

Tracking Men's Perceptions of Women's Sexual Interest

Teresa A. Treat¹, Bob McMurray^{1,2,3,4},
Jodi R. Betty¹, and Richard J. Viken⁵

¹Department of Psychological and Brain Sciences, The University of Iowa; ²Department of Linguistics, The University of Iowa; ³Department of Communication Sciences and Disorders, The University of Iowa;

⁴Development and Learning From Theory to Application (DeLTA) Center, The University of Iowa; and

⁵Department of Psychological and Brain Sciences, Indiana University

Current Directions in Psychological Science
2020, Vol. 29(1) 71–79
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0963721419884322
www.psychologicalscience.org/CDPS


Abstract

Judging a woman's current sexual interest in a specific man is a socially and emotionally complex decision. These judgments can be considered a form of perceptual decision-making in which men integrate both affective (emotional) and nonaffective cues. College men at risk of sexual aggression rely less on women's affective cues and more on nonaffective cues, suggesting that cognitive processes may matter for real-world problems. However, in the real world, people may not have the luxury of waiting for processes to complete before they act. Recent work has used dynamic-competition models of decision-making to examine this problem. These models assume that affective judgments (such as interested vs. rejecting) are partially activated by multiple cues and compete over time. This work, in which mouse tracking is used to index partial decision states, demonstrates that on-line measures predict rape-supportive attitudes over and above off-line (judgment) measures. This offers a new way to understand the cognitive core of an important societal problem.

Keywords

sexual perception, dynamic competition, sexual aggression, individual differences, affect

How sexually interested does a woman feel about a particular man at a specific moment in time? This common and difficult judgment can have important consequences (Abbey, 1987). Usually, misperceiving a woman's sexual interest produces only fleeting embarrassment. However, men who more accurately judge a woman's sexual interest are less likely to endorse attitudes that support rape and to report a history of sexual aggression (Abbey, Jacques-Tiura, & LeBreton, 2011; Farris, Treat, Viken, & McFall, 2008b).

Although sexual-interest judgments are socially complex and potentially important, at their core, they can be considered within a cognitive framework as a form of decision making under uncertainty. As a result, significant progress on the issue of sexual-interest judgments has been made by applying cognitive methods and paradigms. In these approaches, participants view full-body photographs of real women and judge how much sexual interest women are portraying "right now."

This work has revealed what types of information average college males use to judge sexual interest. It has also shown that individual differences in those judgments are associated with risk for sexual aggression (e.g., endorsement of rape-supportive attitudes; Murnen, Wright, & Kaluzny, 2002).

However, decision making unfolds over time, and this work has generally focused on the end state of decision making (i.e., the final judgment or decision). In contrast, measures and models that capture the real-time unfolding of decisions may shed more light on this problem. In recent years, there has been increasing interest in applying such models and methods to complex social and affective processes (Freeman & Ambady,

Corresponding Author:

Teresa A. Treat, The University of Iowa, Department of Psychological and Brain Sciences, W311 Seashore Hall, Iowa City, IA 52242
E-mail: teresa-treat@uiowa.edu

2011). We describe here how such models—and empirical methods—can lend insight into even complex socially and clinically relevant domains such as sexual perception.

What Information Do College Men Use to Judge Women's Momentary Sexual Interest?

Sexual-interest judgment tasks allow us to infer what stimulus information men use or rely on when judging women's portrayal of sexual interest. These tasks present subjects with posed photographs of women (the stimuli) that vary on multiple dimensions, such as the woman's attractiveness and the provocativeness of her clothing. These stimuli are first independently rated by expert undergraduate judges on a variety of features or dimensions, such as attractiveness and clothing style. We refer to these previously rated features of the stimuli as *normative features* because they are based on norms provided by relevant judges. These photos are then presented to undergraduate men to examine how men vary in their utilization of these cues.

In several studies (Treat, Church, & Viken, 2017; Treat, Hinkel, Smith, & Viken, 2016; Treat, Viken, Farris, & Smith, 2016), college men judged the sexual interest of over 100 women portraying a variety of dating-relevant cues (Fig. 1a). Task instructions clearly indicated that male respondents should judge the sexual interest being communicated by the woman (rather than the respondent's sexual interest in the woman). Statistical methods were then used to estimate how much each respondent's judgments were related to normative features of the images (e.g., how much a participant relied on attractiveness vs. clothing style when judging women's sexual-interest portrayals). This approach allowed us to infer what features men use when judging women's sexual interest.

