the inferred dimensions with the explicit ratings, in order to examine the degree of fit there. Dimensions we identify can be manipulated experimentally or otherwise examined further in subsequent research.⁷⁴

II. METHODOLOGY

A. *Materials and Administration*

With continuity and consistency in mind, we used the stimuli from Slobogin and Schumacher's studies, along with one additional stimulus reflecting the *Randolph* fact pattern.⁷⁵ Each stimulus was a sentence summarizing the search at issue in a particular case. All testing was conducted over the Internet through a secure connection.⁷⁶ Participants saw stimuli presented in pairs on the screen and rated how similar they felt each pair of stimuli were using a seven-point scale (1 = Extremely Dissimilar; 7 = Extremely Similar). Participants were instructed to rate how similar they felt the scenarios were, "however they wanted." Stimulus scenarios were randomly assigned to three different lists of seventeen items each to minimize fatigue and participant burden. The shortened lists resulted in similarity ratings of 136 pairwise comparisons. Additionally, two versions of each list were created: one included a parenthetical describing the context or target of the search, while the other did not (see Table 1 in Appendix for examples).⁷⁷ Within each list, scenario pairs were presented in a single pseudo-random order where terms were equally spaced

⁷³ Blumenthal, *Perceptions of Crime*, *supra* note 53; *see also supra* note 20 and accompanying text.

⁷⁴ *See supra* note 16.

⁷⁵ *See* Slobogin & Schumacher, *supra* note 6; Slobogin & Schumacher, *Reasonable Expectations*, *supra* note 10. A complete list of stimuli appears in Table 1.

⁷⁶ The research was approved by the relevant institutional review board and complied with the ethical research guidelines of the American Psychological Association.

⁷⁷ This manipulation reflected Slobogin and Schumacher's hypothesis that providing raters with a specific objective for a search or seizure would lead to lower perceived "intrusiveness," because the search or seizure would seem more justified. Slobogin & Schumacher, *supra* note 6, at 184–85.

throughout the presentation.⁷⁸ Following the similarity ratings, scenarios were presented a second time and participants rated each scenario on objective intrusiveness using a five-point scale (1 = Not at All; 5 = Extremely).

After reading a description of the study and providing informed consent, participants were presented with the instructions for the first task. Participants were randomly assigned to one of the six lists: first to one of the three lists of scenarios, and then to either the context or no-context version of that particular list.

B. Participants

One hundred fifty-nine subjects participated. All were undergraduates enrolled in an introductory psychology course (mean education level was sophomore year), and received partial course credit in exchange for their participation. Fifty-five percent of the sample was female, and the group was 70% Caucasian. Ages ranged from 19 to 27 (mean age = 20, s.d. = 1.08).

Thirty-five percent of the sample self-identified as Democrats, 24% identified themselves as Republicans, 14% reported being Independents, and 1% identified themselves as Libertarians. Twenty-six percent of participants chose not to report their political affiliation. Seven participants indicated that they were citizens of countries other than the United States, and these individuals were excluded from analyses on the basis that different political systems or cultures may alter views of privacy-related situations.⁷⁹

III. RESULTS

In this Part, we present the results of our MDS and other statistical analyses. First, we briefly describe dependent variables based on subjects' background characteristics and discuss the effects of those demographics on dependent variables. Second, we demonstrate the multidimensional nature of subjects' judgments about the privacy-related stimuli, identifying multiple different but related dimensions in the relationships underlying those judgments. Finally, we discuss the influence of providing subjects with contextual information about each stimulus (in the form of a brief parenthetical describing the

⁷⁸ Robert T. Ross, *Optimum Orders for the Presentation of Pairs in the Method of Paired Comparisons*, 25 J. EDUC. PSYCHOL. 375 (1934).

⁷⁹ Two participants indicated previous training in law-related fields; however, these individuals were not excluded from the analyses.

purpose of the search). In Part IV, we more fully discuss these results' implications and extend the discussion to further research.

A. Descriptives

Although subjects rated the objective intrusiveness of each stimulus after rating the similarities of all scenarios, we present those rating data here first. As did Slobogin and Schumacher, we present in Table 1 the subjects' overall rankings, as well as the mean and standard deviation of the subjects' ratings, for all stimuli. For comparison purposes, Table 1 also displays Slobogin and Schumacher's subjects' rankings, as well as their means and standard deviations.⁸⁰ Our subjects' intrusiveness ratings are quite consistent with their results; each of our samples correlated highly with their overall data.⁸¹

In addition to the demographic data described above in Part II.B, we collected descriptive data on the following dependent variables: current place of residence, number of hours spent watching television, and political views. Residence might have affected the subjects' expectations of privacy depending on the degree of autonomy they perceived as a result of shared or individual residency, or as a result of home-ownership or rental status.⁸² Television watching may have affected responses as a result of culturally-induced perceptions of what is acceptable law enforcement conduct. Finally, different political orientations might implicate different perceptions of the value of privacy and autonomy, and the consequent appropriateness of law enforcement intervention.⁸³

⁸⁰ See Slobogin & Schumacher, *Reasonable Expectations*, *supra* note 10, at 738–39 tbl.1.

⁸¹ The samples correlated with their overall ratings as follows: Sample 1, $R(17) = 0.81$, $P < 0.001$; Sample 2, $R(17) = 0.60$, $P = 0.011$; Sample 3, $R(16) = 0.84$, $P < 0.001$; Sample 4, $R(17) = 0.75$, $P = 0.001$; Sample 5, $R(17) = 0.58$, $P = 0.014$; Sample 6, $R(16) = 0.83$, $P < 0.001$.

Note, however, that although we distinguished between contextualized and non-contextualized ratings, their reported data collapse across all their experimental conditions, including context/no context. Slobogin & Schumacher, *Reasonable Expectations*, *supra* note 10, at 737. Thus, we highlight the consistency between our studies, although the tables and rankings are not perfectly comparable.

⁸² Cf. *California v. Ciraolo*, 476 U.S. 207, 213 (1986) ("In [areas] intimately linked to the home, both physically and psychologically, . . . privacy expectations are most heightened."); Jeremy A. Blumenthal, "To Be Human": *A Psychological Perspective on Property Law*, 83 TULANE L. REV. (forthcoming 2009) (discussing psychological perceptions of and relating to "home").

⁸³ Slobogin and Schumacher also examined political orientation in the context of due process/crime control orientations. Slobogin & Schumacher, *supra* note 6, at 186. They found, in part, that subjects who agreed more strongly with due process values tended to rate scenarios as more intrusive. *Id.* at 187, 196–97.

Of the 159 participants, 79% reported living in the campus dorms, approximately 16% reported renting an apartment, 4% reported living with their parents, and 1% reported owning their own home. One hundred and five participants reported watching less than two hours of television per day, 41 reported watching between two and four hours of television per day, and the final 13 reported watching between four and eight hours of television per day. However, there were no statistically significant differences in intrusiveness ratings for any of the scenarios based on the descriptive or demographic data.⁸⁴

B. Multidimensionality

Participants made similarity ratings of all possible pairs of stimuli. Again, these similarity ratings are thought to reflect the implicit cognitive structure participants are imposing on the stimuli.⁸⁵ As alluded to in the Introduction, multidimensional scaling (“MDS”) then allows researchers to uncover “hidden structures” or patterns in the data. MDS is similar to factor analysis in that it extracts underlying patterns; however, these patterns are represented as dimensions in a visual plot rather than statistical factors. MDS statistically extracts n dimensions and produces fit values at each level of n to help determine which n is the best fit for the data—that is, how many dimensions best represent the data. Traditional indices of fit were employed here: Kruskal’s stress index⁸⁶ and R^2 . For Kruskal’s stress index, lower values indicate better fit; for R^2 , higher values indicate better fit.⁸⁷ Stress values were graphed to create scree plots for each of the stimuli sets (see Figure 1 in Appendix),⁸⁸ and R^2 values appear in Table 2. As demonstrated by these scree plots and by the R^2 values, the optimal solution for these data consistently yielded three dimensions; that is,

84 Tests were based on significance at the $P = .05$ level. Precise values for these test results are available from the authors.

85 See *supra* notes 71–73 and accompanying text (noting that plotting various stimuli based on respondents’ perceptions allows for the inference of underlying dimensions, which helps understand the way respondents view the world); see also Roger N. Shephard, *Toward a Universal Law of Generalization for Psychological Science*, 237 *SCI.* 1317 (1987).

86 See J.B. Kruskal, *Multidimensional Scaling By Optimizing Goodness of Fit to a Nonmetric Hypothesis*, 29 *PSYCHOMETRIKA* 1 (1964) (developing a definition of the stress index).

87 See Blumenthal, *Perceptions of Crime*, *supra* note 53 (describing stress as a measure of the badness of fit and R^2 as a measure of goodness of fit); cf. Mark L. Davison & Stephen G. Sireci, *Multidimensional Scaling*, in *HANDBOOK OF APPLIED MULTIVARIATE STATISTICS AND MATHEMATICAL MODELING* 323, 335 (Howard E.A. Tinsley & Steven D. Brown eds., 2000) (explaining stress as “an index of the mismatch” between the MDS distances and the data).

