



Characterizing retroactive jealousy: Evidence from network, machine learning, and qualitative approaches

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*Characterizing retroactive jealousy:
Evidence from network, machine learning, and qualitative approaches*

A dissertation presented
by
Michael A. Osorio
to
The Department of Psychology
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
in the subject of
Psychology

Harvard University
Cambridge, Massachusetts

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Characterizing retroactive jealousy: Evidence from network, machine learning, and qualitative approaches

Abstract

Retroactive jealousy is a distressing and poorly understood phenomenon characterized by intrusive thoughts, compulsive behaviors, and emotional distress in response to a romantic partner's past relationships. This dissertation aims to advance understanding of retroactive jealousy through a series of empirical investigations spanning network analysis, machine learning, and computational linguistic approaches. In Study 1, we examine the symptom structure of retroactive jealousy and its relationship to obsessive-compulsive disorder (OCD), relationship OCD (ROCD), and borderline personality disorder (BPD). We find that retroactive jealousy symptoms do not form a strongly interconnected network, suggesting that the condition may not represent a coherent syndrome. In Study 2, we apply latent profile analysis to identify potential subtypes of retroactive jealousy based on behavioral strategies. Results reveal subtle differences in coping styles but limited evidence for stable or clinically distinct subtypes. In Study 3, we explore cognitive mechanisms associated with retroactive jealousy using open-ended responses analyzed through computational linguistics. We find that higher retroactive jealousy severity is associated with lower self-reported cognitive flexibility and greater use of certainty-related language, suggesting a role for rigid cognitive schemas. Drawing on work in the philosophy of mental illness, we also consider the possibility that retroactive jealousy reflects a historically and culturally situated expression of distress shaped by modern romantic ideals and

digital media. Together, these studies suggest that retroactive jealousy may not be best conceptualized as a form of an existing disorder category, but rather as a culturally embedded cognitive-affective experience that raises broader questions about the nature of emergent psychopathology.

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Chapter 1

General Introduction

The psychology of romantic jealousy, a compound emotion comprising sadness, anger, and fear, has intrigued researchers for decades (Salovey, 1991; Sharpsteen, 1991). Despite their differences, theoretical models share the assertion that romantic jealousy is an inter- and intra-personal experience arising from the subjective need to defend a valued relationship from a perceived threat stemming from a third-party rival (Bevan, 2013; Guerrero & Andersen, 1998; White & Mullen, 1989). These threats can concern the self-esteem of the individual, the quality of the relationship, or its existence.

Within the last decade, a rather perplexing presentation of romantic jealousy experience has emerged on the internet, being discussed in a growing number of popular press articles and blog posts (Ben-Zeév, 2013; Scrimgeour, 2015). Individuals who experience *retroactive jealousy* report extreme distress in reaction to information regarding their partner's past sexual or romantic experiences. Importantly, the past experiences in question occurred *before* the current relationship began. Furthermore, there is no perceived threat of a current third-party rival. In other words, individuals with retroactive jealousy are not necessarily concerned with the infidelity of their partners.

The research literature on such a popular topic is surprisingly sparse. The first researcher to systematically investigate retroactive jealousy, Frampton (2019), was quick to identify that retroactive jealousy does not easily fit into existing theoretical models of romantic jealousy. In cases of retroactive jealousy, it is not immediately clear what the perceived threat to the current relationship is. There is no third-party rival, and the "problematic" romantic and sexual experiences are firmly in the past and not perceived as potentially recurring in the future. Frampton (2019) sought to resolve this difficulty by applying a Meaning Maintenance Model

(MMM) approach. According to the MMM, people develop meaning frameworks, akin to cognitive schemas, to enhance their understanding of their world and their experiences within it as well as enhancing its predictability (Heine et al., 2006). When individuals encounter information or experiences that conflict with the expectations arising from their meaning frameworks, they perceive it as threatening (Proulx & Inzlicht, 2012). Frampton (2019) proposed that individuals with “specialness meaning frameworks,” who have expectations of exclusivity and uniqueness within their current relationship, are at risk for retroactive jealousy when they encounter information that violates these expectations (e.g., information about their partner’s past lovers). This hypothesis was supported in a study where perceived threat to the specialness of the relationship was the only perceived threat to significantly predict retroactive jealousy (Frampton, 2019).

One of the most intriguing features of retroactive jealousy is that individuals report feeling an “uncontrollable need” to ask repetitive, intrusive questions about their partner’s romantic past despite this being the same information which distressed them in the first place (Stockill, n.d.a; Frampton, 2019). Individuals with retroactive jealousy also report a debilitating preoccupation with intrusive thoughts and images about their partner’s pasts. These intrusive thoughts appear largely ego-dystonic as they often conflict with their subjective experience of the relationship and bring about distress. Behavioral responses to this distress include information-seeking, reassurance seeking, as well as outright avoidance, to name a few (Frampton, 2019). Given these characteristics, it was unsurprising that a popular opinion emerged online that retroactive jealousy is a form of obsessive-compulsive disorder (OCD) (Dev, 2020; Keohan, 2022).

In a recent explorative study, we investigated the links between retroactive jealousy and OCD (Osorio & McNally, 2023). We also explored the possibility that retroactive jealousy was

related to other forms of psychopathology, namely relationship OCD (ROCD), a subtype of OCD centered around themes of love and relationships, and borderline personality disorder (BPD), a disorder characterized by dysfunctional emotion regulation strategies and chaotic interpersonal relationships (Doron et al., 2014; Sayrs & Whiteside, 2006). We also sought to uncover the functional motivations behind information-seeking behavior and to determine the incremental validity of the condition. Our findings revealed that retroactive jealousy severity was significantly positively correlated with symptoms of OCD, ROCD, and BPD and that the most frequently endorsed function behind information-seeking was for automatic negative reinforcement (i.e., to get rid of negative feelings) (Osorio & McNally, 2023). Furthermore, we found that severity of one's retroactive jealousy predicted depression, anxiety, and stress symptoms (as measured by scores on the DASS) even while controlling for concurrent jealousy and relationship dissatisfaction (Lovibond & Lovibond, 1993; Osorio & McNally, 2023).

Although this research illuminates perceived threats, psychopathological correlates, and the function driving information-seeking in retroactive jealousy, there are several critical gaps in the literature. First, while our research demonstrated clear links between retroactive jealousy and OCD, ROCD, and BPD, the exact nature of these relationships remains unclear. Second, it is unknown to what extent retroactive jealousy presents homogenously or whether, as in other forms of psychopathology, there exist distinct subtypes of the phenomenon that might inform different treatment approaches. Third, although work by Frampton (2019) has elucidated the role of specialness meaning frameworks in retroactive jealousy, we lack an understanding of how clinicians might target potential cognitive processes at play.

This dissertation comprises three studies designed to answer questions about retroactive jealousy through a combination of network, machine learning, and qualitative approaches. In

Study 1, we implement a network approach to examine the symptom structure of retroactive jealousy and the relationships between retroactive jealousy and OCD, ROCD, and BPD. In Study 2, we explore the latent heterogeneity in retroactive jealousy by characterizing potential subtypes of the phenomenon. In Study 3, we build the theoretical groundwork for a potential cognitive intervention of retroactive jealousy by using qualitative methods to explore the links between this phenomenon and aspects of cognitive flexibility.

Chapter 2: Study 1

A network analysis of retroactive jealousy

Michael A. Osorio & Richard J. McNally

Background

Retroactive jealousy refers to obsessive thinking, emotional distress, and compulsive behaviors in response to a romantic partner's past romantic or sexual experiences. Individuals often engage in reassurance-seeking, rumination, and information gathering, even while recognizing that their concerns may be irrational or excessive (Frampton, 2019; Osorio & McNally, 2023). Although retroactive jealousy shares thematic overlap with obsessive-compulsive disorder (OCD), its symptom structure, clinical validity, and nosological status remain uncertain.

Numerous anecdotal accounts and recent qualitative data lend credence to the claim that retroactive jealousy is a form of OCD (Thriveworks, 2020; Frampton, 2019; Keohan, 2022; Stockill, n.d.b). For instance, one individual speaking about the obsessive nature of their thoughts about their partner's past stated that they “were the first thing [they] thought about in the morning and the last thing [they] thought about at night” (Mohan, 2018). Another individual described their compulsive need to ask questions, writing that they felt that “if [they] ask this question, just one more, then [they'll] feel resolved and it won't bother [them] anymore” (Frampton, 2019). Indeed, our own research revealed that retroactive jealousy severity was significantly positively associated with responses on the Obsessive-Compulsive Inventory-Revised (OCI-R) (Foa et al., 2002; Osorio & McNally, 2023).

Although at first glance this finding may seem to confirm a connection between OCD and retroactive jealousy, further examination of the measure reveals a more puzzling picture. The OCI-R measures symptoms across various themes that frequently present in OCD: washing, checking, neutralizing, obsessing, ordering, and hoarding (Foa et al., 1998). Further analysis of the correlations between retroactive jealousy severity and these different subscales of the OCIR-

R reveal the strongest significant positive association between the obsessing subscale and retroactive jealousy ($r = 0.53$, $p < 0.05$) with correlations with all other subscales being either very small or non-significant. This raises further questions as to the degree of similarity between OCD and retroactive jealousy. Although one would expect sufferers of retroactive jealousy to score high on measures of obsessing, if this condition were really a presentation of OCD, we might also expect these individuals to present with some of these different obsessional themes, since research indicates that most individuals with OCD present with more than one obsessional theme (Rasmussen & Eisen, 1992). Our findings align with the lack of anecdotal data referencing any other kinds of obsessions in this population. Therefore, the exact nature of the relationship between OCD and retroactive jealousy remains unclear.