On average, men strongly based their judgments on the woman's affective cues (her portrayed emotion), as communicated by her facial expressions and in her body posture. In other words, men's judgments correlated strongly with the normative ratings of women's affect, indicating strong sensitivity to women's portrayed emotion. It is not surprising that men use affective cues as indicators of sexual interest because affective cues can change from moment to moment and can be directed toward a specific person. However, college men also relied on three stimulus features that are more stable over time: the provocativeness of the woman's clothing, her attractiveness, and the relevance of the surrounding context to dating and sexual activity. That is, even when women portrayed the same level of interest, men judged women to be feeling more interested if the women wore more provocative clothing,

were more attractive, or were in a sexually relevant context (e.g., at a party). Thus, men take both affective and nonaffective information into account when judging women's current sexual interest.

Such results may extend outside of the lab: Perilloux, Easton, and Buss (2012), for example, showed analogous results for attractiveness in a speed-dating study. Interestingly, college women also rely on both women's affective and nonaffective cues when judging women's momentary sexual interest (for information on gender differences in sexual perception, see Farris et al., 2008a; Treat et al., 2017).

A second series of studies examined the impact of the *congruence* of women's affective cues with their nonaffective cues on sexual-interest judgments. For example, a normatively attractive woman who is portraying sexual interest displays what we term *congruent cues*. Congruent cues both potentially lead to the same interpretation (e.g., she is portraying interest). Conversely, the same normatively attractive woman portraying rejection displays *incongruent cues* (i.e., the two cues conflict).

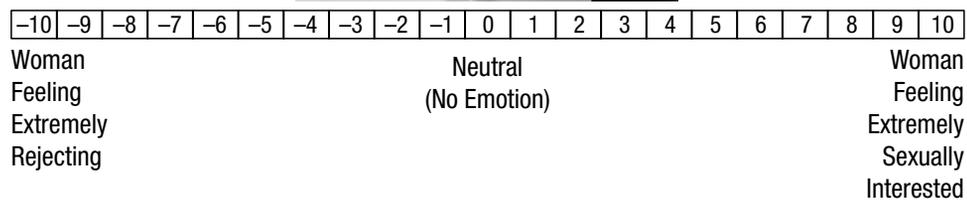
In these studies, men judged whether women felt sexually interested, friendly, sad, or rejecting (Fig. 1b; Farris et al., 2008a; Farris, Viken, & Treat, 2010; Farris, Viken, Treat, & McFall, 2006; Treat, Farris, Viken, & Smith, 2015). Analyses focused on men's utilization of affective cues as a function of clothing style. As predicted, a *congruence effect* emerged. Men were more likely to correctly report that a woman's affective cues indicated sexual interest (consistent with normative judgments) when the woman also wore more provocative clothing. Conversely, men were more likely to correctly identify rejection when women wore more conservative clothing. Thus, men's judgments of women's current sexual interest reflect the integration of many sources of information—both more dynamic cues, such as affect, and more stable cues, such as context, dress, and attractiveness.

Are Men's Sexual-Interest Judgments Linked to Sexual Aggression?

These studies speak to the cognitive processing of the average college male, but individual differences also emerge in the way men integrate cues. Across studies, men who endorsed more rape-supportive attitudes (i.e., high-risk men) focused less on affect and more on attractiveness than their peers did (see also Treat & Viken, 2018). High-risk men also tended to show a larger congruence effect. The attractiveness finding suggests that high-risk men may be more prone than their peers to affective projection, in which they confuse their own sexual feelings about a woman with her emotions (Maner, Miller, Moss, Leo, & Plant, 2012). These

a

How Sexually Interested Versus Rejecting Is the Woman Feeling Right Now?



b

How Is the Woman Feeling?