88 See Davison & Sireci, *supra* note 87, at 336.

for every sample, solutions with more than three dimensions did not result in substantial decreases in stress, or in substantial increases in R^2 . For clarity, Figures 2 through 7 display these three dimensions in two-dimensional form; each figure thus has three sub-parts, (a) through (c), plotting each dimension against each of the others.⁸⁹

Unsurprisingly, interpretation of MDS plots involves both qualitative and quantitative factors and both objective and subjective interpretation. Most intuitively, researchers can inspect the resulting plots visually, focusing on “whether the dimension is ordering the stimuli according to some continuous stimulus characteristic, or grouping stimuli according to a discrete characteristic.”⁹⁰ Thus, in our discussion here we highlight comparisons of stimuli located at different ends of the plotted dimensions, as well as similarities in the grouping of stimuli at particular coordinates. We recognize that our interpretations—like most initial MDS interpretations—are “primarily subjective,”⁹¹ and look to our ongoing research to test the dimensions’ robustness. Our important points here are to demonstrate that lay perceptions of privacy are multidimensional and that providing context affects subjects’ judgments.

Nevertheless, we are able to infer dimensions from these plots, reflecting the cognitive rules subjects used to distinguish among the stimuli. Again, the best-fitting solution for each sample has three dimensions, although they differ among the non-contextualized samples (Samples 1 through 3). In Samples 1 and 2 (Figures 2 and 3), the three that appear are *person vs. property*; *type of action* constituting the search; and *intrusiveness*. In Sample 3, the *type of action* dimension appears to be replaced by one reflecting *degree of permission*, that is, a judgment about “to what degree would one have permission to do such a search?”⁹²

Our inferences about these dimensions stem from the way in which clusters of stimuli fall along them. Specifically, for the *person/property* dimension from Samples 1 through 3, the endpoints are represented by stimuli such as “body cavity search,” “dog sniff,” and “going through magnetometer” at one end, and “search of a newspaper office,” “perusing bank records,” and “looking through burned-

89 As we discuss further in the next subsection, providing context made a difference in subjects’ responses and in the dimensional plots that these responses yielded.

90 See Davison & Sireci, *supra* note 87, at 337.

91 *Id.* at 339.

92 Note the degree to which this perceived implicit dimension tracks the ultimate legal question.

down house” at the other. For these same samples, the *intrusiveness* dimension has similar stimuli at its endpoints, though additional stimuli (e.g., “rummaging through suitcase” and “searching footlocker”) that clustered with other *property* stimuli suggests the perception of intrusiveness by participants along that dimension. As noted above, the second dimension did not appear consistent across Samples 1 through 3. For the first two samples, the dimension regarding the *type of action* seemed apparent from clusters along the endpoints that included similar stimuli as the first dimension, though the spread is different. Thus, while the first dimension seems to be more cleanly represented by a judgment about “what are they searching? My person or my property?,” the third dimension seems more cleanly represented by a judgment about “what are they doing while searching? Looking, rummaging, touching?” In Sample 3 (Figure 4), the *permission* dimension seemed apparent from a cluster of stimuli such as “reading a personal diary” and “surrounded by a fence and no trespassing signs” at one end and “searching a jail cell” and “searching bedroom of probationer.”

However, providing context had an important effect on the way subjects distinguished among stimuli. The two dimensions reflecting *person/property* and *intrusiveness* seem to replicate in the contextualized samples. However, a prominent dimension across Samples 4 through 6 (Figures 5 through 7) reflects the *seriousness* of the crime that provided the basis for the search, consistent with Slobogin and Schumacher’s “dangerousness” theory.⁹³ That dimension seems to replace or supersede the shifting “type of action” or “permission” dimensions identified in the non-contextualized samples above. Our inferences for the replicating dimensions are based on stimuli that cluster along the ends of the dimension in groupings similar to those described above for the no context samples. Our inferences about the *seriousness* dimension reflect endpoints involving “armed robbery” and “stolen car parts” at the more serious endpoint, and “drunkenness” and “damage to residence” at the less serious endpoint, with more moderately serious crimes at midpoints along that dimension.

C. Context and Perceptions of Intrusiveness

Moreover, recall Slobogin and Schumacher’s hypothesis that context would influence respondents’ ratings of intrusiveness. Specifically, they suggested that providing raters with a specific objective for

⁹³ See *supra* note 58 and accompanying text.

a search or seizure would lead to lower perceived "intrusiveness," because the search or seizure would seem more justified. They reported that the hypothesis was confirmed,⁹⁴ and suggested this leads to negative policy implications because evaluators will "systematically underestimate the intrusiveness" of a search or seizure.⁹⁵

However, some caveats attach to Slobogin and Schumacher's results. First, purely as a statistical matter, the results they reported do not clearly match the hypothesis they tested.⁹⁶ Second, their data suggested that providing context mattered, but in different ways for different searches.⁹⁷ For example, in some instances describing the goal of the search led to lower ratings of intrusiveness consistent with their prediction, but in other instances, context in fact increased intrusiveness ratings. Third, although they inferred that lower intrusiveness ratings with context are "underestimations," they simply assumed a priori that the non-contextualized ratings were the appropriate normative baseline.⁹⁸

To more closely address the question of context, we manipulated that variable as well. Our data also revealed provocative patterns in terms of context.

We found high correlations between overall intrusiveness ratings of stimuli in samples with and without context,⁹⁹ $R_{\text{Sample1-Sample4}} = 0.84$, $P < 0.001$; $R_{\text{Sample2-Sample5}} = 0.74$, $P = 0.001$; $R_{\text{Sample3-Sample6}} = 0.97$, $P < 0.001$. Superficially, this might suggest that context had no effect on ratings.

⁹⁴ Slobogin & Schumacher, *supra* note 6, at 187.

⁹⁵ *Id.* at 191.

⁹⁶ Slobogin and Schumacher reported a diffuse F-test, testing four experimental conditions. The result they reported, showing no difference between "evidence" and "no evidence" conditions, would have required a focused test between those two conditions only. Slobogin & Schumacher, *supra* note 6, at 187. They apparently reported a test across all four of their subject samples—leading to a diffuse F-test with three degrees of freedom in the numerator—where the more precise test of their context hypothesis would combine all four samples, leading to a focused F-test with one degree of freedom in the numerator.

⁹⁷ Slobogin & Schumacher, *supra* note 6, at 191–95.

⁹⁸ The authors argue that post hoc evaluations are more likely than non-contextualized evaluations to be "incorrect" because case law calls for taking the perspective of an "innocent" defendant. See *Florida v. Bostick*, 501 U.S. 429, 438 (1991) (stating that "the 'reasonable person' test presupposes an *innocent* person"). The explanations they give for their data rely in part, however, on the evaluators' assumptions that the defendant is more likely than not guilty. Moreover, although this is a correct statement of case law, the *Bostick* Court was making a different point: rather than emphasizing the evaluator's belief or assumption of defendant's guilt, the Court was stating that the degree of intrusiveness should be viewed from the perspective of a reasonable innocent person. See *id.* We discuss this issue further *infra* at notes 111 through 113 and accompanying text.

⁹⁹ Recall that Samples 1, 2, and 3 did not include context; Samples 4, 5, and 6 were identical to 1, 2, and 3, respectively, but provided context.

But examining the results more closely indicates a number of clear differences between the contextualized and non-contextualized samples.

First, the dimensions we identified in the best-fitting solution are inconsistently correlated across samples.¹⁰⁰ That is, in comparing the dimensions the MDS solution identifies across samples, some are correlated and some are not; and those that are correlated, are not correlated in each sample. Dimension 1, for instance, correlates highly between Samples 1 and 4 ($R = 0.90$, $P < 0.001$) and 2 and 5 ($R = 0.69$, $P = 0.002$), but not between Samples 3 and 6 ($R = 0.31$, $P = 0.23$). The contextualized Dimension 2, on the other hand, is uncorrelated with its non-contextualized counterpart across all samples (R 's ranged between 0.06 and 0.35, P 's between 0.17 and 0.81). Dimension 3, like Dimension 1, varied across samples: correlated significantly between Samples 1 and 4 ($R = -0.58$, $P = 0.015$); uncorrelated between Samples 2 and 5 ($R = 0.13$, $P = 0.62$), and Samples 3 and 6 ($R = 0.13$, $P = 0.63$).

Thus, the dimensions identified differ substantially with and without context, as shown in Figures 2 through 7. Such inconsistent correlations might be expected from dimensions that are related but not the same (i.e., that tap different aspects or features of the same broad, overarching construct). And again, at least two dimensions seem to repeat across samples, though the third varies in the non-contextualized samples and changes in the contextualized samples.

Second, again as might be expected, the stimuli cluster together quite differently with and without context, as illustrated more extensively in Tables 3–5. Third, such a nuanced effect of context is consistent with earlier findings. Slobogin and Schumacher found that context mattered, but inconsistently; sometimes it elevated subjects' intrusiveness ratings, sometimes it decreased those ratings.¹⁰¹ Our data shows similar patterns.

Specifically, we conducted a multivariate analyses of variance ("MANOVA") on each of the three context/no-context sample pairs examining whether there was an effect of the independent variable *context* on multiple dependent variables (i.e., ratings of each stimulus). As shown in Table 1, for almost every stimulus (43 of 51), pro-

¹⁰⁰ Of course, these dimensions are not necessarily identical to the ones we infer above; rather, they simply reflect the way the plots display subjects' perceptions of the similarity of the stimuli. Our analysis here demonstrates that these perceptions change when context is provided.

¹⁰¹ Slobogin & Schumacher, *supra* note 6, at 191–95; *see also id.* at 187.

viding context led to a decrease in absolute intrusiveness ratings.¹⁰² In ten of those instances the decrease was statistically significant below the $P = 0.05$ level; in an additional four, the decrease was significant below the $P = 0.10$ level. These more focused findings are shown in Table 6.

