D29 Who Was Texting During the Alleged Kidnapping and Rape?

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Learning Overview: After attending this presentation, attendees will better understand how quantitative analysis of language use can identify authorship of texts.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the utility of quantitative linguistic analysis for solving crime.

A woman and her estranged husband agreed to meet to discuss whether they were going to divorce or remain married. Since the husband was a long-distance truck driver and the wife stayed at home taking care of the children and horses, the husband and wife regularly texted each other throughout the day, even while they were separated. At one point they agreed to meet at his rig to discuss the state of their marriage. Both sides agreed to the meeting. Both sides even agreed that during the meeting the husband and wife had sexual intercourse. But the wife claimed that her estranged husband kidnapped her, because he would not allow her to leave, and raped her. The husband claimed that he had never kidnapped her and that he had not raped her because their sexual intercourse was consensual. The husband also said that after they had had sexual intercourse and were discussing their marriage, they argued and hit each other. The wife contacted the police; the husband was arrested and charged with kidnapping and rape.

During the investigation, an issue arose, from the defense's perspective, about the timing of the events. The beginning of the meeting was verifiable from text messages; the end of the meeting was verifiable from the police record. But during that time period, when exactly had the kidnapping and rape occurred? The wife's interviews showed that she had changed her mind about the timing of the events. Meanwhile, when the timeframe was finally decided upon by the prosecution and the defense, the text messaged showed that there were 24 text messages sent from the wife's phone during that three-hour period. The defense wanted to know: who was texting from the wife's phone during the alleged kidnapping and rape? The wife claimed that her husband had taken the phone from her and was sending texts to her mother, grandmother, boyfriend, and son so that they would not worry about her. The defense, however, claimed that if she had access to her phone and was actually texting her family, she could have texted 911. The linguistic issue then became: who was texting?

Forensic authorship identification applies standard linguistics to the issue.[1-4] In this case, two methods for determining authorship were used. The first method is Syntax-Based Authorship Identification (SynAID).[5,6] The second method is keyboard dynamics, or typing patterns.[5] The data for both of these methods were more than 3,000 known texts sent between the husband and wife. From these known texts, a statistical model of the syntactic patterns of the husband and wife were developed. This statistical model of the possible authors' known writing had 96% cross-validated accuracy. Given the high level of accuracy for the known writing, the model of authorship was applied to the questioned items.[7,8] Of the 24 questioned text messaged, 23 were assigned to the wife, with high typicality probability, and 1 was assigned to the husband. With an error rate of 4%, the one assigned to the husband could simply be statistical error, but even if the potential error were taken from the wife's assignments, for the benefit of the doubt, the wife's assignments were such that she would have had ample time to contact 911 or to ask her family to contact 911. The second method focused on the typing patterns since the main issue was who was actually typing on the phone. The husband and wife differed in their typing patterns; in particular, a differentiator was whether the text started with a space or a character. This pattern was favored by the wife rather than the husband. In the questioned texts, more texts started with a space than a character; this result converged with the syntactic method.

The prosecutor dropped the charges of kidnapping and rape. Because the husband admitted to hitting his wife during their argument after sexual intercourse, he was charged and convicted of other crimes.

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Forensic Authorship Identification, Syntax, Keyboard Dynamics

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