Fig. 1. Example trial from (a) a sexual-interest judgment task and (b) a sexual-interest classification task. In the judgment task, participants view a photo of a woman for 2 s and rate how sexually interested the woman is feeling right now on a 21-point scale. In the classification task, participants view a photo of a woman for 1 s and indicate how the woman is feeling: rejecting, sad, sexually interested, or friendly. Across trials in both tasks, photographs depict many women who vary in affect (as portrayed on the face), body posture, provocativeness of dress, normative attractiveness, and the sexual relevance of the context (e.g., setting) in which they are shown.

risk-linked findings are consistent with theoretical models specifying a role for misperception of sexual interest in sexual aggression (Abbey et al., 2011).

Dynamic-Competition Accounts of Cue Integration and Decision Making

These results suggest the value of thinking about socially and clinically relevant decision making within a cognitive framework. However, what kinds of mechanisms describe the process of integrating information for sexual-interest judgments? There are a variety of cognitive architectures for combining and weighting perceptual and cognitive influences on a decision (e.g., Landy, Banks, & Knill, 2011; McClelland & Elman, 1986; Oden & Massaro, 1978). However, a critical factor when thinking about complex social judgments is that decision making takes time. Prior studies on sexual interest used methods that tap the end point (or cognitive products) of this process; that is, they focused on the final choice. However, in a real social interaction, people may need to act before they are certain, on the basis of preliminary decision states. Or they may need to continually update and revise prior decisions. These aspects of real-world decision making favor models that capture ongoing processing dynamics.

Dynamic-competition accounts suggest that people use both bottom-up stimulus cues and top-down expectations. These cues are integrated to partially activate multiple potential responses (Freeman & Johnson, 2016; McClelland & Elman, 1986; Spivey, 2007). Potential responses compete over time. Less-supported responses lose activation, and the system gradually converges on a single possibility (see Fig. 2a; Spivey, 2007).

This approach was originally developed for basic cognitive phenomena such as language (where stimuli vary over time) and categorization (where ambiguity is common; McClelland & Elman, 1986; Spivey, 2007). However, recent work underscores its relevance to complex social judgments, such as gender, race, and emotion (e.g., Freeman, Ambady, Rule, & Johnson, 2008; Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011).

How can dynamic competition inform our understanding of sexual-interest judgments? Suppose that a college man views a photograph of a woman who portrays clear rejection but wears provocative clothing and is normatively attractive. In this case, her affective cues are incongruent with her nonaffective cues. Dynamic competition (Fig. 2b) suggests that bottom-up characteristics of the woman activate both interested and rejecting response options to different degrees. Her affect should activate the rejecting response, but her

clothing style and attractiveness may partially activate the interested response. These options then compete until a decision can be reached. As a result, on some incongruent trials, partial activation of the interested (incorrect) response could lead the system to settle on the wrong decision. That is, the system may occasionally settle on a decision that is inconsistent with the normative ratings of the woman's affective cues. Or even if the system settles on the correct decision (i.e., the decision consistent with the normative ratings), increased activation of the incorrect response could slow the decision. In contrast, consider a congruent trial in which the woman is portraying interest and wearing provocative clothing. Here, both cues point to the same response. This minimizes competition, resulting in a rapid decision and making it less likely that the system will settle on the rejecting (incorrect) response.

Thus, dynamic competition among conceptually distinct response options may have produced the congruence effect on decisional products observed in prior work. This processing may be further altered by top-down characteristics of the perceiver, such as the strength of his rape-supportive attitudes (Freeman & Johnson, 2016; McClelland & Elman, 1986).

Does Dynamic Competition Underlie Sexual-Interest Judgments?

A critical assumption of dynamic-competition models is that ongoing (incomplete) decision states are available to guide ongoing action (Spivey, 2007). This is particularly relevant to sexual-interest judgments because in the real world, there is rarely sufficient time to process stimuli fully to guide action (Spivey, 2007). Thus, partially activated perceptual states and partially resolved competition may be the basis of much of social action (Duran, Dale, & McNamara, 2010; Kieslich & Hilbig, 2014; Koop & Johnson, 2011). In the case of sexual perception, for example, the system might be 75% committed to an interested response and 25% to a rejecting response. Nonetheless, the system may still need to act even though the decision is not complete (e.g., not 100% for one decision state). Because people may need to act before their sexual perceptions are fully settled, measures of intermediate states of processing might uniquely predict relevant attitudes and behavior.