One might intuitively expect retroactive jealousy, should it be a presentation of OCD, to fall under the umbrella of relationship OCD (ROCD), since that is the subtype with the most thematic overlap. Researchers distinguish obsessional content in ROCD into two subtypes: relationship-centered ROCD and partner-focused ROCD (Doron et al., 2012a, b, 2014). These subtypes are highly overlapping and often comorbid but distinguished in the literature by the exact content of the obsessions. Individuals with relationship centered ROCD are obsessed with the “rightness” of their relationship. They are immensely preoccupied with doubts as to whether they are in the right relationship and constantly engage in behaviors like checking (e.g., making sure they are happy in their relationship) and neutralizing (e.g., imagining themselves happy with their partner) (Doron et al., 2014). Individuals with partner focused ROCD are obsessed with their partner’s perceived flaws and are constantly evaluating their partner and comparing them to others (Doron et al., 2012b). However, obsessions and compulsions of the kind present in cases of retroactive jealousy have not been discussed in the ROCD literature. Our findings indicated

that retroactive jealousy severity was significantly positively associated with both subtypes of ROCD (Osorio & McNally, 2023). Given that those with ROCD typically report doubts and obsessions that are thematically different (although related) to those present in retroactive jealousy, the implications of our findings are not fully clear.

In our original study, we also investigated the possibility that individuals with retroactive jealousy, who engage in serious interpersonal conflict by the very nature of their condition, may present ties with borderline personality disorder (BPD). We found retroactive jealousy severity to be significantly positively associated with responses on the Borderline Symptom List-23 (BSL-23) (Bohus et al., 2007; Osorio & McNally, 2023). We speculated that the internalizing symptoms measured by the BSL-23 (i.e., anxiety, inner tension, and feelings of shame and worthlessness) speak to the emotional experience of the retroactive jealousy sufferer. However, two key symptoms of BPD not measured by the BSL-23, unstable sense of self and rapidly fluctuating perceptions of one's relationships, are not typically reported in anecdotal or qualitative reports of retroactive jealousy. Individuals with retroactive jealousy report that their obsessions are ego-dystonic. That is, while they feel distressed about their partner's past actions, they often acknowledge that they trust their partner, understand that their partner would not do anything to hurt them, and otherwise feel positively about their relationships. These perceptions appear, for the most part, stable. Furthermore, they do not report unstable senses of self, although the degree of insight they have is unclear. Thus, further work is necessary to reveal the nature of the relationship between retroactive jealousy and BPD.

Network analysis provides both a theoretical framework and statistical method which might help elucidate the relationships between retroactive jealousy, OCD, ROCD, and BPD. Network theory offers an alternative to the latent common cause model typical of medical

science and often presumed to be the case in mental illness (Borsboom & Cramer, 2013; McNally, 2016). Under the latent common cause model, disorders emerge when there is an underlying (hidden) common cause which causes the emergence of observable symptoms. For example, a fever, severe cough, and loss of olfactory sensation occur together because of the underlying common cause of the COVID-19 virus. There are a few assumptions inherent to this model (Borsboom & Cramer, 2013). Firstly, the cause is presumed to be distinct from its symptoms. Secondly, the symptoms are assumed to be related only due to the common cause and not due to any mutual influence on each other (McNally, 2019). However, mental disorders appear not to meet these assumptions. While it might make sense to imagine an individual infected with the COVID-19 virus who presents with no symptoms, it makes less sense to imagine an individual who "has" OCD or depression but does not experience any symptoms. What's more, symptoms functionally influence each other, thereby violating the axiom of local independence (Borsboom & Cramer, 2013). Consider the case of OCD. An individual may develop an obsession, the presence of which generates significant distress. This individual then engages in compulsive behavior to mitigate this distress, unwittingly reinforcing the original compulsion. Network theory not only accounts for this interplay of symptoms but also argues that it is from these causal interactions directly that a disorder emerges (Borsboom & Cramer, 2013).

Over the past decade, network analysis has been used to investigate a wide array of mental disorders including PTSD, complicated grief, OCD, and eating disorders (Bellet et al., 2018; McNally et al., 2017; Meier et al., 2020). In network analysis, networks of disorders are composed of nodes (i.e., symptoms) connected by edges which represent associations between nodes. Researchers can identify nodes that have many strong connections with other nodes in the

network and are thus highly central. These highly central nodes are typically understood as plausible candidates for symptoms that may be important in the onset and maintenance of episodes of a disorder (Borsboom & Cramer, 2013).

Expected influence is a specific centrality measure that accounts for both the direct and indirect effects of a given symptom on the rest of the network, making it particularly useful for identifying symptoms that are most likely to sustain or exacerbate the disorder (Robinaugh et al., 2016). Unlike strength centrality, which considers only the absolute magnitude of edges, expected influence takes into account the signs of edges, thereby distinguishing symptoms that propagate influence activation throughout a network from those that may dampen it.

Methods have also been developed to help researchers investigate the connections between theoretically distinct syndromic clusters (Cramer et al., 2010; Fortunado, 2010). Community analysis is one method by which researchers can test for communities of nodes that have particularly strong connections, and which may correspond to meaningfully distinct subnetworks (e.g., cluster of depression symptoms versus a cluster of OCD symptoms; Jones et al., 2018).

Bridge centrality plays a crucial role in identifying symptoms that link different communities within a network, providing insight into how disorders may co-occur and interact (Jones et al., 2021). Symptoms with high bridge centrality scores are hypothesized to be transdiagnostic features that facilitate the spread of activation from one disorder to another, highlighting potential targets for intervention aimed at disrupting maladaptive symptom interactions (McNally, 2021).

Although network approaches have yielded important insights into various mental disorders, no prior work has examined the network structure of retroactive jealousy. In the

current study, we fill this critical gap in the literature by implementing a network approach to examine the interrelations between retroactive jealousy symptoms and links to related disorders. Our first aim was to test whether retroactive jealousy can be modeled as a network of mutually reinforcing symptoms. To explore this aim, we built a regularized partial correlation network of retroactive jealousy symptoms and examined various properties of the network. Our second aim was to determine whether the different psychopathological constructs can be reliably detected as separate communities and examine potential bridge nodes connecting those communities.

Method

Participants. Analyses included data from participants collected in our previous study of retroactive jealousy (Osorio & McNally, 2023). Individuals who have experienced retroactive jealousy were recruited online and, once they passed the initial screener, completed a large battery of measures online. The full dataset consisted of 299 participants ($M_{\text{age}} = 30.5$, $SD_{\text{age}} = 12$; 56% female). Participant age ranged from 18 to 75 years. Most identified as white (57%) and heterosexual (78%). For network estimation, participants with missing data on any included variables were excluded using listwise deletion, resulting in a final network analysis sample of 221 participants.

Measures. The Obsessive-Compulsive Inventory-Revised (OCIR) measured OCD symptoms (Foa et al., 1998). The Relationship Obsessive Compulsive Inventory (ROCI) and Partner-Related Obsessive-Compulsive Symptoms Inventory (PROCSI) measured relationship-centered ROCD and partner-focused ROCD, respectively (Doron et al., 2012a, b). The Communicative Responses to Jealousy Scale (CRJS) was adapted so that participants saw a list of commonly reported behaviors exhibited by individuals experiencing retroactive jealousy (e.g., avoiding reminders, information-seeking, reassurance-seeking; Guerrero et al., 2011; Frampton, 2019;

Osorio & McNally, 2023). They were asked to indicate how frequently they engaged in each of these behaviors in response to feeling retroactive jealousy. The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was adapted to measure the severity of participant's experience with their retroactive jealousy intrusive thoughts and compulsive behaviors (Goodman et al., 1989; Osorio & McNally, 2023;). This measure assessed time occupied by intrusive thoughts, interference due to intrusive thoughts, distress associated with intrusive thoughts, resistance against intrusive thoughts, and degree of control over intrusive thoughts. The same five aspects were assessed regarding the "compulsive" behavior engaged in during the retroactive jealousy experience. Finally, the Borderline Symptom List-23 (BSL-23) was included to measure symptoms of BPD (Bohus et al., 2007).

Not all items or subscales from the administered measures were included in the network analysis. Instead, we used a combination of theory-driven and data-driven approaches to determine which variables to include. This selection process was designed to reduce redundancy, improve interpretability, and ensure that the network reflected meaningful constructs related to retroactive jealousy. The Borderline Symptom List-23 (BSL-23) was administered in full, but instead of including all individual items, we created theory-driven subscales based on prior literature on borderline traits and affective dysregulation (Bohus et al., 2007). The following four subscales were derived from a combination of theoretical constructs and empirical validation: emotional dysregulation subscale (capturing intense mood fluctuations, distress tolerance, and affective instability), interpersonal difficulties subscale (capturing distrust in others, fears of abandonment, and interpersonal distress), impulsivity and self-harm subscale, and cognitive dysfunctions and dissociations subscale. These selected BSL subscales demonstrated high internal consistency (Cronbach's $\alpha > 0.80$; see Appendix A for items included, Cronbach's α ,

and factor loadings). While the adapted Communicative Responses to Jealousy Scale (CRJS) and Relationship Obsessive Compulsive Inventory (ROCI) were included in full, only theoretically relevant subscales were included for the Partner-Related Obsessive-Compulsive Symptoms Inventory (PROCSI) (i.e., morality subscale), and the Obsessive-Compulsive Inventory-Revised (OCIR) (i.e., obsessing subscale).

Analyses. All analyses were conducted in R (version 4.3.1). The network was estimated using a Gaussian Graphical Model (GGM) with the Extended Bayesian Information Criterion Graphical LASSO (EBICglasso) algorithm, implemented in the bootnet package (Epskamp et al., 2018). This method estimates a sparse regularized partial correlation network, identifying edges between nodes while controlling for all other variables in the network. The tuning parameter was set to $\gamma = 0.5$ to balance sensitivity and specificity in edge selection. Nodes in the network represented symptom-level responses, while edges reflected regularized partial correlations between symptoms.

To assess node importance, we computed strength centrality and expected influence centrality. We calculated strength centrality as the sum of absolute edge weights, providing a measure of how strongly a symptom was connected within the network. Expected influence was computed using the networktools package (Jones et al., 2021) and retained the sign of edges to differentiate between activation and inhibition effects in symptom interactions.

Initial plans were to identify communities using the Louvain algorithm, a modularity-based clustering approach that optimizes within-community connectivity while minimizing between-community links (Blondel et al., 2008). Louvain was originally selected because it is computationally efficient, widely used in psychological network research, and effective at detecting hierarchical structures in sparse networks (Fortunato & Hric, 2016). However, Louvain

failed, because even though it can handle signed (i.e., negative or positive) edges, the network had too many weak or near-zero edges for the algorithm to identify meaningful clusters. Instead, we used an alternative community detection method, Walktrap. Walktrap detects communities based on random walks, making it more robust in networks with weak connections, but may struggle with negative edges and so we used absolute weights (Pons & Latapy, 2005). We computed modularity scores to evaluate the strength of the detected communities. We applied alternative clustering methods, including Fast Greedy (Clauset et al., 2004) and Infomap (Rosvall & Bergstrom, 2008), to test the robustness of the community structure.