IV. DISCUSSION

We highlight here three useful contributions from the present study: the utility of our methodological approach; substantive doctrinal implications for Fourth Amendment law and policy; and implications for further research.

A. Methodological

Multidimensional scaling is a valuable methodology for digging more deeply into individual judgments about concepts and constructs; at its broadest, it is useful in any context in which similarities among stimuli may be of interest or in which we are interested in understanding what the basis might be for people's judgments or perceptions. Here, we used the approach to decompose people's perceptions of "privacy" and violations of privacy. Rather than simply examining privacy as a "unitary concept with a uniform value,"¹⁰³ we confirmed that it is a multifactor construct, best thought of as reflecting three different, albeit related, dimensions. Our analysis emphasizes the importance of not looking at such broad concepts as unidimensional, and not focusing solely on one variable (such as "intrusiveness") in seeking to capture understandings of the concepts. If nothing else, taking this approach helps broaden the toolbox of empirical legal studies. More profitably though, it helps elucidate researchers' understandings of how individuals see "privacy," and can help courts and policymakers in fashioning Fourth Amendment doctrine.

¹⁰² These findings are consistent with—and, indeed, stronger than—Slobogin and Schumacher's predictions.

The following stimuli showed an increase in absolute intrusiveness ratings when context was provided: following pedestrian in police car, looking at foliage in public park, flying 400 yards over backyard in helicopter, search of house over husband's objection when wife gives consent, shining flashlight down dark alley next to home, searching jail cell, pat-down at border, and searching bedroom of probationer. Of these, only flying 400 yards over backyard in helicopter increased ratings at a significant level, $R = -0.27$, $P = 0.047$.

¹⁰³ Solove, *Taxonomy*, *supra* note 14, at 480.

B. Substantive

Specifically, our findings of multidimensionality and context effects have substantive implications. First, despite the Court's apparent focus on broad constructs such as "intrusiveness" or "expectations of privacy," it is clear that those broad concepts subsume more specific, narrower ones that influence how each broad concept is perceived. Proponents might emphasize the flexibility inherent in such broad concepts.¹⁰⁴ Importantly, however, these narrower features likely vary substantially across cases and fact patterns, and can lead to quite different expectations of privacy on the part of the target of the search, as well as different understandings of those expectations on the evaluator's part. To the extent that additional research indicates that such narrower features are emphasized differently and systematically by different groups—i.e., the target of the search, the conductor of the search, and the evaluators of the search's appropriateness—courts and policymakers may need to address whether legal standards should accommodate these different emphases.¹⁰⁵ Depending on the privilege to be accorded lay intuitions, it might be that the Court's standard for judging "reasonable expectations of privacy" will need refinement in order to account for changes depending on certain facts of the case, characteristics of the actors in a case, or characteristics of reviewers of the case.

Second, the attention subjects paid to the "seriousness" of the crime, leading to the dimension identified in Samples 4 through 6, is worthy of note. Slobogin and Schumacher posited a similar feature—the "dangerousness" of criminal activity—to explain some of their findings.¹⁰⁶ For them, "to the extent an intrusiveness rating is based on the . . . fear of the criminal activity investigated, it should be invalid for Fourth Amendment purposes[, and] . . . should not normally affect measurement of the action's insult to privacy or autonomy."¹⁰⁷ That is, at a doctrinal level, an unjustified warrantless search of a bedroom is equally intrusive whether the object of the search is a crack pipe, counterfeit money, or a dirty bomb in a suitcase. Similarly, an unjustified pat down should be equally unacceptable whether on the

104 Cf. Marc R. Poirier, *The Virtue of Vagueness in Takings Doctrine*, 24 CARDOZO L. REV. 93 (2002) (arguing, in an eminent domain context, that doctrinal "vagueness" allows for flexibility when appropriate).

105 Cf. Dan M. Kahan et al., *Whose Eyes Are You Going to Believe? Scott v. Harris and the Perils of Cognitive Illiberalism*, 122 HARV. L. REV. 837 (2009).

106 Slobogin & Schumacher, *supra* note 6, at 195.

107 *Id.*

street or at an airport, regardless of the National Threat Level. Our subjects' focus (and that of Slobogin and Schumacher's subjects) on the seriousness or dangerousness of the criminal activity in question, however, might suggest that they do not share that perspective, and that the purpose of a search justifiably plays a role in evaluating it—typically leading to lower perceived intrusiveness.¹⁰⁸ The Court has certainly acknowledged a long-standing doctrine allowing "exigent circumstances" to justify otherwise inappropriate searches. This doctrine has been narrowly construed, however, typically applied under circumstances that might lead to the destruction of evidence. Moreover, the Court has expressly rejected the idea that "the seriousness of the offense under investigation itself creates exigent circumstances of the kind that under the Fourth Amendment justify a warrantless search."¹⁰⁹ As in the example above, if further research bears out these findings, there will be an important disconnect between black-letter law and lay perceptions. In this and other research in the criminal law context, such disconnect can occasion substantial debate over its consequences: to the extent the two perspectives differ, which should change?¹¹⁰

Third, we found, consistent with Slobogin and Schumacher, that when the context of a search is provided—typically information about the crime under investigation, or perhaps the evidence or information sought—the search is evaluated differently. In our sample, even more than in those researchers', ratings of intrusiveness decreased when such information was provided.

Those researchers saw such context effects as troubling, suggesting that they could lead to courts and law enforcement officials underestimating the degree of intrusiveness of a particular search.¹¹¹ However, as noted above, it is not clear a priori that evaluators are necessarily *underestimating* intrusiveness; it could be that non-contextualized judgments might be *overestimating* intrusiveness. That is, Slobogin and Schumacher assumed that the abstract judgment was the correct one as both a doctrinal and a psychological matter. Doc-

108 See Table 6.

109 *Mincey v. Arizona*, 437 U.S. 385, 394 (1978). Under a related doctrine, the "knock-and-announce rule," a dangerous situation may constitute exigent circumstances. *E.g.*, *Wilson v. Arkansas*, 514 U.S. 927, 936 (1995). Under *Mincey*, however, that does not appear to be the case under the "expectations of privacy" approach.

110 Compare ROBINSON & DARLEY, *supra* note 53, with Blumenthal, *Who Decides?*, *supra* note 53. See also Kahan et al., *supra* note 105.

111 Slobogin & Schumacher, *supra* note 6, at 191.

trinally, that may not be so¹¹²; psychologically, it is not clear that there are explicit grounds for making such a choice.

Moreover, in practice, such context effects may be of less import, because judges will always be presented with context in making their decisions, whether issuing a warrant or ruling on admissibility. Outside of court, however, the context effects might be of more relevance. In setting policy, for instance, legislation about the scope of law enforcement authority to conduct searches would be framed in the abstract—that is, in non-contextualized terms—but would thus be seen as more intrusive. However, when a search is actually conducted under such authority, the context will lead to it being perceived as less intrusive. Invasive conduct may thus be seen as less so in practice,¹¹³ a circumstance both salutary and discomfiting. That is, it may be comforting that apparently broad search authority might be seen as more acceptable when the purpose of the search is understood or placed in context; on the other hand, this is precisely what concerns contemporary civil rights advocates: the idea that justifying such authority in one way can lead to that power being broadened beyond its appropriate scope. Clearly, this issue as well is one for further discussion and research, both normative and empirical.

CONCLUSION

Recent theoretical work has sought to articulate a descriptive framework for the Court's privacy decisions and privacy scholarship overall,¹¹⁴ and for Fourth Amendment search-and-seizure doctrine in particular.¹¹⁵ The empirical approach taken here expands upon such theoretical work. Although the present data are preliminary, they set the stage for a research agenda that develops our understandings of "expectations of privacy" from an empirical perspective, elaborating and providing insight into Fourth Amendment doctrine.

112 See *supra* note 98.

113 As just one example from the present data, note the drop of almost 1.5 points (on only a five-point scale) when "pat-down" is instead presented as "pat-down (at airport after terrorist threat)." See Table 1.

114 See *supra* note 14.

115 Kerr, *supra* note 15.

APPENDIX

Table 1. Overall Ratings of Intrusiveness of Stimuli, with Slobogin and Schumacher Data for Comparison.