Empirically, paradigms such as eye tracking and motion tracking allow us to measure ongoing behavior. These methods show how preliminary processing states can influence behavior as it unfolds over time. These methods can detect the influence of ongoing competition on dynamics of an unfolding behavior in a variety of domains.

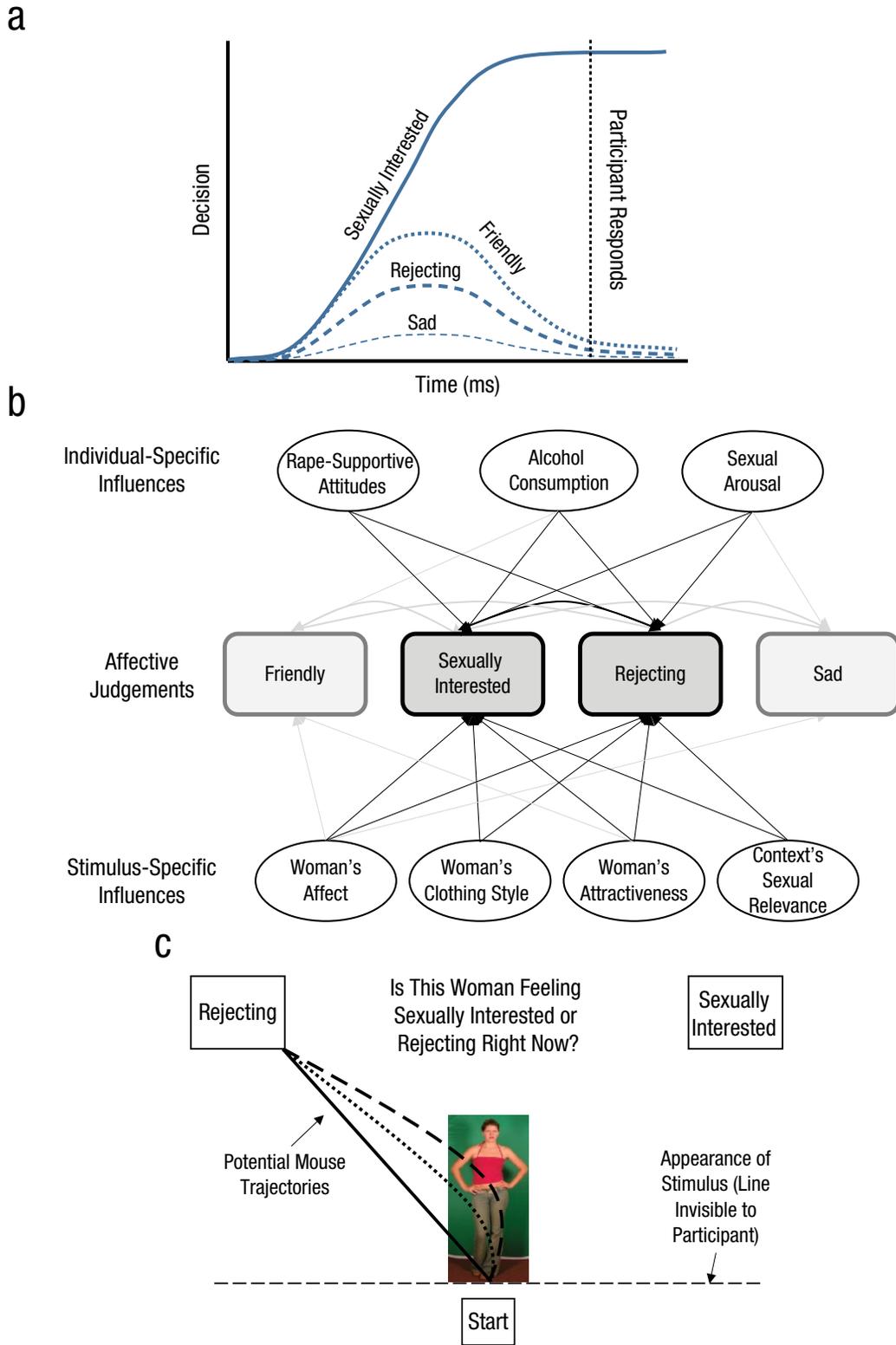


Fig. 2. Dynamic-competition model and mouse-tracking paradigm used in a study examining men's judgments of women's sexual interest. The schematic in (a) shows competition among four possible judgments of women's interest as they unfold over time. Initially, both sexual-interest and friendliness responses receive some activation, whereas less activation occurs for rejection and sadness. By the time of the participant's response, activation for interested responses has increased, and activation for the three competing response