We attempted to compute bridge centrality using the `bridge()` function from the `networktools` package (Jones & Heeren, 2021) to identify nodes that serve as connectors between communities. However, bridge centrality analysis failed because the network was too weakly connected to detect meaningful bridge nodes connecting already sparsely defined communities.

We conducted bootstrapped stability analyses using the `bootnet` package to assess the robustness of network parameters (Epskamp et al., 2018). We evaluated centrality stability using case-dropping bootstraps, with values greater than 0.5 considered highly stable. We assessed edge stability using nonparametric bootstrapping, which generated confidence intervals for edge weights. Additionally, we tested network structure stability by comparing bootstrapped networks to the original network using correlation tests, which determined whether the global structure remained consistent across resampling.

We ran a network sensitivity analysis to determine whether the weak connectivity observed in the network was an inherent characteristic of the data or if it resulted from specific modeling choices, such as regularization parameters, edge thresholding, or the choice of estimation method. The regularization parameter (γ) in the Extended Bayesian Information

Criterion graphical least absolute shrinkage and selection operator (EBICglasso) model was systematically varied to assess its influence on network structure (Epskamp & Fried, 2018). We estimated networks using gamma values of 0.25 (less regularization, denser network), 0.5 (moderate regularization, default setting), and 0.75 (more regularization, sparser network). This approach allowed for an evaluation of whether the weak connectivity was an artifact of overregularization or an inherent property of the data. If the weak structure persisted across all gamma values, it would suggest that the symptom relationships were naturally weak rather than artificially constrained by the modeling choices.

We used a thresholding approach on the $\gamma = 0.5$ network to further assess whether weak edges contributed to network instability (Epskamp et al., 2018). Edges with absolute weights below 0.05, 0.1, and 0.2 were sequentially removed to observe whether pruning weak connections would reveal a more coherent structure or cause network fragmentation. If the removal of weak edges significantly altered network topology, it would indicate that the observed weak structure was highly dependent on these connections, suggesting that retroactive jealousy symptoms may not be strongly reinforcing one another.

Finally, we used three alternative network estimation methods to determine whether the weak structure was a byproduct of the EBICglasso approach. These included: partial correlation network (PCOR), which directly estimates partial correlations between symptoms without regularization; Bayesian network (ggmModSelect), which selects the most probable sparse network structure using Bayesian model selection; and thresholded correlation network, which removes edges with absolute weights below 0.05 (Epskamp & Fried, 2018; Foygel & Drton, 2010). If all three methods produced similarly weak networks, it would provide further evidence

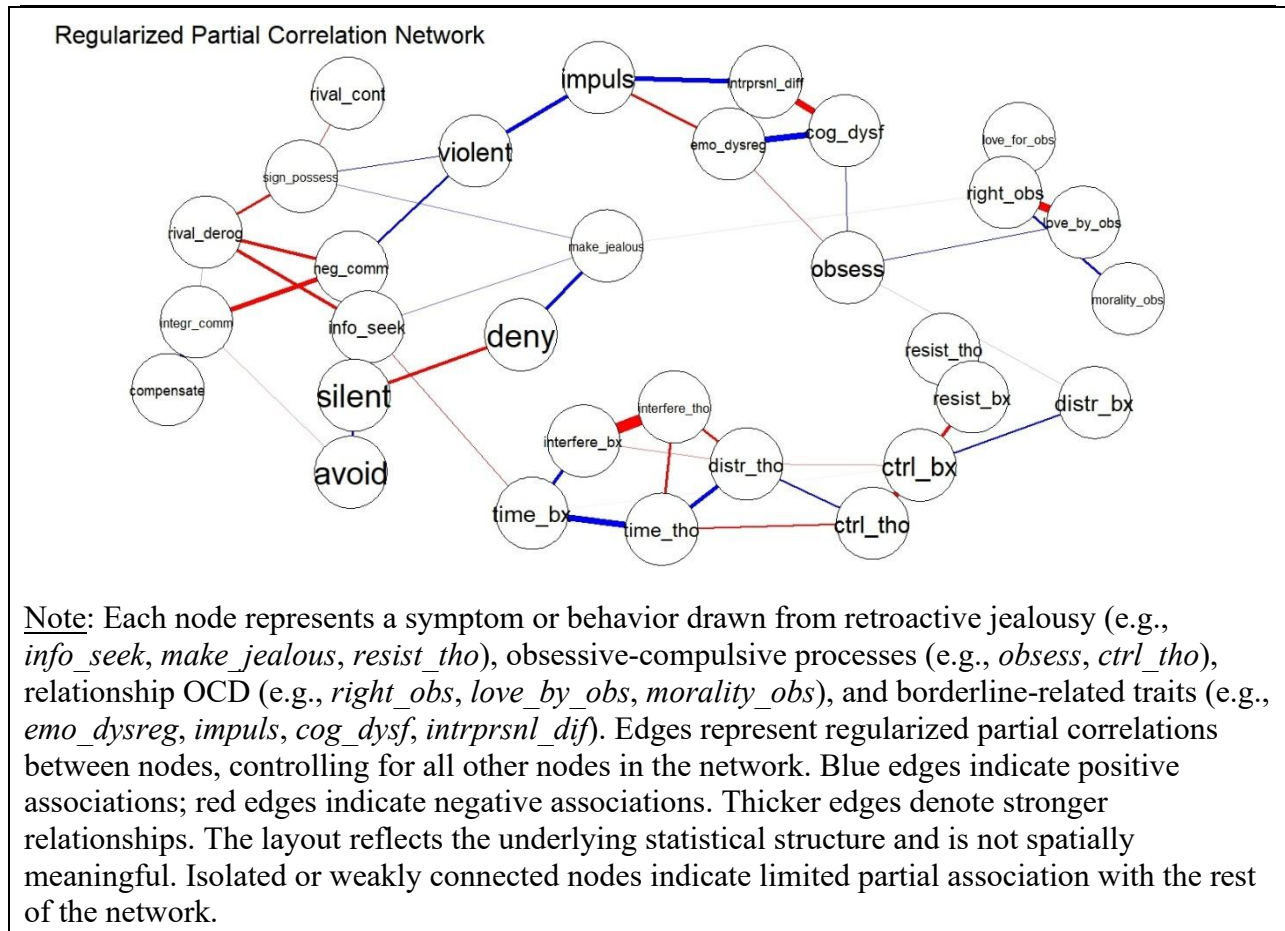
that the weak connectivity observed in retroactive jealousy symptoms was intrinsic to the data rather than an artifact of estimation technique.

Results

We constructed a regularized partial correlation network to examine the relationships between symptoms of retroactive jealousy (retroactive jealousy) and related psychopathology (see figure 1). However, expected influence centrality could not be computed due to the network's extreme sparsity and weak connectivity. Expected influence accounts for both direct and indirect connections among symptoms, making it useful for identifying highly influential nodes (Robinaugh et al., 2016). In this case, the network's weak edge weights prevented meaningful propagation of activation between nodes, rendering expected influence calculations unstable. Network sparsity was evident in the mean edge weight of approximately 0.026, with a median and quartile values of zero. This suggests that most symptom pairs had negligible associations, suggesting that these symptoms may not be strongly interconnected.

Figure 1.

Regularized partial correlation network of retroactive jealousy symptoms and related constructs.



Given the failure of expected influence, we examined strength centrality as an alternative. We successfully computed strength centrality, which sums the absolute values of a node's direct connections, for all symptoms (Jones et al., 2019). The symptoms with the highest strength centrality were emotional distress related to intrusive thoughts, compulsive reassurance-seeking, and behavioral avoidance. These symptoms had the strongest cumulative connections to other nodes, suggesting that they may be key features of retroactive jealousy's clinical presentation. However, strength centrality does not account for directional propagation of influence, meaning that while these symptoms are well-connected, they may not necessarily sustain the network.

We computed the Centrality Stability Coefficient (CS-Coefficient), which measures how consistently node centrality remains across bootstrapped resamples, to assess the robustness of centrality rankings (Epskamp et al., 2018). The CS-Coefficient for strength centrality was 0.595, indicating that the relative ranking of symptoms was stable across resampled datasets. However, stability in centrality rankings does not necessarily imply that the network structure itself is stable. A network can contain nodes that are consistently central even if the connections between those nodes fluctuate significantly.

Bootstrapped edge stability analyses further revealed substantial instability in edge weights, suggesting that many of the relationships between symptoms were weak and inconsistent across resampled networks. Multiple bootstrapped networks were too sparse to estimate reliably, frequently returning an error that an empty network was selected as the best-fitting model. This suggests that the estimated symptom relationships are fragile and do not hold together consistently when subsets of the data are analyzed separately.

Further compounding this instability, the correlation matrix was frequently non-positive definite across resamples, meaning that the relationships between symptoms were not strong or stable enough to generate a reliable network structure. Additionally, many edges in the network exhibited wide bootstrapped confidence intervals, and edge statistics for several connections could not be computed at all. Taken together, these findings reinforce the notion that the relationships between retroactive jealousy symptoms are weakly defined and highly variable across samples.

Community detection analysis using the Louvain algorithm failed to identify stable symptom clusters in the signed network, indicating that the network's structure was too weak or fragmented to support clear subgroupings (Blondel et al., 2008). However, Walktrap community

detection, which does not require strongly weighted edges, successfully identified five communities when edge weights were converted to absolute values (Pons & Latapy, 2006). One community contained symptoms related to compulsive information-seeking, confrontational behaviors, and avoidance strategies, largely corresponding to communicative responses to jealousy (CJRS-related symptoms). Another consisted of symptoms primarily associated with intrusive thoughts, compulsions, and distress linked to obsessive thinking, aligning with obsessive-compulsive processes (YBOCS and OCIR-related symptoms). A third captured symptoms centered on relationship-related doubts, self-esteem concerns, and moralized beliefs about past relationships, resembling aspects of self-concept and relationship obsessions (PROCSI and ROCI-related symptoms). Another community comprised behaviors aimed at resisting compulsive urges and managing distress associated with retroactive jealousy. The final group included symptoms related to emotional dysregulation, interpersonal difficulties, impulsivity, and cognitive dysfunction, aligning with borderline symptoms (BSL-related symptoms).