STIMULUS (context)	SAM- PLE	WITHOUT CONTEXT M (SD) (scale: 1-5)	WITH CONTEXT M (SD) (scale: 1-5)	OVERALL RANK (least to most)	S&S M (SD) (scale: 0-100)	OVERALL RANK (least to most)
Looking in foliage at public park (murder weapon)	2	1.61 (0.96)	1.67 (0.87)	51	6.48 (15.74)	50
Searching a coal mine (safety violations)	2	1.96 (1.04)	1.83 (1.09)	50	52.17 (35.35)	35
Shining flashlight down dark alley next to home (drug transaction)	3	1.96 (1.04)	2.41 (1.37)	49	18.33 (25.64)	48
Going through magnetometer at airport (weapons)	1	2.00 (1.07)	1.59 (0.80)	48	13.47 (18.74)	49
Inspecting plumbing and wiring of residence (damage)	1	2.41 (1.15)	1.63 (1.08)	47	42.51 (30.25)	40
Flying 400 yards over backyard in helicopter (marijuana)	2	2.50 (1.43)	3.29 (1.37)	46	40.32 (30.44)	41
Searching jail cell (evidence of conspiracy)	3	2.50 (1.29)	2.70 (1.17)	45	30.63 (27.87)	45
Hospital surgery on shoulder (bullet)	2	2.68 (1.61)	1.92 (1.50)	44	74.17 (30.06)	11
Inspecting exterior of car in public lot (blood stains)	2	2.71 (1.12)	2.00 (1.02)	43	19.46 (21.98)	47
Dog sniff of body (drugs)	1	2.83 (1.31)	2.78 (1.34)	42	58.33 (31.58)	28

STIMULUS (context)	SAM- PLE	WITHOUT CONTEXT M (SD) (scale: 1-5)	WITH CONTEXT M (SD) (scale: 1-5)	OVERALL RANK (least to most)	S&S M (SD) (scale: 0-100)	OVERALL RANK (least to most)
Questioning on public sidewalk for 10 minutes (determine destination)	3	2.88 (1.03)	2.81 (1.49)	40	69.45 (33.16)	15
Stopping all drivers at roadblock to view occupants (illegal immigration)	3	2.92 (1.38)	2.89 (1.28)	39	37.06 (29.55)	42
Fingerprinting in back of police car	2	2.96 (1.48)	2.33 (1.27)	38	57.39 (31.11)	29
Search of newspaper office (picture)	1	3.00 (1.13)	2.52 (1.28)	37	56.31 (31.42)	31
Stopping drivers at roadblock for 30-second questioning at night (drunkenness)	1	3.03 (1.27)	2.52 (1.31)	36	46.41 (31.19)	37
Needle in arm at work to get blood (drug usage)	2	3.04 (1.45)	2.83 (1.34)	35	84.94 (22.19)	5
Pat-down at border (drugs)	3	3.04 (1.37)	3.07 (1.24)	34	42.76 (38.70)	39
Looking through burned-down house (evidence of arson)	1	3.10 (1.23)	1.81 (1.08)	33	30.26 (30.85)	46
Obtaining a voiceprint	3	3.17 (1.17)	3.11 (1.28)	32	48.21 (31.74)	36
Search of house over husband's objection when wife gives consent (drugs)	3	3.25 (0.94)	3.26 (1.23)	31	n/a ¹¹⁶	n/a

¹¹⁶ The *Randolph* fact pattern was not included in Slobogin and Schumacher's sample.

STIMULUS (context)	SAM- PLE	WITHOUT CONTEXT M (SD) (scale: 1-5)	WITH CONTEXT M (SD) (scale: 1-5)	OVERALL RANK (least to most)	S&S M (SD) (scale: 0-100)	OVERALL RANK (least to most)
Inspecting restaurant kitchen (health code violations)	2	3.29 (1.18)	1.75 (1.52)	29	31.14 (28.15)	44
Following pedestrian in police car (determine destination)	1	3.31 (1.37)	3.74 (1.16)	28	32.73 (39.85)	43
Search of cornfields surrounded by fence and No Trespassing signs (marijuana)	3	3.42 (0.93)	3.22 (1.25)	27	56.58 (28.99)	30
Rummaging through suitcase at airport (drugs)	1	3.52 (1.09)	3.00 (1.14)	26	60.93 (27.72)	25
Searching a private junkyard (stolen car parts)	1	3.52 (1.15)	3.26 (1.02)	25	54.15 (29.04)	34
Searching yacht at sea (drugs)	1	3.52 (1.15)	3.11 (1.28)	24	69.11 (24.75)	16
Searching interior of car on public highway (weapons)	3	3.54 (1.02)	3.30 (1.10)	23	67.53 (26.33)	21
Searching a garage (contraband)	2	3.57 (1.00)	3.42 (1.06)	22	71.20 (22.41)	14
Arrest, handcuffing, and detention for 48 hours (rape charges)	2	3.61 (1.55)	2.50 (1.62)	21	65.58 (24.84)	23
Searching footlocker found in car (drugs)	1	3.66 (0.77)	3.04 (1.02)	20	67.91 (28.47)	19
Searching mobile home (drugs)	3	3.71 (1.04)	3.70 (1.17)	19	77.68 (21.04)	6

STIMULUS (context)	SAM- PLE	WITHOUT CONTEXT M (SD) (scale: 1-5)	WITH CONTEXT M (SD) (scale: 1-5)	OVERALL RANK (least to most)	S&S M (SD) (scale: 0-100)	OVERALL RANK (least to most)
Using a beeper to track car (suspected drug dealer)	3	3.88 (0.74)	3.48 (1.09)	17	54.46 (36.14)	33
Looking in trunk of car on public street (evidence of armed robbery)	1	3.93 (1.19)	3.41 (1.19)	16	67.20 (31.77)	22
Searching a 6th grader's locker (drugs)	2	3.93 (1.02)	3.67 (1.13)	15	60.32 (28.26)	26
Planting chauffeur as undercover agent (organized crime)	2	3.96 (1.25)	3.50 (1.01)	14	67.56 (24.82)	20
Using secretary as undercover agent (organized crime)	2	3.96 (1.20)	3.63 (1.06)	13	68.98 (32.32)	17
Going through drawers at office (evidence of theft)	3	3.96 (0.86)	3.81 (0.96)	12	63.11 (27.43)	24
Searching high school kid's purse (cigarettes)	1	4.00 (1.00)	3.33 (1.24)	11	75.14 (37.90)	10
Pat-down (at airport after terrorist threat)	2	4.00 (0.98)	2.54 (1.10)	10	54.76 (31.84)	32
Search of a college dormitory room (drugs)	2	4.04 (1.04)	3.71 (1.16)	9	76.13 (24.52)	8
Watching person in front yard with binoculars (see who is there)	3	4.17 (1.17)	3.81 (1.27)	8	68.63 (24.34)	18
Monitoring a phone for 30 days (gambling)	2	4.21 (1.10)	3.58 (1.28)	7	87.67 (19.00)	2

STIMULUS (context)	SAM- PLE	WITHOUT CONTEXT M (SD) (scale: 1-5)	WITH CONTEXT M (SD) (scale: 1-5)	OVERALL RANK (least to most)	S&S M (SD) (scale: 0-100)	OVERALL RANK (least to most)
Body cavity search at border (drugs)	1	4.38 (0.94)	3.93 (1.30)	5	90.14 (18.18)	1
Search of a bedroom (money)	1	4.38 (1.01)	3.93 (1.27)	4	85.23 (18.45)	4
Tapping into corpo- ration's computer (fraud)	3	4.50 (0.66)	4.19 (1.00)	3	75.21 (22.78)	9
Perusing bank re- cords (il- legal funds)	1	4.59 (0.57)	3.37 (1.31)	2	71.60 (24.81)	13
Reading a personal diary (em- bezzlement)	3	4.79 (0.41)	4.04 (1.02)	1	85.56 (20.73)	3

Table 2. R^2 Fit Statistics for Each Stimuli Set.

STIMULI SET						
	1		2		3	
	WITHOUT CONTEXT	WITH CONTEXT	WITHOUT CONTEXT	WITH CONTEXT	WITHOUT CONTEXT	WITH CONTEXT
Dimension	R^2	R^2	R^2	R^2	R^2	R^2
1	0.566	0.547	0.571	0.499	0.556	0.44
2	0.739	0.736	0.783	0.634	0.635	0.648
3	0.853	0.827	0.899	0.793	0.745	0.784
4	0.889	0.896	0.931	0.848	0.841	0.851
5	0.925	0.929	0.96	0.931	0.853	0.903
6	0.936	0.943	0.969	0.953	0.902	0.931

Table 3. Clusters for Stimuli with and without Context for Stimuli Set 1.

	WITHOUT CONTEXT	WITH CONTEXT
CLUSTER 1	Searching a private junkyard (stolen car parts)	Searching a private junkyard (stolen car parts)
	Search of newspaper office (picture)	
	Searching yacht at sea (drugs)	
	Looking in trunk of car on public street (evidence of armed robbery)	Looking in trunk of car on public street (evidence of armed robbery)
	Search of a bedroom (money)	Search of a bedroom (money)
CLUSTER 2	Going through magnetometer at airport (weapons)	Going through magnetometer at airport (weapons)
	Dog sniff of body (drugs)	Dog sniff of body (drugs)
	Rummaging through suitcase at airport (drugs)	Rummaging through suitcase at airport (drugs)
	Searching high school kid's purse (cigarettes)	Searching high school kid's purse (cigarettes)
	Searching footlocker found in car (drugs)	Searching footlocker found in car (drugs)
	Boarding a bus and asking to search luggage (drugs)	Boarding a bus and asking to search luggage (drugs)
	Body cavity search at border (drugs)	Body cavity search at border (drugs)
		Searching yacht at sea (drugs)
CLUSTER 3	Following pedestrian in police car (determine destination)	Following pedestrian in police car (determine destination)
	Stopping drivers at roadblock for 30-second questioning at night (drunkenness)	Stopping drivers at roadblock for 30-second questioning at night (drunkenness)
CLUSTER 4	Inspecting plumbing and wiring of residence (damage)	Inspecting plumbing and wiring of residence (damage)
	Looking through burned-down house (evidence of arson)	Looking through burned-down house (evidence of arson)
	Perusing bank records (illegal funds)	Perusing bank records (illegal funds)

Note: Items that are located in different clusters in the context condition are in bold.

Table 4. Clusters for Stimuli with and without Context for Stimuli Set 2.