Fig. 2. (continued on next page)

options has been suppressed. A hypothetical dynamic-competition model of dating-relevant affective judgments is shown in (b). Bottom-up sources of information from the stimuli are shown in the bottom row; top-down participant characteristics are shown in the top row. Information is integrated in the middle row to achieve a judgment about the woman's affect. Our discussion focuses on judgments of sexual interest versus rejection (darker boxes), but the model can be expanded to account for other affective states such as sadness and friendliness (lighter boxes). Similarly, the model can be expanded to account for top-down influences beyond endorsement of rape-supportive attitudes, such as alcohol consumption and sexual arousal. A trial from a mouse-tracking application of a sexual-interest judgment task is shown in (c). Participants indicate whether a woman currently feels rejecting or sexually interested. The woman presented on this trial portrays incongruent affective and nonaffective cues (i.e., rejecting affect but provocative dress). A participant begins a trial by clicking on the start button and then moving the mouse upward on the screen. For purposes of illustration, the mouse trajectories shown here begin at the point indicated by the dashed horizontal line, which is when a photograph of a woman appears for 1 s. The participant then continues moving the mouse until he clicks on his response. Three potential mouse-tracking trajectories are shown. Both the dashed and dotted trajectories deviate, or veer, from the solid straight-line trajectory. Greater veer suggests that the woman's provocative dress influenced the participant's on-line processing (i.e., increased activation of the sexually interested response). The dashed trajectory shows greater veer than the dotted trajectory, indicating greater competition between the rejecting and sexually interested response options.

In the mouse-tracking paradigm (Dshemuchadse, Scherbaum, & Goschke, 2013; Huette & McMurray, 2010; Kieslich & Hilbig, 2014; Spivey, Grosjean, & Knoblich, 2005), participants view or hear a target stimulus and then move a computer mouse toward one of several response options (see Fig. 2c for a trial from our recent application of this procedure to sexual-interest judgments; Smith, Treat, Farmer, & McMurray, 2018). As the participant moves the mouse, its streaming x, y coordinates are recorded. In many domains of decision making, such as language and categorization, the continuous spatial mouse trajectories are influenced by fluctuations in the activation of the response options. Typically, when the incorrect response is considered, mouse trajectories veer, or curve, more toward it along the way to the final selection (in Fig. 2c, the hypothetical dotted- and dashed-line trajectories), compared with trials in which the incorrect response shows less competitive influence. This veer can reflect heightened activation before the ultimate response for an ultimately rejected decision (Spivey, 2007).

In a recent study (Smith et al., 2018), this approach was used to examine the real-time dynamics of college men's decisions about women's sexual-interest cues. College men completed mouse-tracking trials with photographs of women portraying either extreme sexual interest or extreme rejection, according to highly reliable expert judges. Thus, the percentage of agreement with normative classifications (accuracy) was high. Men judged women's affect (sexually interested or rejecting) under conditions that manipulated both clothing style (provocative or conservative) and attractiveness (high or low). This manipulation was predicted to lead to heightened competition when cues were incongruent. Participants also completed a measure of rape-supportive attitudes (Payne, Lonsway, & Fitzgerald, 1999).

The ultimate response was highly normatively accurate overall. In addition, both clothing style and attractiveness

produced the expected congruence effects. Errors were more common when nonaffective and affective cues were incongruent, for instance when the woman displayed a rejecting attitude but her clothing was provocative or her attractiveness was high. Thus, the basic pattern of cue integration found in the earlier studies was observed.

We next evaluated ongoing decision making (i.e., veers in men's mouse trajectories toward the incorrect response). Critically, this analysis was conducted only on trials with correct responses, in which correctness was indicated by the woman's portrayed affect according to normative judges. The idea here is that even when men ultimately respond correctly, veer in the mouse trajectory would provide evidence that the early states of processing reflect consideration of the other (incorrect) choice. This would be strong evidence that both choices were simultaneously (even if briefly) active, a key prediction of competition models.