We applied Fast Greedy and Infomap to the absolute-value network to assess clustering robustness. While both algorithms identified five communities, their specific compositions varied. Fast Greedy produced clusters more aligned with theoretical distinctions (e.g., cognitive-emotional symptoms vs. compulsive behaviors), whereas Infomap grouped cognitive-emotional symptoms into a broader cluster. These inconsistencies suggest that community structure is sensitive to the detection method used, reinforcing the need for caution when interpreting symptom clustering in retroactive jealousy.

A modularity score of 0.51 suggested moderate separation among putative communities (Blondel et al., 2008). However, given the unstable clustering solutions across algorithms, this

value should be interpreted cautiously. The moderate modularity score, combined with evidence of network instability, suggests that symptom groupings may be artifacts of methodological choices rather than stable features of retroactive jealousy.

Network sensitivity analyses tested whether the network's structure held up under different conditions (such as resampling or removing data) to ensure that results weren't overly dependent on random noise or specific data points (Epskamp, et al., 2018). The network structure remained largely unchanged across gamma values of 0.25, 0.5, and 0.75. Lowering gamma (0.25) retained more weak edges without meaningfully increasing network density, while increasing gamma (0.75) pruned weaker edges but preserved the primary connections observed at the default setting. This consistency across different levels of regularization suggests that the weak connectivity of retroactive jealousy symptoms is not an artifact of modeling constraints but rather an inherent feature of the dataset. Similarly, thresholding weak edges at 0.05 retained most connections while maintaining the weakly structured network, but raising the threshold to 0.1 led to fragmentation, with symptoms forming smaller, isolated sub-networks. At a threshold of 0.2, the network disintegrated further, with many nodes becoming completely disconnected. These results indicate that the retroactive jealousy network is highly sensitive to the presence of weak edges, further bringing into question the cohesion of the apparent syndrome.

Three alternative estimation methods—PCOR, Bayesian network modeling, and thresholded correlation networks—consistently produced weakly connected networks, reinforcing the conclusion that retroactive jealousy symptoms do not coalesce into a tightly bound network akin to disorders like OCD, where symptom interactions are strongly reinforcing (McNally et al., 2017). The sensitivity analysis confirmed that the weak structure of the

retroactive jealousy network is not an artifact of specific modeling choices but rather an intrinsic property of the symptom relationships.

Discussion

Findings from this study suggest that retroactive jealousy may not function as a tightly integrated syndrome but rather as a loosely associated set of symptoms that co-occur without strong internal reinforcement. Unlike OCD networks, where symptoms interact in self-sustaining cycles, retroactive jealousy symptoms displayed weak connectivity, suggesting their persistence may be more influenced by external relational stressors than by intrinsic reinforcement mechanisms (Dingemans et al., 2022). This raises the possibility that retroactive jealousy is not a distinct clinical entity but rather a cognitive-affective experience shaped by situational and interpersonal factors.

The inability to compute expected influence centrality reinforces this weak symptom connectivity. Expected influence centrality helps identify symptoms with widespread effects across a network, yet no symptom in the retroactive jealousy network met this threshold (Jones et al., 2021). This suggests that symptoms do not drive one another in a way that perpetuates chronic distress.

Despite this weak connectivity, strength centrality analysis highlighted emotional distress related to intrusive thoughts, compulsive reassurance-seeking, and behavioral avoidance as the most connected symptoms. While these symptoms may be central to the experience of retroactive jealousy, their prominence does not necessarily mean they sustain the condition over time. Instead, they may simply be the most frequently occurring reactions to encountering information about a partner's past. Future research should examine whether these symptoms

serve as viable treatment targets or whether their centrality depends on contextual factors such as relationship stress or attachment insecurity (Simpson, 1990).

The instability of symptom relationships further supports the idea that retroactive jealousy is not a cohesive syndrome. Bootstrapped analyses showed that edge weights fluctuated significantly across resampled networks, with many networks too sparse to estimate reliably. This variability suggests that retroactive jealousy symptoms differ widely across individuals, making it difficult to conceptualize the condition as a unified psychopathological construct. Instead, retroactive jealousy may be better described as a cluster of maladaptive cognitive and behavioral tendencies. Future research should explore whether symptom interconnectivity varies based on attachment style, relationship history, or distress tolerance, as these factors may shape symptom presentation and persistence (Guerrero, 1998).

Community detection analyses provided further insight into the structural instability of retroactive jealousy symptoms. The Louvain algorithm failed to detect stable symptom clusters, reinforcing the idea that retroactive jealousy does not exhibit strongly defined subgroups. While Walktrap analysis identified five communities, their composition varied across different algorithms, indicating that clustering solutions were highly sensitive to methodological choices rather than reflecting inherent subtypes of retroactive jealousy. Some patterns emerged—such as a distinction between compulsions related to retroactive jealousy and self-concept-related symptoms—but these groupings lacked consistency, making it difficult to draw firm conclusions about symptom subtypes. Future research should investigate whether retroactive jealousy presents greater structural coherence in individuals with more severe symptoms or among those experiencing chronic rather than episodic distress. Additionally, subtyping may help identify distinct retroactive jealousy presentations that could guide tailored interventions.

The network's sensitivity to regularization and edge thresholding further supports the conclusion that retroactive jealousy symptoms may not form a robustly interconnected syndrome. Lowering the threshold to include more edges did not meaningfully increase network density, while raising the threshold caused the network to fragment into isolated sub-networks. This suggests that symptom co-occurrence is tenuous and easily disrupted. Alternative estimation methods, including PCOR and Bayesian network modeling, produced similarly weakly connected networks, confirming that the observed sparsity is not merely an artifact of analytic approach. Given these findings, future studies should explore whether retroactive jealousy networks demonstrate stronger connectivity under conditions of heightened distress, relationship insecurity, or comorbid anxiety disorders.

These findings have important clinical implications. Given the lack of strong symptom interconnectivity, interventions for retroactive jealousy may need to focus on addressing external triggers rather than modifying symptom interactions. Cognitive restructuring and exposure-based interventions aimed at reducing reassurance-seeking and avoidance behaviors may be beneficial, but their effectiveness may depend on whether retroactive jealousy symptoms are primarily maintained by situational stressors rather than intrinsic loops. If retroactive jealousy is highly context-dependent, clinicians may need to tailor interventions to relationship-specific concerns rather than applying a uniform treatment model. Approaches that incorporate mindfulness, distress tolerance, and emotion regulation strategies may help individuals manage retroactive jealousy distress without resorting to compulsive behaviors or avoidance (Choudhary & Thapa, 2012).

Several limitations should be considered when interpreting these findings. The instability of the network suggests that retroactive jealousy symptoms are highly dependent on individual

differences and contextual factors, which were not systematically examined in this study. Future research should examine idiographic (individual-based) networks to determine whether this system sustains itself on the individual network but is perhaps too heterogeneous to be represented in nomothetic (group-based) networks (Fisher et al., 2017). Additionally, while network analysis provides valuable insights into symptom relationships, it does not establish causality. Experimental studies are needed to determine whether specific symptoms act as causal drivers of retroactive jealousy distress or whether symptom co-occurrence is largely incidental. Examining the role of interpersonal dynamics, attachment patterns, and emotion regulation difficulties in the emergence of retroactive jealousy symptoms may provide further insight into its underlying mechanisms.

Another important limitation of this study is that the items used in the network analysis were adapted from existing measures of OCD, ROCD, and related constructs rather than developed specifically for retroactive jealousy. While this approach allowed for comparisons across disorders, it may not have fully captured the unique symptom structure of retroactive jealousy as it's experienced. If key symptoms or mechanisms were missing, that could explain the weak connectivity and instability in the network. A useful next step would be to conduct qualitative case studies or in-depth interviews with individuals struggling with retroactive jealousy to better map out its core cognitive, emotional, and behavioral features. This could provide a foundation for developing a dedicated measure from scratch rather than relying on adapted scales. If a more tailored measure captures the full spectrum of retroactive jealousy experiences, future network analyses may reveal a more stable and interconnected structure.

In sum, this study suggests that retroactive jealousy may not best understood as a standalone psychopathological syndrome but rather as a cognitive-affective experience shaped

by relational dynamics and external stressors. While certain symptoms—such as emotional distress, reassurance-seeking, and avoidance—appear central to the retroactive jealousy experience, their weak interconnectivity suggests that retroactive jealousy is not maintained by a self-perpetuating symptom network. Future research should examine whether symptom connectivity strengthens in individuals with higher symptom severity and whether interventions targeting external relational stressors can effectively reduce retroactive jealousy distress. Understanding how retroactive jealousy symptoms interact with broader relationship dynamics, such as attachment insecurity and maladaptive interpersonal behaviors, will be critical in refining treatment approaches and improving clinical outcomes.

Chapter 3: Study 2

Identifying subtypes of retroactive jealousy

Michael A. Osorio, Katherine A. Grisanzio, & Richard J. McNally

Background

Retroactive jealousy is characterized by intrusive preoccupations with a partner's past romantic or sexual experiences, often accompanied by distress and compulsive behaviors such as repeated questioning, avoidance, or social comparison (Frampton, 2019; Osorio & McNally, 2023). While not formally recognized as a diagnostic condition, retroactive jealousy anecdotally presents with considerable variation in symptom expression and coping strategies across individuals.

Under our current diagnostic classification system, mental disorders are polythetic. That is, they are defined by multiple symptoms, but not all symptoms need to be present for an individual to receive a diagnosis (Kreuger & Bezdjian, 2009). A patient need only experience a specific number and combination of symptoms to reach diagnostic criteria for a certain disorder. For example, to be diagnosed with major depressive disorder (MDD), an individual would need to have at least five of the nine possible symptoms, including at least one of two possible core symptoms (5th ed.; DSM-5; American Psychiatric Association, 2013). Accordingly, there are 227 different combinations that would lead to a diagnosis of MDD (Van Loo et al., 2012). In a more extreme example, Galatzer-Levy and Bryant (2013) calculated that, based on DSM-5 criteria, there are "636,120 ways to have PTSD." Therefore, people qualifying for a diagnosis may exhibit marked symptomatic heterogeneity. This heterogeneity (like issues of comorbidity) challenges our current nosological understanding of mental disorders and, more importantly, creates complex issues for researchers attempting to study causal mechanisms and develop targeted treatments (Van Loo et al., 2012).