	WITHOUT CONTEXT	WITH CONTEXT
CLUSTER 1	Inspecting kitchen of restaurant (health code violations)	Inspecting kitchen of restaurant (health code violations)
	Looking in foliage at public park (murder weapon)	
	Going through garbage in opaque bags at curbside (forgery)	Going through garbage in opaque bags at curbside (forgery)
	Searching a coal mine (safety violations)	Searching a coal mine (safety violations)
	Inspecting exterior of car in public lot (blood stains)	
	Searching a college dormitory (drugs)	Searching a college dormitory (drugs)
	Searching a garage (contraband)	Searching a garage (contraband)
	Searching a 6th grader's locker (drugs)	Searching a 6th grader's locker (drugs)
CLUSTER 2	Pat-down (at airport after terrorist threat)	Pat-down (at airport after terrorist threat)
	Fingerprinting in police car (-)	Fingerprinting in police car (-)
	Planting chauffeur as undercover agent (organized crime)	
	Using secretary as undercover agent (organized crime)	
	Monitoring a phone for 30 days (gambling)	
	Arrest, handcuffing, and detention for 48 hours (rape charges)	
		Inspecting exterior of car in public lot (blood stains)
		Looking in foliage at public park (murder weapon)
CLUSTER 3	Hospital surgery, shoulder (bullet)	
	Needle in arm at work to get blood (drug usage)	Needle in arm at work to get blood (drug usage)
		Flying 400 yards over backyard in helicopter (marijuana)
CLUSTER 4	Flying 400 yards over backyard in helicopter (marijuana)	
		Monitoring a phone for 30 days (gambling)
		Planting chauffeur as undercover agent (organized crime)
		Using secretary as undercover agent (organized crime)
CLUSTER 5	N/A	Arrest, handcuffing, and detention for 48 hours (rape charges)
		Hospital surgery shoulder (bullet)

Note: Items that are located in different clusters in the context condition are in bold.

Table 5. Clusters for Stimuli with and without Context for Stimuli Set 3.

	WITHOUT CONTEXT	WITH CONTEXT
CLUSTER 1	Reading a personal diary (embezzlement)	Reading a personal diary (embezzlement)
	Watching person in front yard with binoculars (see who is there)	
	Search of cornfields surrounded by fence and No Trespassing signs (marijuana)	
		Tapping into corporation's computer (fraud)
		Obtaining a voiceprint (-)
CLUSTER 2	Using a beeper to track car (suspected drug dealer)	Using a beeper to track car (suspected drug dealer)
	Tapping into corporation's computer (fraud)	
	Shining flashlight down dark alley next to home (drug transaction)	
		Accompanying to urinal at work and listening for urination (drug usage)
		Questioning on public sidewalk for 10 minutes (determine destination)
	Watching person in front yard with binoculars (see who is there)	
CLUSTER 3	Search of house over husband's objection when wife consents (drugs)	Search of house over husband's objection when wife consents (drugs)
	Searching drawers at office (theft)	Searching drawers at office (theft)
	Searching mobile home (drugs)	Searching mobile home (drugs)
		Searching jail cell (conspiracy)
		Searching bedroom of probationer (illegal gun)
		Searching interior of car on public highway (weapons)
		Search of cornfields surrounded by fence and No Trespassing signs (marijuana)
	Shining flashlight down dark alley next to home (drug transaction)	
CLUSTER 4	Pat-down at border (drugs)	Pat-down at border (drugs)
	Searching jail cell (conspiracy)	
	Obtaining a voiceprint (-)	
	Questioning on public sidewalk for 10 minutes (determine destination)	
	Searching bedroom of probationer (illegal gun)	
	Searching interior of car on public highway (weapons)	
	Stopping all drivers at roadblock to view occupants (illegal immigration)	Stopping all drivers at roadblock to view occupants (illegal immigration)
CLUSTER 5	Accompanying to urinal at work and listening for urination (drug usage)	n/a

Note: Items that are located in different clusters in the context condition are in bold.

Table 6. Significant Context Differences in Intrusiveness Ratings.

STIMULUS	CONTEXT (GOAL OF SEARCH)	EFFECT OF CONTEXT ON INTRUSIVENESS RATING	SIGNIFICANCE LEVEL
Looking through burned-down house	Evidence of arson	Lower	<.001
Perusing bank records	Illegal funds	Lower	<.001
Inspecting kitchen of restaurant	Health code violations	Lower	<.001
Pat-down ¹¹⁷	At airport after terror- ist threat	Lower	<.001
Reading a personal diary	Embezzlement	Lower	.01
Inspecting wiring and plumbing of residence	Damage	Lower	.011
Searching high school kid's purse	Cigarettes	Lower	.031
Searching footlocker found in car	Drugs	Lower	.013
Inspecting exterior of car in public lot	Blood stains	Lower	.021
Arrest, handcuffing, and detention for 48 hours ¹¹⁸	Rape charges	Lower	.015
Rummaging through suitcase at airport ¹¹⁹	Drugs	Lower	.089
Monitoring a phone for 30 days	Gambling	Lower	.062
Going through garbage in opaque bags at curb- side	Forgery	Lower	.09
Hospital surgery on shoulder	Bullet	Lower	.086
Flying 400 yards over backyard in helicopter	Marijuana	Higher	.047

117 In Slobogin and Schumacher's analysis, context lowered this stimulus's intrusiveness rating substantially as well, from an overall ranking (out of 50) of 27 to an overall ranking of 9. Slobogin & Schumacher, *supra* note 6, at 192 tbl.2.

118 In Slobogin and Schumacher's analysis, context lowered this stimulus's intrusiveness rating substantially as well, from an overall ranking (out of 50) of 31 to an overall ranking of 26. Slobogin & Schumacher, *supra* note 6, at 192 tbl.2.

119 In Slobogin and Schumacher's analysis, context elevated this stimulus's intrusiveness rating substantially, from an overall ranking (out of 50) of 25 to an overall ranking of 33. Slobogin & Schumacher, *supra* note 6, at 192 tbl.2.

Figure 1. Scree plots for each set of stimuli of stress values for n -dimensions.

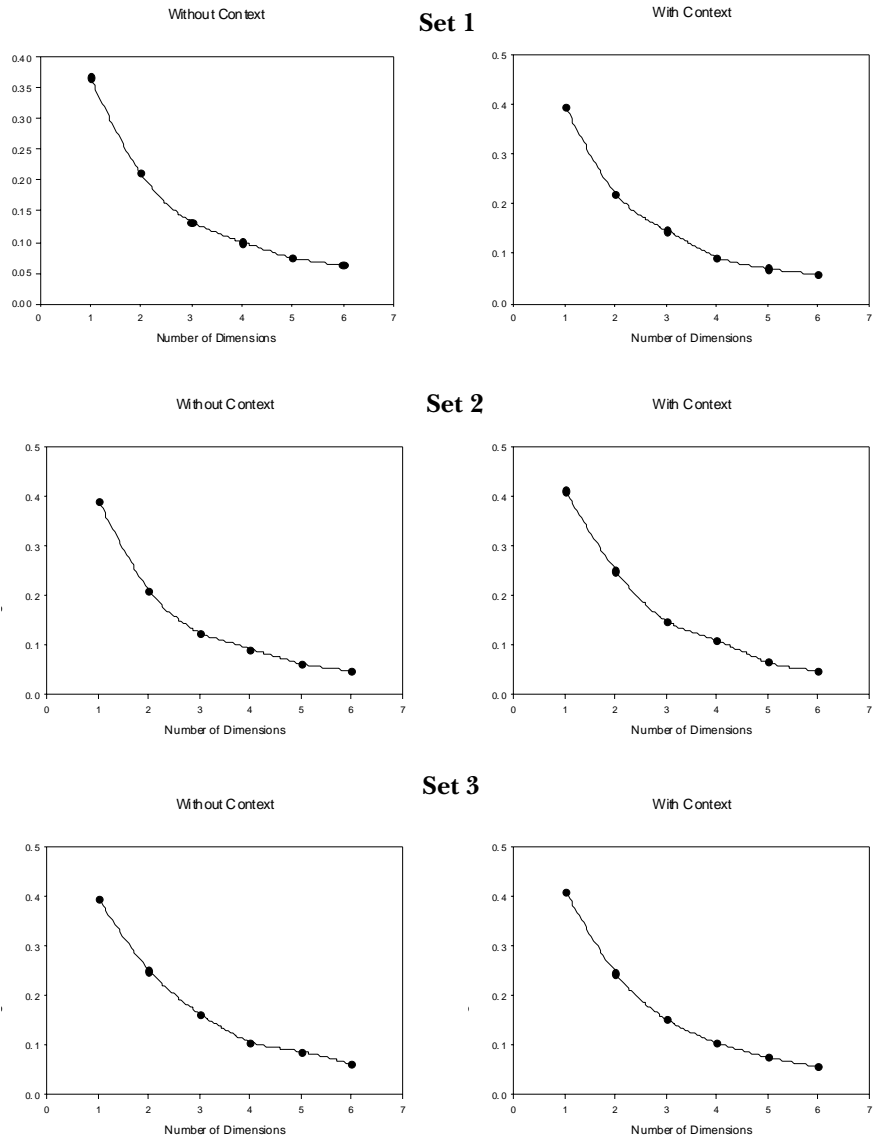


Figure 2a. Two-Dimensional Plot of Dimensions 1 and 2 (Sample 1).