This is exactly what we observed. For example, when men made a decision about sexually interested women, their trajectories veered significantly more toward the rejecting response when the women were dressed conservatively than when they were dressed provocatively (an incongruent trial). Importantly, this occurred even when the analysis was restricted to trials on which men ultimately chose the normatively correct response. That is, even when men were choosing correctly, the mouse trajectory showed that the other response option was also activated. Moreover, high-risk men who endorsed rape-supportive attitudes showed a stronger congruence effect than their peers in the clothing-style (but not the attractiveness) condition.

Finally, we evaluated the differential predictive utility of these measures: Congruence effects were revealed both in the cognitive product (the final choice) and the process (the mouse trajectory). We thus asked whether the on-line measure (veer) tells us something we could not learn using the simpler off-line measure (accuracy).

A hierarchical regression showed that the off-line accuracy indexes accounted for 12.7% of the variation in men's rape-supportive attitudes. Notably, the on-line competition indexes accounted for an additional 7.6% of the variability in men's attitudes. This finding supports the incremental validity of the on-line indexes. Thus, measures of real-time decision processes may reveal something unique about the decision processes associated with sexual aggression. This supports the idea that early decision states may provide unique information about real-world behavior.

Conclusions and Future Directions

Both the products of men's sexual-interest judgments and the processes generating the judgments are influenced by characteristics of the women being perceived and the men doing the perceiving. Product-level investigations demonstrate that college men on average focus strongly on women's affect when judging their momentary sexual interest. However, men also rely on women's attractiveness and clothing style as well as the social environment. This underscores that judgments of sexually relevant emotion are often made in the context of nonaffective information (Barrett & Kensinger, 2010; de Gelder et al., 2006). Misconstruing dress, attractiveness, or context as valid indicators of a woman's momentary feelings about a man could set the stage for unwanted or ill-timed advances by college men. Importantly, men at greater risk of exhibiting aggression, relative to men at lower risk, rely relatively more on nonaffective than affective cues when judging women's interest. Such processing patterns could increase the likelihood of later aggressive behavior in one of two ways. First, it could bias perception of a woman's later sexual-consent cues. Second, it could encourage interpretation of a woman's later nonconsent cues as token resistance or as a deliberate incitement of sexual frustration.

Process-level investigations using mouse tracking reveal that sexually interested and rejecting decisions are simultaneously active and compete throughout men's evaluation of women's sexual interest. Even when a woman clearly communicates rejection—and the observer correctly picks up on this cue—provocative clothing and normative attractiveness can activate the competing percept of sexual interest. Moreover, on-line indexes predict rape-supportive attitudes even when analyses control for the man's ultimate decision. These findings highlight the unique value of on-line sexual-perception measures in predicting sexual-aggression risk, even when the affective decision is very easy. This perhaps reflects the fact that real-world decision making often necessitates acting on early or partial decision states.

Future work should flesh out the precise architecture of sexual-perception processes. For example, do rape-supportive attitudes bias the decision (by modifying the top-down connections shown in Fig. 2a), change the weights of the perceptual cues (by modifying the bottom-up connections), or both? Similar questions arise for other participant-specific influences on sexual perception, such as alcohol consumption and sexual arousal. Some of these architectural considerations suggest the potential benefits of placing our competition account into richer predictive-coding frameworks (Clark, 2013). Such accounts can accommodate multiple simultaneous decisions, ongoing evaluation of these decisions against new input, and innovative use of top-down knowledge to aid perception.

Finally, this work suggests the potential utility of cognitive training to enhance the accuracy of men's judgments. Recent studies have demonstrated that two experimental methods increase men's use of women's affect when judging women's momentary sexual interest: (a) explicit instruction about the differential relevance of affective and nonaffective cues (Treat et al., 2017) and (b) trial-by-trial feedback on participant judgments that is based on the judgments of expert raters (Treat, Viken, et al., 2016). However, we do not know whether such training would alter real-time processes or influence real-world behavior. In the long run, expanded versions of these experimental methods could potentially be incorporated into prevention efforts to reduce sexual assault on college campuses (Cantor et al., 2015). Future research should evaluate whether cognitive-training methods are useful for this purpose given the role of sexual misperception in sexual aggression and the inadequacy of current prevention efforts in this area (Abbey et al., 2011; DeGue et al., 2014).