Most attempts to combat this heterogeneity have focused on identifying subtypes of disorders that stand for more homogeneous groups. Often, these subtypes are identified by

recognizing patterns observed in clinical practice, based on characteristics such as symptom combination, age of onset, course of illness, and severity (Rush, 2007). These efforts to extract homogenous subtypes from heterogenous diagnoses are designed to improve treatment allocation and treatment outcome. However, the clinical utility of subtypes produced by such methods has often been questioned (Peat et al., 2009; Radomsky & Taylor 2005; Rush, 2007). An alternative approach exists which involves using data-driven models to identify unique clusters within and even across diagnostic categories (Grisanzio et al., 2018). One of these methods, latent profile analysis, aims to detect response patterns within a heterogenous group of individuals and then cluster those individuals into more homogenous subgroups (Weller et al., 2020). Latent profile analysis has been used to identify subtypes of depression, OCD, borderline personality disorder, and insomnia (Benjamins et al., 2017; Kwak et al., 2020; Smits et al, 2017; Van Loo et al., 2012). One of the advantages of these data-driven methods is that they identify subgroups empirically and do not rely on theoretical suppositions.

Initial impressions that retroactive jealousy may be a form of OCD led to speculation that an exposure and response prevention (ERP) approach to treatment could be the most appropriate line of intervention (Foa et al., 2005; Osorio & McNally, 2023). However, findings that retroactive jealousy was also associated with BPD suggested that an alternative approach, modeled on dialectical behavior therapy (DBT) might prove useful as well (Osorio & McNally, 2023). What treatment is most appropriate depends on the individual's presentation of retroactive jealousy, with those whose condition mirrors OCD responding better to ERP and those whose condition mirrors BPD responding better to DBT. Latent profile models may offer a fruitful means of approaching this issue by deciphering potential latent heterogeneity that could inform these differing treatment approaches. Furthermore, clustering offers an intermediary between the

nomothetic approach (i.e., searching for generalizable laws that govern retroactive jealousy) and the idiographic approach (i.e., an individualized, person-specific study of retroactive jealousy). Given that our understanding of retroactive jealousy is still growing, using this data-driven method may yield deeper insights that transcend surface-level similarities most obvious to researchers and clinicians.

We proposed two primary aims to explore these possibilities. First, we sought to determine whether we could identify subtypes of retroactive jealousy through latent profile analysis. Because we did not know what clustering solution our analysis would yield, this aim was exploratory. Second, we aimed to establish whether these subtypes meaningfully differed on external validation measures relevant to retroactive jealousy, namely, OCD, ROCD, and borderline personality disorder. We examined whether the subtypes diverged in clinically meaningful ways on these constructs to assess their potential utility for understanding and treating retroactive jealousy.

Methods

Participants. Analyses included data from participants collected in our previous study of retroactive jealousy (Osorio & McNally, 2023). Individuals who have experienced retroactive jealousy were recruited online and, once they passed the initial screener, completed a large battery of measures online. The final sample consisted of 299 adults ($M_{\text{age}} = 30.5$, $SD_{\text{age}} = 12$; 56% female). Participant age ranged from 18 to 75 years. Most identified as white (57%) and heterosexual (78%). For clustering analyses, participants with missing data on any included variables were excluded by using listwise deletion, resulting in a final analysis sample of 272 participants.

Measures. The Obsessive-Compulsive Inventory-Revised (OCIR) measured OCD symptoms (Foa et al., 1998). The Relationship Obsessive Compulsive Inventory (ROCI) and Partner-Related Obsessive-Compulsive Symptoms Inventory (PROCSI) measured relationship-centered ROCD and partner-focused ROCD, respectively (Doron et al., 2012a, b). The adapted form of the Communicative Responses to Jealousy Scale (CRJS) measured frequency of behaviors exhibited by individuals experiencing retroactive jealousy (e.g., avoiding reminders, information-seeking, reassurance-seeking; Guerrero et al., 2011; Frampton, 2019; Osorio & McNally, 2023). The Borderline Symptom List-23 (BSL-23) measured symptoms of borderline personality disorder (Bohus et al., 2007).

Analysis. Before analysis, all variables to be entered into the clustering algorithm were z-scored within individuals. Because these variables were measured on the same scale, z-scoring was unnecessary for standardization across variables. However, it was used to prevent variables with larger variance from disproportionately influencing the clustering solution, to improve numerical stability in Gaussian mixture modeling, and to facilitate interpretation by centering symptom scores around a mean of zero (Gelman, 2008). This ensured that clustering was based on relative symptom expression rather than absolute score differences, making it easier to compare symptom profiles across clusters.

We excluded retroactive jealousy severity scores (as measured by the adapted Y-BOCS) from the clustering model, to ensure that clustering was driven by qualitative differences in symptom patterns rather than overall severity (Goodman et al., 1989; Osorio & McNally, 2023). This approach ensured that clusters were not simply stratified by severity, allowing individuals with high retroactive jealousy severity to be assigned to different clusters based on symptom expression rather than overall symptom burden. Accordingly, differences in severity were not the

primary determinant of cluster assignment, and any observed clusters were based on differences in symptom presentation rather than overall retroactive jealousy severity.

We conducted a latent profile analysis (LPA) using a Gaussian finite mixture modeling approach implemented via the Mclust package in R, to identify potential latent subgroups of retroactive jealousy symptom profiles (Scrucca et al., 2016). This method estimates probabilistic class membership for each participant based on patterns in their retroactive jealousy symptom scores, allowing for the identification of distinct subtypes within the population. We tested models with two to ten subtype solutions and performed model selection by using Bayesian Information Criterion (BIC) values to keep results interpretable (Weller et al., 2020).

Once the optimal number of subtypes were determined through a combination of goodness-of-fit measures and theoretical interpretability, we assessed clustering stability using a bootstrap resampling analysis. Following recommendations for assessing clustering reproducibility, we repeatedly drew bootstrap samples from the original dataset and re-estimated the latent profile model using the same number of clusters (Wang et al., 2021). For each iteration, we computed the Adjusted Rand Index (ARI) between the original cluster assignments and those obtained in the bootstrap sample to assess consistency in profile structure across resampled datasets.

We computed silhouette scores, which measure how well each participant fits within their assigned profile compared to alternative profiles, to assess cluster separability (Rousseeuw, 1987). This step is important for evaluating how distinct the identified subtypes are—higher silhouette scores indicate clearer boundaries between profiles, while lower scores suggest substantial overlap, raising questions about whether the profiles reflect truly discrete groups or more continuous variation.

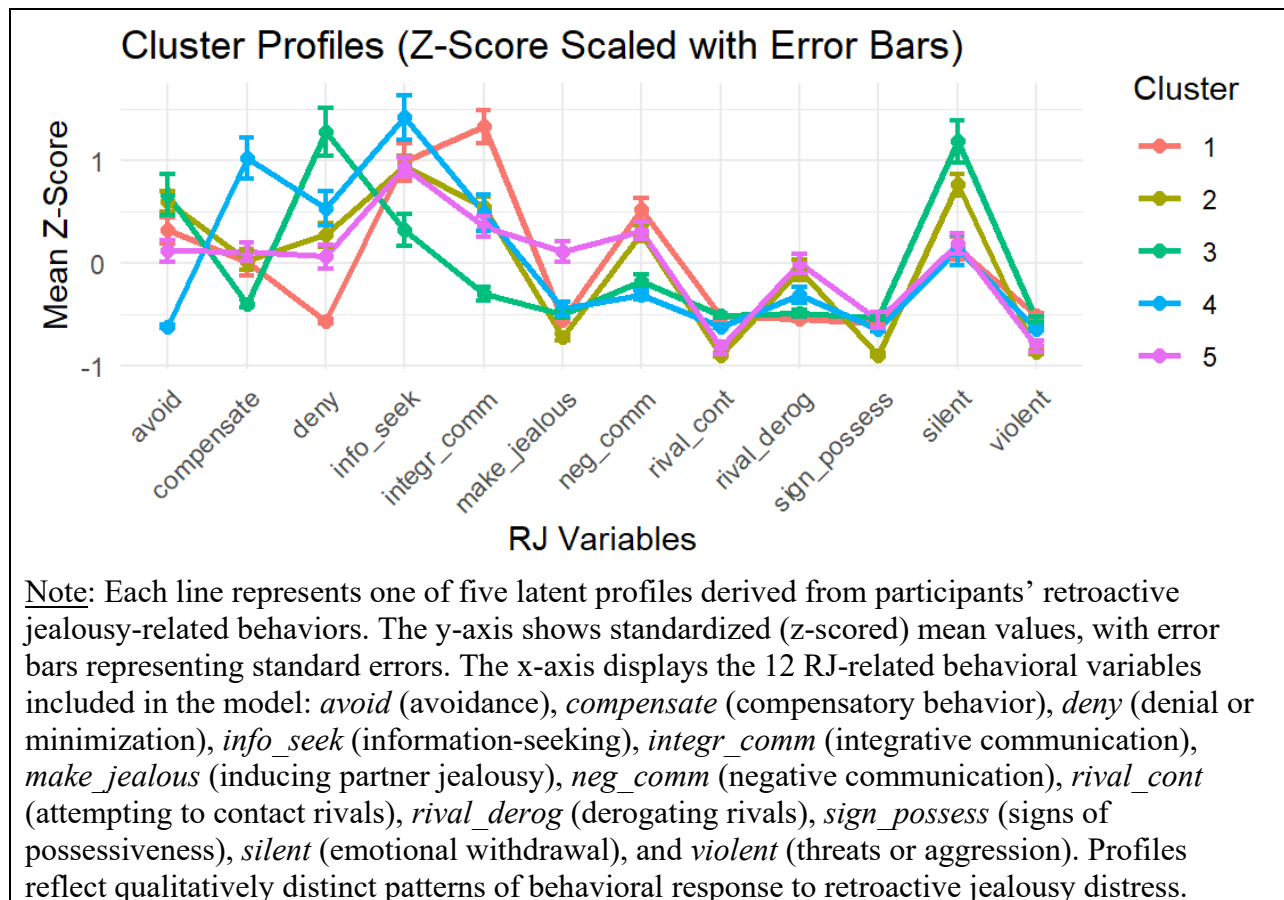
We also conducted ANOVAs to test whether BSL-23, OCIR, PROCSI, and ROCI total scores significantly differed across profiles (Bohus et al., 2007; Doron et al., 2012a, b). This helped us evaluate whether the identified profiles corresponded to meaningfully clinically distinct subtypes.