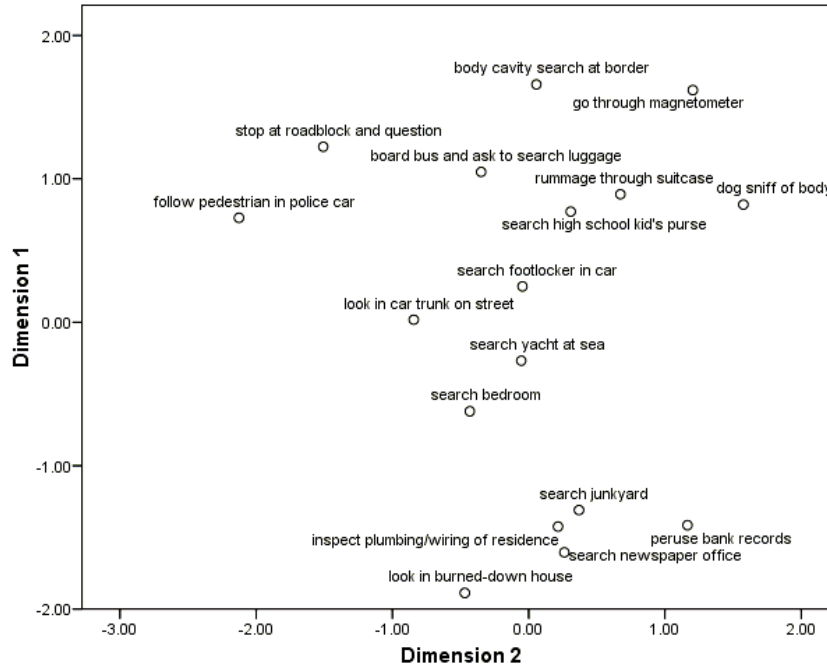


Figure 2b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 1).

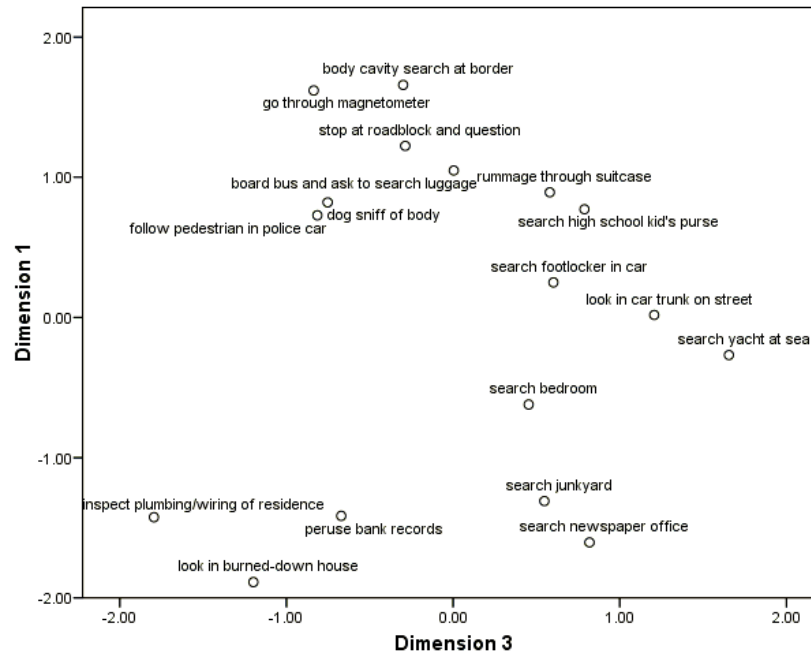


Figure 2c. Two-Dimensional Plot of Dimensions 2 and 3 (Sample 1).

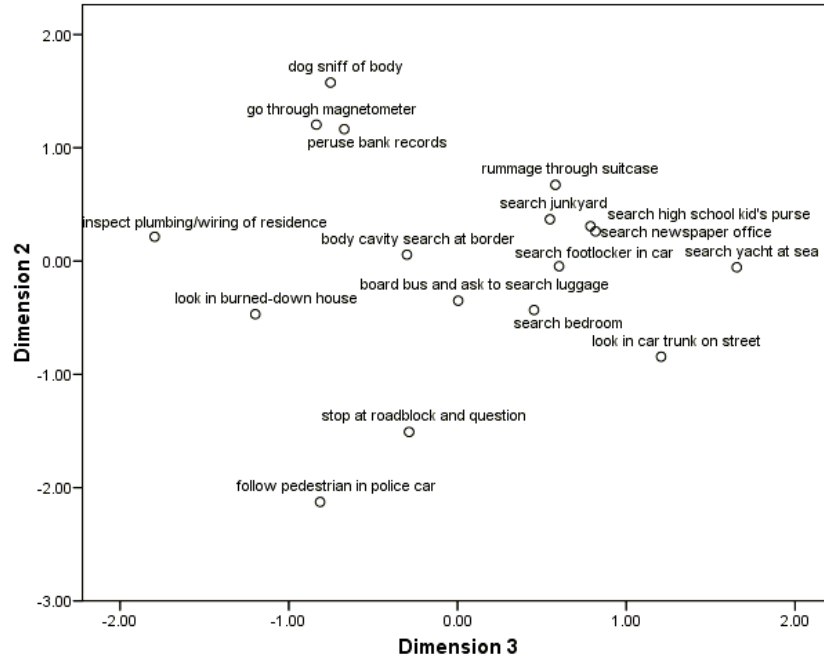


Figure 3a. Two-Dimensional Plot of Dimensions 1 and 2 (Sample 2).

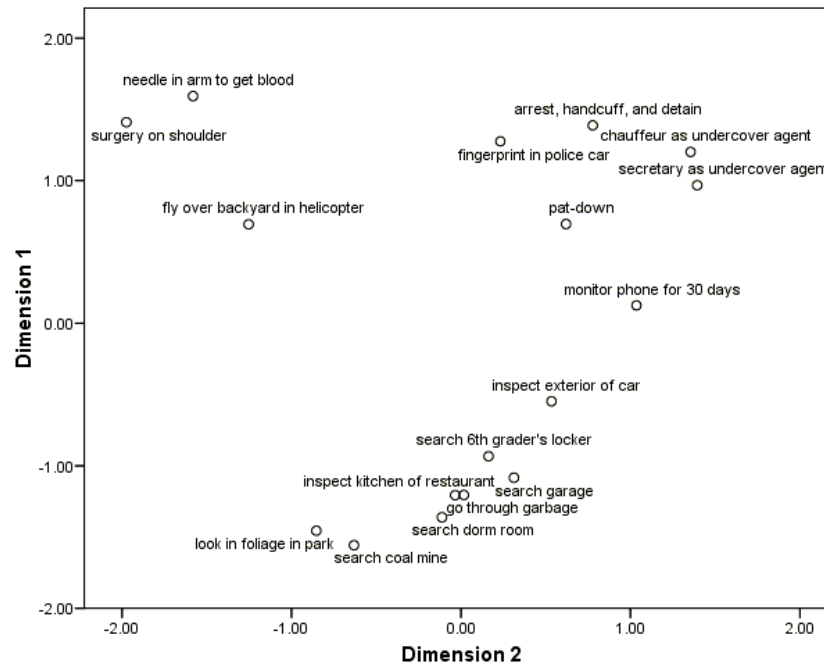


Figure 3b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 2).

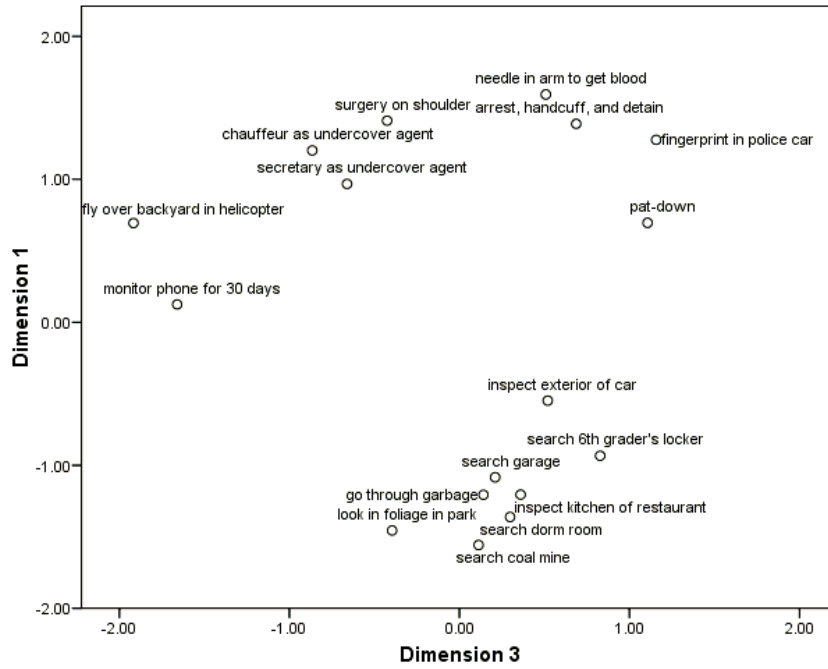


Figure 3c. Two-Dimensional Plot of Dimensions 2 and 3 (Sample 2).