Recommended Reading

- Abbey, A., Jacques-Tiura, A. J., & LeBreton, J. M. (2011). (See References). Reviews risk factors for sexual aggression among young men, including misperception of sexual interest.
- Freeman, J. B., & Ambady, N. (2011). (See References). Presents a dynamic, interactive theory of person perception.
- Smith, J. R., Treat, T. A., Farmer, T. A., & McMurray, B. (2018). (See References). Presents findings bearing on dynamic-competition account of men's perceptions of women's sexual interest.
- Spivey, M. (2007). (See References). Introduces a continuous, dynamic, interactive account of the operation of perceptual, cognitive, and motor processes.
- Treat, T. A., Church, E. K., & Viken, R. J. (2017). (See References). Documents stimulus-specific, person-specific, and experimentally manipulated influences on men's judgments of women's momentary sexual interest.

Action Editor

Randall W. Engle served as action editor for this article.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

References

- Abbey, A. (1987). Misperception of friendly behavior as sexual interest: A survey of naturally occurring incidents. *Psychology of Women Quarterly, 11*, 173–194.
- Abbey, A., Jacques-Tiura, A. J., & LeBreton, J. M. (2011). Risk factors for sexual aggression in young men: An expansion of the confluence model. *Aggressive Behavior, 37*, 450–464.
- Barrett, L. F., & Kensinger, E. A. (2010). Context is routinely encoded during emotion perception. *Psychological Science, 21*, 595–599.
- Cantor, D., Fisher, B., Chibnall, S., Townsend, R., Lee, H., Bruce, C., & Thomas, G. (2015). *Report on the AAU Campus Climate Survey on Sexual Assault and Sexual Misconduct*. Retrieved from https://www.aau.edu/sites/default/files/%40%20Files/Climate%20Survey/AAU_Campus_Climate_Survey_12_14_15.pdf
- Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behavioral & Brain Sciences, 36*, 181–253.
- de Gelder, B., Meeren, H. K., Righart, R., van den Stock, J., van de Riet, W. A. C., & Tamietto, M. (2006). Beyond the face: Exploring rapid influences of context on face processing. *Progress in Brain Research, 155*, 37–48.
- DeGue, S., Valle, L. A., Holt, M. K., Massetti, G. M., Matjasko, J. L., & Tharp, A. T. (2014). A systematic review of primary prevention strategies for sexual violence perpetration. *Aggression and Violent Behavior, 19*, 346–362.
- Dshemuchadse, M., Scherbaum, S., & Goschke, T. (2013). How decisions emerge: Action dynamics in intertemporal decision making. *Journal of Experimental Psychology: General, 142*, 93–100.
- Duran, N. D., Dale, R., & McNamara, D. S. (2010). The action dynamics of overcoming the truth. *Psychonomic Bulletin & Review, 17*, 486–491.
- Farris, C., Viken, R. J., & Treat, T. A. (2010). Perceived association between diagnostic and non-diagnostic cues of women's sexual interest: General recognition theory predictors of risk for sexual coercion. *Journal of Mathematical Psychology, 54*, 137–149.
- Farris, C., Treat, T. A., Viken, R. J., & McFall, R. M. (2008a). Perceptual mechanisms that characterize gender differences in decoding women's sexual intent. *Psychological Science, 19*, 348–354.
- Farris, C., Treat, T. A., Viken, R. J., & McFall, R. M. (2008b). Sexual coercion and the misperception of sexual intent. *Clinical Psychology Review, 28*, 48–66.
- Farris, C., Viken, R. J., Treat, T. A., & McFall, R. M. (2006). Heterosocial perceptual organization: Application of the choice model to sexual coercion. *Psychological Science, 17*, 869–875.
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review, 118*, 247–279.
- Freeman, J. B., Ambady, N., Rule, N. O., & Johnson, K. L. (2008). Will a category cue attract you? Motor output reveals dynamic competition across person construal. *Journal of Experimental Psychology: General, 137*, 673–690.