Results

The five-profile model identified by LPA suggested subtle differences in symptom presentation rather than clearly distinct subtypes. As seen in Figure 2, each profile exhibited a broadly similar pattern of retroactive jealousy symptoms, with some profiles showing elevations on certain symptom dimensions but no entirely unique profiles.

Figure 2

Cluster profiles of retroactive jealousy behaviors identified through latent profile analysis.



One profile, Cluster 1, was notable for elevated levels across a range of retroactive jealousy-related behaviors, including making one's partner jealous, information-seeking, compensatory behaviors, and integrative communication. Individuals in this group appeared highly behaviorally engaged, expressing their distress through both confrontational and affiliative strategies. This pattern may reflect a broadly expressive subtype—individuals who respond to retroactive jealousy-related distress by actively seeking both emotional reassurance and behavioral validation from their partners.

Cluster 4 was also characterized by high behavioral engagement, but with a more selective emphasis on information-seeking and integrative communication. Unlike Cluster 1, individuals in this group were relatively low on reactive or externalizing behaviors such as making their partner jealous or using negative communication. This suggests a more reassurance-focused subtype, wherein individuals attempt to reduce uncertainty and distress by gathering information and initiating open dialogue with their partners, rather than by acting out.

In contrast, Cluster 3 was defined by a markedly different pattern. Individuals in this group showed high scores on avoidance, silence, and denial, while scoring low on more outwardly directed behaviors. This internalizing or withdrawn subtype appears to manage retroactive jealousy distress by disengaging—avoiding reminders, withdrawing emotionally, and downplaying or suppressing their feelings rather than expressing them directly.

Cluster 2 and Cluster 5 appeared more muted in their profiles, with scores that hovered around the sample mean across most variables. Cluster 2 exhibited a particularly flat profile with minimal behavioral activation, potentially reflecting a normative or low-symptom group. Cluster 5 showed a similarly subdued pattern, though with modest elevations on information-seeking and

silence. This group may reflect a more mixed or ambivalent subtype—individuals who experience some retroactive jealousy-related distress but do not consistently engage in any one dominant behavioral strategy.

Taken together, these profiles seem to reflect differences in both severity and coping style, rather than pointing to clearly distinct subtypes of retroactive jealousy. Some individuals appear to engage more actively with their distress—whether through reassurance-seeking, confrontation, or affiliative communication—whereas others rely on passive strategies like avoidance or emotional withdrawal. The flatter profiles suggest that these clusters may be capturing degrees of symptom intensity and differences in regulatory approach, rather than marking out fundamentally different categories of individuals.

We conducted a series of one-way ANOVAs using profile membership as the independent variable, to determine whether the identified profiles differed meaningfully on external variables. Dependent variables included total scores on the BSL-23, OCIR, PROCSI, and ROCI. Results indicated that none of these measures significantly differed across profiles: BSL_total, $F(4, 136) = 0.738, p = .567$; OCIR_total, $F(4, 136) = 0.285, p = .887$; PROCSI_total, $F(4, 136) = 0.315, p = .868$; and ROCI_total, $F(4, 136) = 0.083, p = .988$.

We computed silhouette scores for each participant to evaluate whether the identified profiles differed meaningfully on external variables. Silhouette scores estimate how well each individual fits within their assigned cluster relative to other clusters, with higher values indicating clearer separation. In the current sample, silhouette scores were negative across all clusters, suggesting poor separation between profiles. The mean silhouette score was -0.115 , indicating that, on average, participants were as close or closer to an alternative cluster than to the one they were assigned.

We conducted a bootstrap stability analysis to examine how reliably the five-profile solution replicated across resampled subsets of the data. Adjusted Rand Index (ARI) scores were computed between the original and bootstrapped cluster assignments across 100 iterations. The mean ARI was 0.33 (SD = 0.22), with values ranging from 0.04 to 0.70. These results indicate only moderate stability in cluster membership and suggest that the identified profiles did not consistently reproduce across bootstrap samples.

Discussion

The current study sought to identify latent subtypes of retroactive jealousy through a data-driven clustering approach. Using latent profile analysis, we extracted a five-profile solution from a broad battery of retroactive jealousy-related behavioral variables (Oberski, 2016). Although this solution did reveal some meaningful differences in symptom presentation and coping style, the profiles were marked more by subtle gradations in severity and strategy than by qualitatively distinct categories of individuals.

Profile differences were most apparent in terms of behavioral engagement and regulation strategies. For example, Cluster 1 was characterized by heightened levels across a range of retroactive jealousy-related behaviors, including both affiliative and reactive forms of responding. This expressive pattern stood in contrast to Cluster 4, whose members showed similarly high engagement but in more selective, reassurance-focused ways. In contrast, individuals in Cluster 3 appeared to manage retroactive jealousy distress through avoidance, suppression, and emotional withdrawal, reflecting a more internalizing style. Clusters 2 and 5 showed flatter profiles overall, suggesting either lower levels of retroactive jealousy symptomatology or a more diffuse, mixed pattern of coping.

However, several lines of evidence cast doubt on the interpretability of the five-profile solution as a set of robust, well-separated subtypes. First, silhouette scores were negative across all clusters, indicating poor separation and substantial overlap between profiles (Rousseeuw, 1987). This suggests that, on average, participants were no closer to their assigned cluster than to other potential classifications. Second, external validation analyses failed to show any significant differences in borderline symptoms, obsessive-compulsive symptoms, or ROCD subtypes across the five groups. The absence of significant differences between profiles on these measures raises important questions about whether putative subtypes of retroactive jealousy would differ in clinically meaningful ways—differences that, as we originally speculated, might have justified distinct treatment approaches such as, for example, ERP versus DBT. Finally, bootstrap stability analyses revealed only moderate reliability in cluster membership, with ARI scores indicating considerable variability in classification across resampled datasets. Taken together, these results suggest that although patterns of retroactive jealousy responding can be described and grouped, these patterns may not reflect naturally occurring subtypes that hold up across methodological tests of stability and external differentiation.

Several limitations warrant consideration when interpreting these findings. First, although we used a large battery of theoretically relevant retroactive jealousy variables, all measures were self-report, and many were adapted from existing scales rather than developed specifically to assess retroactive jealousy. It is possible that important dimensions of retroactive jealousy—especially more idiosyncratic or relationally contextual features—were not captured in the current battery (Podsakoff et al., 2003). Second, while latent profile analysis can be a useful tool for uncovering heterogeneity in symptom presentation, the interpretability of any solution is constrained by sample size and variable selection. With 12 retroactive jealousy variables and 272

participants, the ratio was acceptable but likely underpowered to detect more nuanced or high-resolution subtype distinctions (Tein et al., 2013). Third, although we used silhouette scores, external validators, and bootstrap techniques to evaluate the solution, our analysis remains cross-sectional and exploratory. No conclusions can be drawn about causality, developmental course, or potential treatment response based on these data alone.

Future research would benefit from incorporating additional modalities of assessment, including clinician ratings, behavioral tasks, or qualitative interviews to determine the dimensions that underlie retroactive jealousy responses (Creswell & Plano Clark, 2017). A useful next step would be to replicate this analysis using a broader set of retroactive jealousy-specific measures, ideally developed from qualitative work with individuals who experience retroactive jealousy. In addition, more fine-grained modeling approaches—such as factor mixture modeling or person-specific (idiographic) network approaches—may help capture the dimensional and contextual nuances that subtype-based approaches obscure. Finally, longitudinal work will be critical to examine whether individuals move among profiles over time and whether certain response styles predict functional outcomes or treatment responsiveness.

Taken together, the current findings suggest that retroactive jealousy presents with varying degrees of severity and coping strategy, but these differences may not constitute robust or replicable subtypes. Rather than forcing retroactive jealousy into rigid categories, it may be more productive to conceptualize it as a fluid, context-sensitive phenomenon that unfolds differently across individuals and relationships.

Chapter 4: Study 3

A qualitative study of cognitive processes in retroactive jealousy

Michael A. Osorio & Richard J. McNally

Background

Retroactive jealousy involves distressing cognitive, emotional, and behavioral reactions to a partner's prior romantic or sexual experiences. Individuals may struggle to reconcile this information with preexisting beliefs about love, relationships, or self-worth, leading to intrusive thoughts and maladaptive responses such as reassurance-seeking or emotional withdrawal (Frampton, 2019; Osorio & McNally, 2023). These experiences may reflect difficulties in cognitive processes such as meaning-making and schema accommodation.

Frampton (2019) expanded our understanding of retroactive jealousy by applying the Meaning Making Model (MMM) and elucidating the role of specialness meaning frameworks. According to the MMM, when individuals encounter information that is threatening to their existing schema, they will experience discomfort and will respond to this discomfort in one of five ways: assimilation, accommodation, affirmation, abstraction, and assembly (Proulx & Inzlicht, 2012). Abstraction and assembly have questionable theoretical foundations and sparse evidential support and so will not be examined in the current study (Proulx & Inzlicht, 2012). Affirmation involves the reinforcement of an alternative existing schema unrelated to the schema originally threatened (Heine et al., 2006; Proulx & Inzlicht, 2012). This strategy presumably eliminates the discomfort without directly dealing with the new information. To date, affirmation has not been empirically examined in relation to retroactive jealousy, including in Frampton's (2019) study, which did not address this component of the MMM. Since the meaning maintenance strategy of affirmation is foundational to the MMM, we will focus instead on assimilation and accommodation as these are most relevant to potential therapies for retroactive jealousy (Heine et al., 2006).