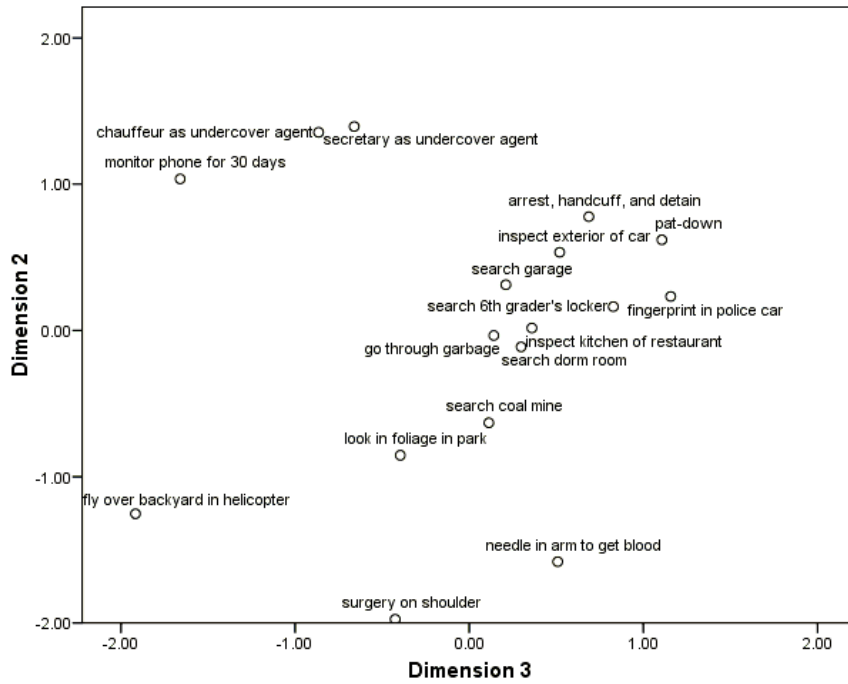


Figure 4a. Two-Dimensional Plot of Dimensions 1 and 2 (Sample 3).

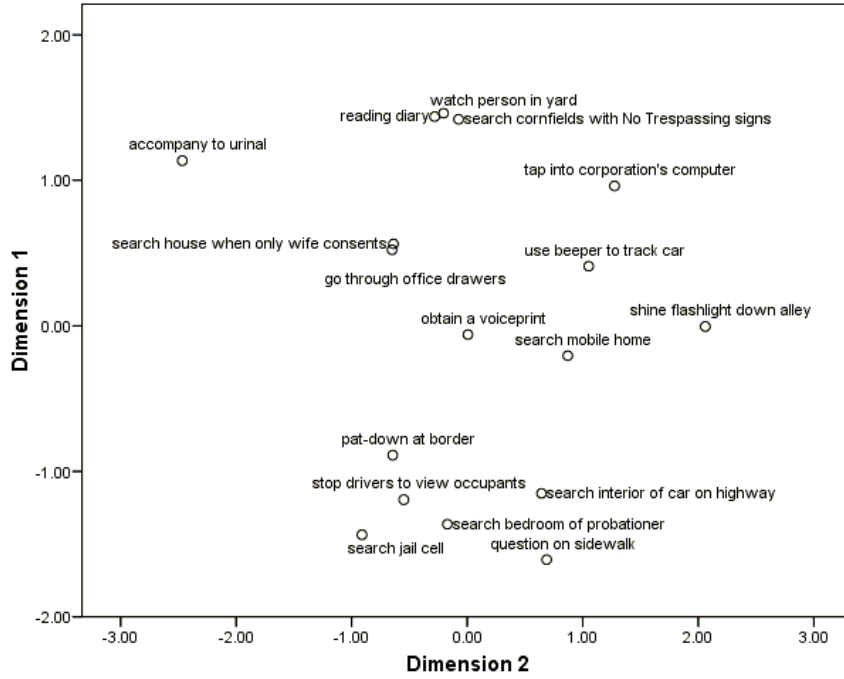


Figure 4b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 3).

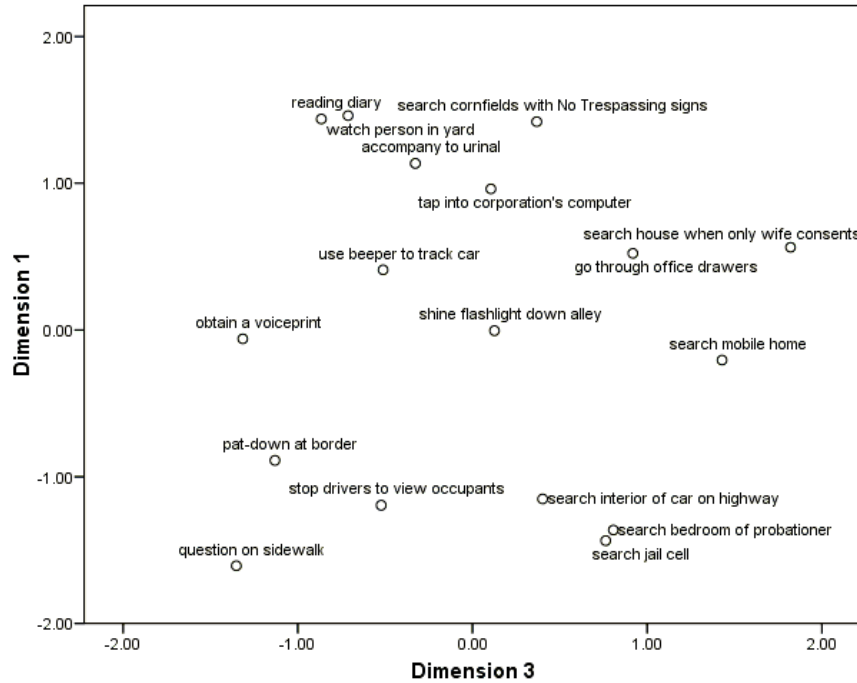


Figure 4c. Two-Dimensional Plot of Dimensions 2 and 3 (Sample 3).

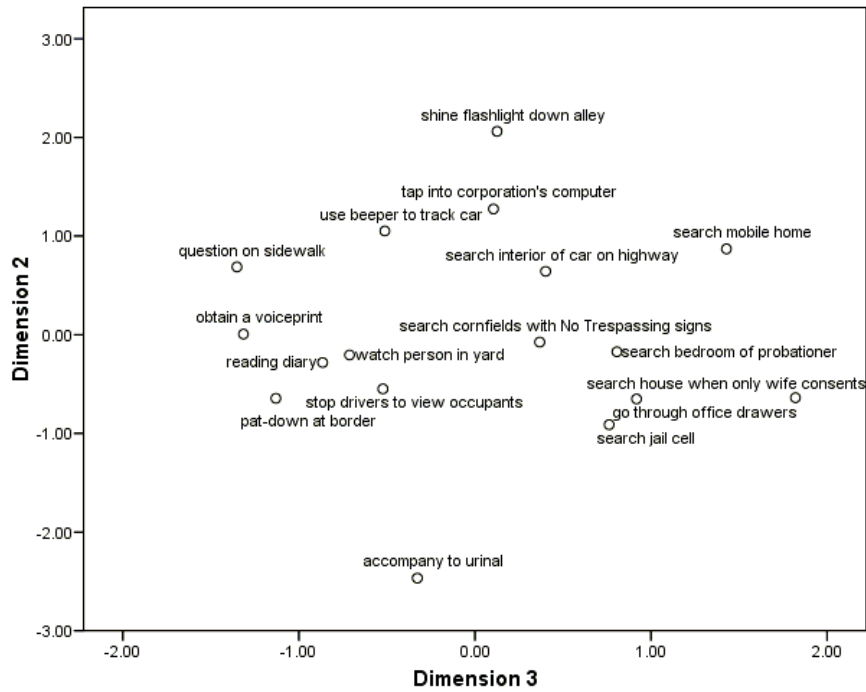


Figure 5a. Two-Dimensional Plot of Dimensions 1 and 2 (Sample 4).

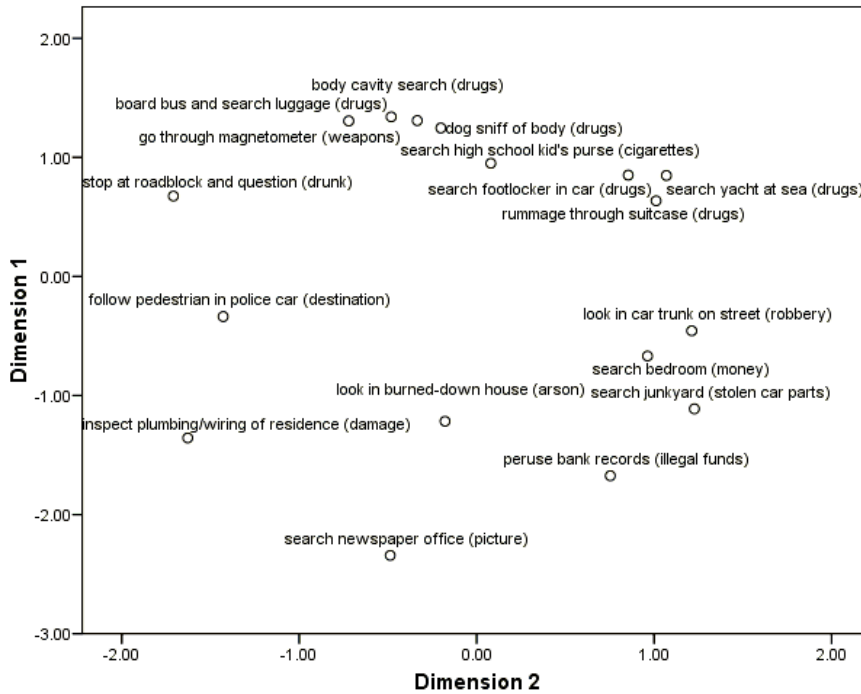


Figure 5b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 4).