- Freeman, J. B., & Johnson, K. L. (2016). More than meets the eye: Split-second social perception. *Trends in Cognitive Sciences, 20*, 362–374.
- Freeman, J. B., Penner, A. M., Saperstein, A., Scheutz, M., & Ambady, N. (2011). Looking the part: Social status cues shape race perception. *PLOS ONE, 6*(9), Article e25107. doi:10.1371/journal.pone.0025107
- Huetter, S., & McMurray, B. (2010). Continuous dynamics of color categorization. *Psychonomic Bulletin & Review, 17*, 348–354.
- Kieslich, P. J., & Hilbig, B. E. (2014). Cognitive conflict in social dilemmas: An analysis of response dynamics. *Judgment and Decision Making, 9*, 510–522.
- Koop, G. J., & Johnson, J. G. (2011). Response dynamics: A new window on the decision process. *Judgment and Decision Making, 6*, 750–758.
- Landy, M. S., Banks, M. S., & Knill, D. C. (2011). Ideal-observer models of cue integration. In J. Trommershauser, K. Körding, & M. S. Landy (Eds.), *Sensory cue integration* (pp. 5–29). Oxford, England: Oxford University Press.
- Maner, J. K., Miller, S. L., Moss, J. H., Leo, J. L., & Plant, E. A. (2012). Motivated social categorization: Fundamental motives enhance people's sensitivity to basic social categories. *Journal of Personality and Social Psychology, 103*, 70–83.
- McClelland, J. L., & Elman, J. L. (1986). The TRACE model of speech perception. *Cognitive Psychology, 18*, 1–86.
- Murnen, S. K., Wright, C., & Kaluzny, G. (2002). If “boys will be boys,” then girls will be victims? A meta-analytic review of the research that relates masculine ideology to sexual aggression. *Sex Roles, 46*, 359–375.
- Oden, G., & Massaro, D. W. (1978). Integration of featural information in speech perception. *Psychological Review, 85*, 172–191.
- Payne, D. L., Lonsway, K. A., & Fitzgerald, L. F. (1999). Rape myth acceptance: Exploration of its structure and its measurement using the Illinois Rape Myth Acceptance Scale. *Journal of Research in Personality, 33*, 27–68.
- Perilloux, C., Easton, J. A., & Buss, D. M. (2012). The misperception of sexual interest. *Psychological Science, 23*, 146–151.
- Smith, J. R., Treat, T. A., Farmer, T. A., & McMurray, B. (2018). Dynamic competition account of men's perceptions of women's sexual interest. *Cognition, 174*, 43–54.
- Spivey, M. (2007). *The continuity of mind*. Oxford, England: Oxford University Press.
- Spivey, M. J., Grosjean, M., & Knoblich, G. (2005). Continuous attraction toward phonological competitors. *Proceedings of the National Academy of Sciences, USA, 102*, 10393–10398.

- Treat, T. A., Church, E. K., & Viken, R. J. (2017). Effects of gender, rape-supportive attitudes, and explicit instruction on perceptions of women's momentary sexual interest. *Psychonomic Bulletin and Review*, *24*, 979–986.
- Treat, T. A., Farris, C. A., Viken, R. J., & Smith, J. R. (2015). Influence of sexually degrading music on men's perceptions of women's dating-relevant cues. *Applied Cognitive Psychology*, *29*, 135–141.
- Treat, T. A., Hinkel, H., Smith, J. R., & Viken, R. J. (2016). Men's perceptions of women's sexual interest: Effects of environmental context, sexual attitudes, and women's characteristics. *Cognitive Research: Principles and Implications*, *1*, Article 8. doi:10.1186/s41235-016-0009-4
- Treat, T. A., & Viken, R. J. (2018). Sexual-perception processes in acquaintance-targeted sexual aggression. *Aggressive Behavior*, *44*, 316–326.
- Treat, T. A., Viken, R. J., Farris, C. A., & Smith, J. R. (2016). Enhancing the accuracy of men's perceptions of women's sexual interest in the laboratory. *Psychology of Violence*, *6*, 562–572.