The processes of assimilation and accommodation were first described by Jean Piaget, who observed such processes while studying the cognitive development of children (Piaget & Cook, 1952). In assimilation, new information is changed so that it can be incorporated neatly into prior schemata. In accommodation, prior schemas change to incorporate discrepant information.

Clinical psychologists have been interested in these processes for decades as they are implicated in various forms of psychopathology (e.g., PTSD). Cognitive theorists in PTSD posit a process very similar to what Piaget first described (Janoff-Bulman, 1989; McCann et al., 1988; Resick & Schnicke, 1992). People form beliefs about themselves, the world, and others. When an individual experiences a traumatic event, his or her prior beliefs can often be shattered. People then struggle to reconcile their beliefs with the new information conveyed by the trauma via processes such as assimilation, accommodation, and overaccommodation. Consider the following example. Simon grows up and acquires the belief that "good things happen to good people and bad things happen to bad people" (i.e., just world belief; Lerner, 1980). Later in adulthood, Simon is violently mugged while riding the subway. As Simon recovers from this traumatic event, he struggles to make sense of why it happened to him. If Simon were to assimilate the trauma into his preexisting beliefs, he might consider that he "must have done something wrong to deserve being mugged" (e.g., he is being punished by God for past sins). If Simon were to overaccommodate, thereby changing his prior beliefs in an overly negative, exaggerated fashion to account for the trauma, he might then believe that "the world is a completely unfair and dangerous place." Both processes contribute to the formation of unhealthy maladaptive beliefs, termed "stuck points," which impede natural recovery from the trauma (Resick et al., 2016). Alternatively, were Simon to accommodate the new information gained

from the traumatic experience, he might simply believe that "sometimes bad things can happen to good people and good things can happen to bad people." This accommodation signals a more adaptive cognitive response to the trauma.

These processes of assimilation and overaccommodation, and more specifically the stuck points that they produce, are directly targeted in cognitive processing therapy (CPT), one of the gold-standard, evidence-based trauma-focused treatments for PTSD (Resick et al., 2016). In CPT, patients are first asked to produce an impact statement about their index trauma (i.e., the traumatic event that is most distressing to them), answering the question of why they believe the traumatic event happened to them and detailing the impact this event has had on their beliefs about themselves, the world, and other people in relation to five themes (safety, trust, power/control, esteem, and intimacy). The therapist and patient then work together to identify stuck points from the impact statement that will be worked on over the course of therapy. The rest of CPT entails the patient completing a series of worksheets aimed at helping them critically evaluate and challenge their stuck point beliefs. The therapist will also engage in Socratic questioning to help the patient adopt more balanced, adaptive perspectives on their traumatic event.

Although the exact mechanisms that foster recovery from PTSD in CPT remain up for debate (Kangaslampi & Peltonen, 2022), one factor that has received both theoretical and evidential support is cognitive flexibility (Joseph et al., 2015). Cognitive flexibility as discussed here is defined as the ability to adaptively switch between cognitive sets in response to environmental stimuli (Dennis & Vander Wal, 2009). With regards to psychopathology, cognitive inflexibility (i.e., rigidity) can be understood as the automatic adoption of maladaptive negative beliefs as seen in disorders like depression and PTSD (Beck, 1979; Ehlers & Clark,

2000). Research has demonstrated that reductions in maladaptive posttraumatic cognitions predict recovery from PTSD (Holliday et al., 2018; Kangaslampi & Peltonen, 2022; Schumm et al., 2015) and that cognitive flexibility (as measured by neuropsychological tests) improves with trauma-focused treatments (Walter et al., 2010).

There is theoretical support for, and some research evidence to suggest, that the processes at play in PTSD (namely assimilation and overaccommodation) may also be at work in retroactive jealousy. Such a parallel could point to CPT as a potential starting point for a cognitive approach to treating the condition. Consider an example of how these processes might play out in a case of retroactive jealousy. Shayna believes that "you only have one true love." She then begins a romantic relationship with Reba and the two eventually fall deeply in love. Later, Shayna learns that not only has Reba dated others in the past (before the start of this current relationship), but also that Reba loved several of those individuals. Shayna struggles to accommodate her prior beliefs about love to account for this new, distressing information, and experiences retroactive jealousy as a result. Shayna may assimilate the new information by changing it to be in line with her prior beliefs (i.e., "Reba did not really love those people in the past; it wasn't love-love"). Indeed, Shayna may engage in information seeking, asking Reba additional questions to determine whether Reba "truly loved" her exes. Shayna may alternatively overaccommodate her prior schemas, changing them in ways that may account for the new information but are also extremely exaggerated and overly negative. Currently, it is less clear exactly how overaccommodation may present in retroactive jealousy. Perhaps Shayna may adopt an internal, global, and stable inferential style in response to this "negative event" as we see in depression, believing that she will "never find true love" or that "true love doesn't exist" (Rubenstein et al., 2016). Alternatively, should Shayna instead change her prior beliefs such that

she adaptively accommodates the new information, she might then believe that "you can love more than one person in your life." Theoretically, this belief would put Shayna at reduced risk of experiencing retroactive jealousy.

Frampton's (2018, 2019) research demonstrated that individuals with retroactive jealousy endorse prior schemas about specialness in love and relationships, which, when threatened, predict the experience of retroactive jealousy. She also examined the relationship between communicative behaviors in retroactive jealousy and endorsement of meaning maintenance strategies (e.g., assimilation, accommodation, and overaccommodation) but found null results (Frampton, 2019). Importantly, Frampton (2019) suggests that one limitation that may explain this lack of findings is that she used a self-report measure to examine use of meaning maintenance strategies, which requires participants to have greater insight into their behaviors and cognitions.

Qualitative analysis, an approach demonstratively informative for illuminating retroactive jealousy (Frampton & Fox, 2018; Frampton, 2019), suggests a cognitive intervention for retroactive jealousy. Qualitative methods allow for a more naturalistic, less restrictive approach to understanding psychological phenomena in context and may be especially appropriate given our nascent understanding of retroactive jealousy (Hsieh & Shannon, 2005). Several researchers have recognized the limitations of the typical approach of using self-report inventories to study cognitive distortions in PTSD and have instead opted for qualitative methods to answer similar questions to the ones we hope to answer in our study (Botsford et al., 2019; Foa et al., 1995; Price et al., 2016; Sobel et al., 2009). Sobel et al. (2009) used qualitative coding to compare impact statements of female rape survivors before and after they completed CPT and found significant increases in accommodated beliefs and significant decreases in overaccommodated

and assimilated beliefs. Furthermore, they found that PTSD symptoms were positively associated with the percentage of overaccommodated clauses and negatively associated with the percentage of accommodated clauses (Sobel et al., 2009). Botsford et al. (2019) used qualitative coding in a study of adolescent survivors of interpersonal trauma to examine the relationship between themes present in their stuck point beliefs and symptoms of PTSD. They found that a higher number of stuck points about trust was associated with greater PTSD symptom severity (Botsford et al., 2019).

Although qualitative approaches have yielded important insights into the retroactive jealousy experience, no prior work has utilized these methods to explicitly examine potential cognitive treatment targets. In the current study, we fill this critical gap in the literature by using both traditional qualitative coding and computational linguistic analysis to explore the links between assimilation, overaccommodation, and cognitive flexibility in retroactive jealousy. In addition to manual coding, we planned to use Linguistic Inquiry and Word Count (LIWC), a validated tool for computational text analysis, to extract psychological meaning from participants' responses. LIWC allows researchers to identify patterns in cognitive and emotional language use and offers a scalable and objective approach that complements human-coded methods, particularly when open-ended responses may vary widely in clarity or focus (Boyd et al., 2022). Although our original plan included both approaches, the open-ended data we collected did not support the intended qualitative coding. As such, we proceeded with the LIWC analysis alone, which offered a scalable alternative for extracting psychologically meaningful language patterns.

Method

Participants. Eligibility criteria included being 18 years of age or older, fluent in English, currently in a romantic relationship, and currently experiencing retroactive jealousy.

Demographic characteristics (e.g., age, gender, sexual orientation) were collected. Participants were recruited online via study advertisements posted to Reddit (a popular social news platform) and through retroactive jealousy listservs.

Measures. All measures were completed online. We presented participants with an open-ended response prompt modeled after the impact statement instructions used in CPT to capture

participant's beliefs about their partner's past (Resick et al., 2016). Specifically, participants

were instructed: “ *P l e a s e w r i t e o n w h a t i t m e a n s t o y o u t*
actions/had these feelings in the past. Please consider the effects that this information has had on

your beliefs about yourself, your beliefs abo u t y o u r p a r t n e r , a n d y o u r b

Participants were required to write for a minimum of five minutes before proceeding to the next question.

Although the initial plan was to manually code these statements for assimilated and overaccommodated beliefs using a structured coding manual, the nature of the responses rendered this approach unfeasible. Rather than expressing clear, codable beliefs about meaning or causality, many participants used the space to vividly *recount* their partner's past behaviors. Accordingly, we used a computational linguistic approach. Specifically, we used Linguistic Inquiry and Word Count (LIWC) software to analyze participants' text responses and extract linguistic variables that capture underlying cognitive, emotional, and temporal processes.

We asked participants to complete the Cognitive Flexibility Inventory (CFI), a self-report questionnaire that measures the tendency to perceive difficult situations as controllable, consider multiple explanations for life events and behavior, and generate flexible problem-solving

strategies to assess cognitive flexibility (Dennis & Vander Wal, 2010). The CFI has high test-retest reliability and convergent construct validity.

Participants also completed the Wisconsin Card Sorting Task (WCST), a widely used neuropsychological measure of executive functioning, particularly cognitive flexibility. The task requires individuals to sort stimulus cards according to shifting rules (e.g., color, shape, or number) that change unpredictably over the course of the task. Performance is scored based on participants' ability to detect and adapt to these rule changes, and perseverative errors—instances where participants continue to apply an outdated rule—are commonly used as an index of cognitive rigidity (Berg, 1948; Reitan & Wolfson, 1993). The WCST has been used extensively in clinical research to assess set-shifting capacity across a variety of psychiatric populations (Chamberlain et al., 2005; Snyder, 2013).