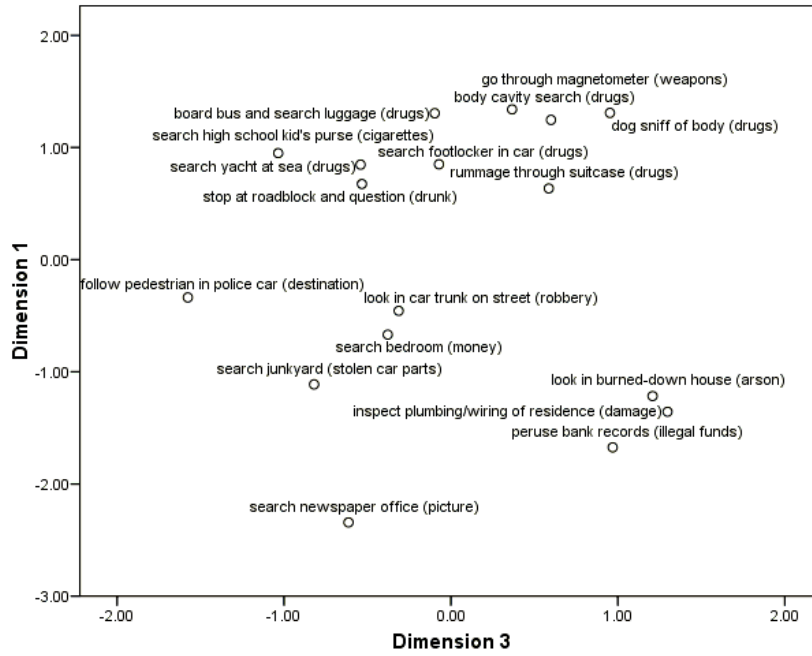


Figure 5c. Two-Dimensional Plot of Dimensions 2 and 3 (Sample 4).

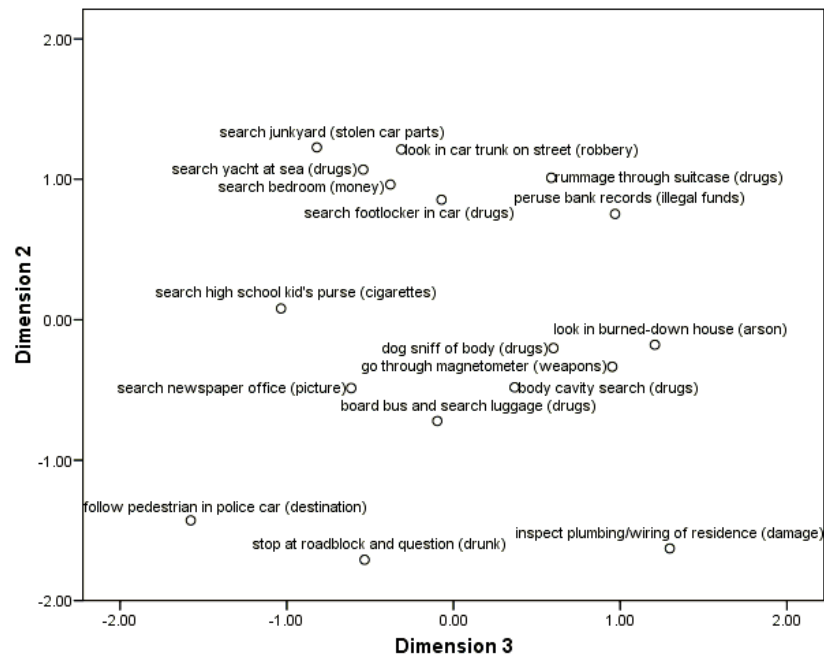


Figure 6a. Two-Dimensional Plot of Dimensions 1 and 2 (Sample 5).

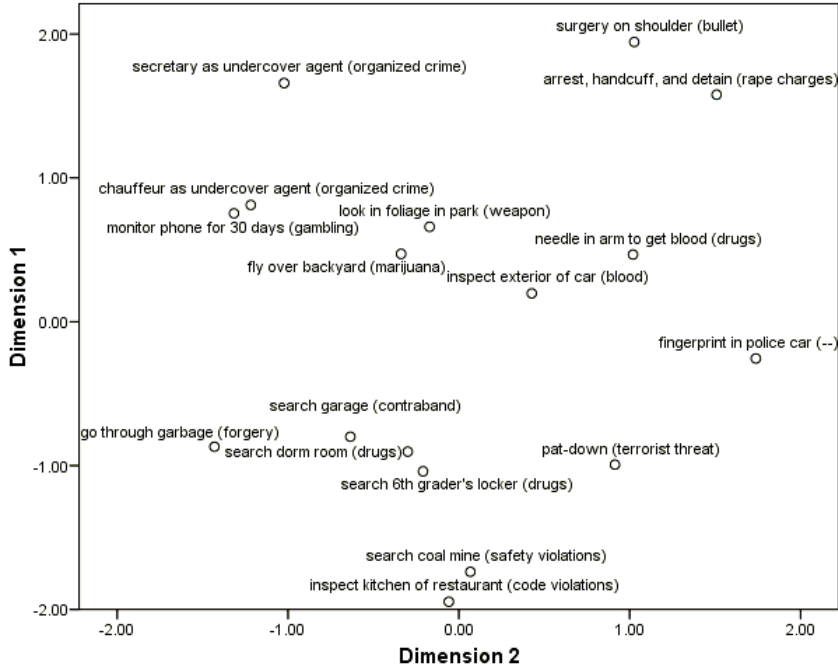


Figure 6b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 5).

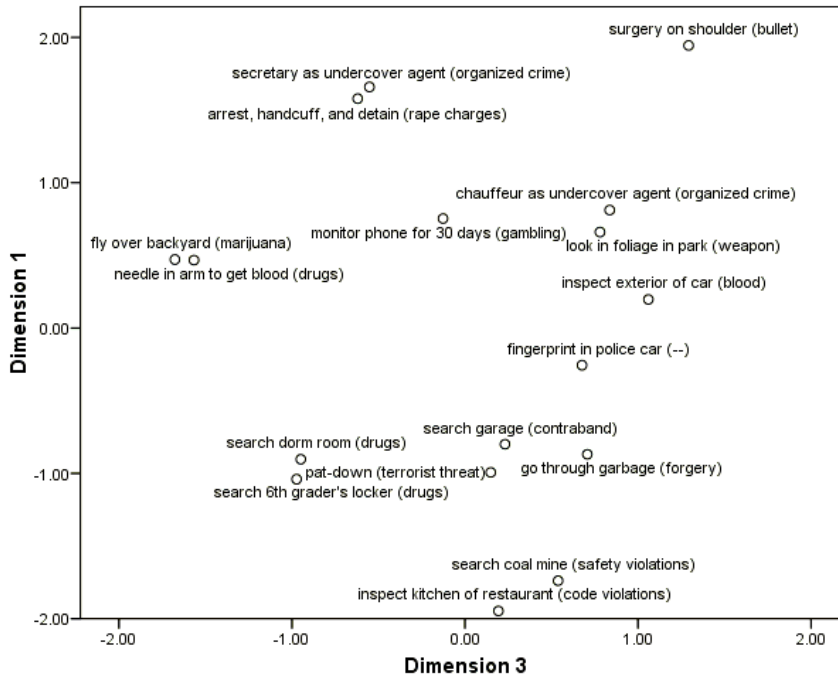


Figure 7b. Two-Dimensional Plot of Dimensions 1 and 3 (Sample 6).

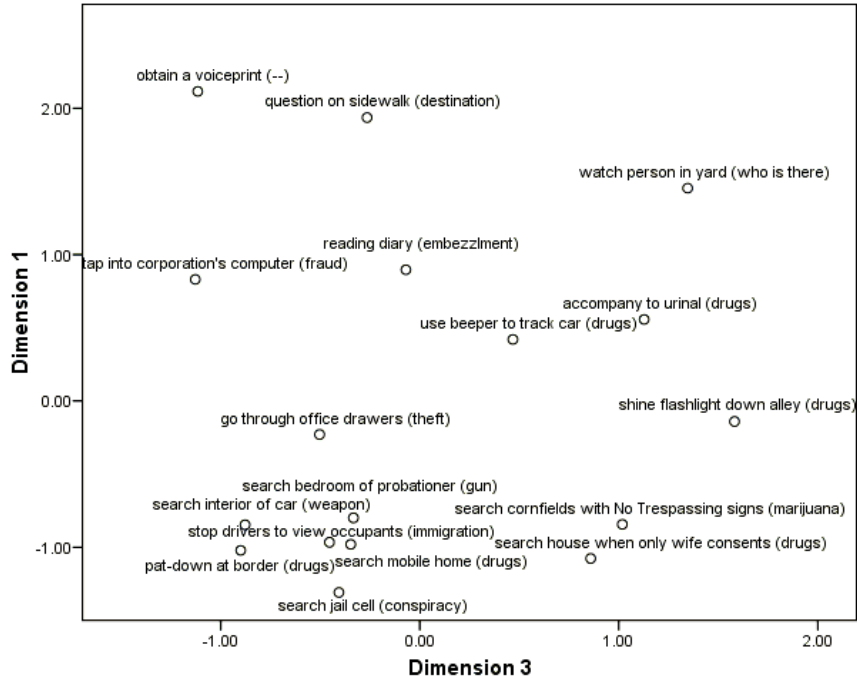


Figure 7c. Two-Dimensional Plot of Dimensions 2 and 3 (Sample 6).