We measured retroactive jealousy severity by using an adapted version of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), modified to assess the severity of intrusive thoughts and compulsive behaviors specific to retroactive jealousy (Goodman et al., 1989; Osorio & McNally, 2023).

We included the Romantic Beliefs Questionnaire (RBQ), a 17-item measure adapted from Frampton (2018) to assess participants' underlying romantic schemas (see Appendix B). This scale was developed to capture endorsement of “specialness meaning frameworks,” or the belief that romantic relationships should be unique, emotionally exclusive, and idealized. Items tap into beliefs about sexual exclusivity, emotional intimacy, and the concept of “true love” (e.g., “A person will have only one real love,” “Sex is the closest form of communication between two people,” “It is possible to truly love more than one romantic partner in one’s lifetime” [reverse-scored]). We asked participants to rate the extent to which they agreed with each item on a five-

point Likert scale ranging from “strongly disagree” to “strongly agree.” Although we had originally planned to extract idiosyncratic beliefs from participants’ open-ended responses via qualitative coding, the RBQ was included as an alternative way of capturing commonly held beliefs about love and sex that are likely to be relevant to the retroactive jealousy experience. This allowed for a more standardized assessment of schema-level beliefs that might otherwise be difficult to detect reliably through hand coding alone.

Analysis. We screened data for completeness and quality prior to analyses. We excluded participants from the final analytic sample if they had excessive missing data (more than 15 incomplete items) or if their free-response text indicated that they were describing an experience other than retroactive jealousy (e.g., infidelity). We conducted all analyses on the resultant sample of 180 participants. We examined variables for normality and outliers. For the Romantic Beliefs Questionnaire (RBQ), reverse-scored items were recoded and a composite score was calculated to reflect overall endorsement of romantic idealization beliefs.

We calculated Pearson correlations to examine bivariate associations between retroactive jealousy severity and a set of theoretically relevant variables: cognitive flexibility (assessed via both the Cognitive Flexibility Inventory [CFI] and the Wisconsin Card Sorting Task [WCST]), intolerance of uncertainty, endorsement of romantic beliefs (RBQ), and linguistic markers extracted from participants’ free responses using Linguistic Inquiry and Word Count (LIWC). We selected the LIWC variables based on their relevance to assimilated and overaccommodated thinking patterns, and included past-focus, certitude, insight words, moral language, and all-or-none language.

Because the qualitative data did not support reliable coding, we excluded those variables from analyses. We conducted all statistical tests using R (version 4.3.1), and calculated correlations using pairwise complete cases.

Results

No hand-coded variables are presented. All analyses focus on linguistic features extracted by the LIWC, endorsement of structured romantic beliefs, and measures of cognitive flexibility. The original dataset included 288 participants. After excluding individuals with excessive missing data (>15 incomplete items) and participants whose free-responses were irrelevant to retroactive jealousy, our final analytic sample consisted of 180 individuals. Participant age ranged from 18 to 72 years ($M = 31.51$, $SD = 12.14$). At birth, 57.4% of participants were assigned male and 39.3% were assigned female, with one participant identifying as intersex and two selecting “prefer not to say.” In terms of gender identity, 56.8% identified as male, 38.3% as female, and a small number identified as non-binary (2.2%) or transgender (1.1%). The sample was majority white (60.7%), followed by Asian (19.7%), Hispanic (6.0%), Black (4.4%), Middle Eastern (2.7%), Native American (0.5%), and individuals identifying with more than one racial group (4.9%). A small proportion (1.6%) selected “prefer not to say.” Most participants reported being single and never married (61.2%), with 30.6% married, 4.4% divorced, and 2.2% separated. Most participants identified as heterosexual (79.8%), with additional representation from bisexual (9.8%), pansexual (2.2%), gay or lesbian (2.2%), not sure (2.7%), and those who preferred not to say (1.6%).

We conducted a series of Pearson correlations to examine associations between retroactive jealousy severity and relevant cognitive and linguistic variables. We conducted analyses using complete cases from the final analytic dataset ($N = 180$). Retroactive jealousy

severity was significantly negatively correlated with self-reported cognitive flexibility, $r(178) = -.32, p < .001$, and significantly positively correlated with intolerance of uncertainty, $r(176) = .29, p < .001$. A small positive correlation was observed between RJ severity and endorsement of romantic beliefs, $r(176) = .15, p = .053$, though this fell just above the conventional significance threshold.

RJ severity was not significantly associated with performance on the Wisconsin Card Sorting Task (WCST), $r(145) = .02, p = .80$. Self-reported and task-based indicators of cognitive flexibility were also uncorrelated, $r(145) = -.01, p = .90$. Additional correlations were conducted to examine associations between RJ severity and LIWC-derived linguistic variables. RJ severity was significantly negatively correlated with use of past-focus language, $r(177) = -.16, p = .036$, and positively correlated with use of certitude language, $r(177) = .16, p = .033$. Use of insight words, $r(177) = .07, p = .36$, moral language, $r(177) = .13, p = .087$, and all-or-none language, $r(177) = .12, p = .10$, were not significantly correlated with RJ severity.

Discussion

The current study aimed to examine cognitive processes involved in the experience of retroactive jealousy, with a focus on language use, maladaptive belief systems, and cognitive flexibility. Although the original plan involved coding open-ended responses for assimilated and overaccommodated beliefs, the nature of the responses precluded this approach. Accordingly, we adapted our methods to incorporate computational linguistic analysis (using LIWC) and included a structured measure of romantic beliefs adapted from Frampton (2018). This methodological shift allowed us to maintain our focus on schema-level cognition while increasing the scalability and objectivity of our analyses.

One of the most robust findings to emerge was that retroactive jealousy severity was significantly negatively associated with self-reported cognitive flexibility, as measured by the Cognitive Flexibility Inventory (CFI). However, retroactive jealousy severity was unrelated to performance on the Wisconsin Card Sorting Task (WCST), and the two cognitive flexibility measures were themselves uncorrelated. This pattern is consistent with prior research demonstrating poor convergence between self-report and performance-based flexibility measures (Snyder et al., 2015; Toplak et al., 2013). These findings suggest that cognitive flexibility in retroactive jealousy may be context-sensitive rather than trait-like. That is, individuals may retain the capacity to shift cognitive sets when the task is emotionally neutral (as with the WCST), but experience rigidity in response to emotionally charged stimuli—such as partner disclosures about past relationships. This interpretation aligns with research showing that cognitive control can degrade under emotional distress (Cisler et al., 2010), and it may help explain why participants report significant inflexibility on self-report measures even when their performance on cold cognitive tasks remains intact. Clinically, this points to the potential relevance of therapeutic approaches that address emotional rigidity directly, such as cognitive restructuring or distress tolerance training, rather than focusing on improving general executive function.

We also found small but statistically significant associations between retroactive jealousy severity and two LIWC-derived linguistic variables: use of past-focus language was negatively correlated with retroactive jealousy severity, while use of certitude language was positively correlated. The latter finding is particularly interesting considering cognitive models of maladaptive belief maintenance. Individuals high in retroactive jealousy may use more absolute or certain language in their narratives as a reflection of cognitive rigidity or black-and-white thinking (e.g., "If they loved someone else before, then I can't be special"). Certainty in language

has been associated with closed-mindedness, overgeneralization, and reduced receptiveness to alternative interpretations, all of which may map onto overaccommodated belief processes. In contrast, the negative association between past-focus and retroactive jealousy severity was somewhat counterintuitive. One way to explain this is that individuals experiencing greater distress avoid directly referencing the past in their narratives, perhaps as a distancing strategy or due to the discomfort associated with reactivating painful memories. Alternatively, those lower in retroactive jealousy may feel more able to reflect on and contextualize their partner's past, allowing them to reference past events without becoming emotionally dysregulated.

Other theoretically relevant linguistic markers, including insight words, moral language, and all-or-none language, were not significantly associated with retroactive jealousy severity. Although these constructs remain conceptually relevant, it may be that the LIWC was insufficiently sensitive enough to detect subtle differences in the expression of these themes, especially given the brevity and variability of participants' free responses. Another possibility is that participants did not articulate their beliefs in a way that aligns with how these categories are operationalized in LIWC. These null findings should not be interpreted as definitive evidence against the role of moralization or cognitive rigidity in retroactive jealousy, but they do suggest that future work may benefit from more targeted language prompts or richer qualitative data collection procedures.

Although the correlation between retroactive jealousy severity and endorsement of specialness-related romantic beliefs (RBQ) did not reach statistical significance ($p = .053$), the direction and size of the effect are consistent with theoretical expectations. Beliefs that romantic relationships should be unique, emotionally exclusive, and irreplaceable have been proposed as a cognitive vulnerability for retroactive jealousy (Frampton, 2018, 2019). The marginal association

observed here suggests that these schemas may contribute to retroactive jealousy distress, but that their effects may be context-dependent or moderated by other factors (e.g., trait insecurity, attachment style). It is also possible that our sample size limited our ability to detect small effects with adequate power. Future work could investigate whether these beliefs interact with situational triggers (e.g., partner disclosure) to produce retroactive jealousy symptoms or whether they function more as distal vulnerability factors.

Taken together, these findings suggest that retroactive jealousy is associated with specific cognitive-affective patterns, including perceived inflexibility, rigid or absolutist language use, and endorsement of romantic schemas that emphasize uniqueness and exclusivity. However, these features may not be easily detected through performance-based cognitive tasks or generalized linguistic categories alone. One implication is that interventions for retroactive jealousy may benefit from targeting emotion-linked cognitive rigidity and maladaptive beliefs, rather than focusing solely on compulsive behaviors or anxiety reduction. Cognitive restructuring, Socratic questioning, and values clarification exercises—all core components of cognitive therapies—may be particularly helpful in addressing the rigid beliefs and certitude language that emerged as potential markers of distress.

The current study has several limitations. First, the reliance on self-report and single-session data limits the conclusions we can draw about causality or temporal dynamics. Second, while LIWC provides a powerful tool for large-scale text analysis, it may miss more nuanced cognitive or emotional content that could be captured through human coding or mixed-methods approaches.

Perhaps our most important limitation of the current study involves the feasibility of our original plan to conduct qualitative coding of participants' free responses. Although we modeled

our open-ended prompt after the impact statement used in cognitive processing therapy (CPT), it may not have been phrased in a way that effectively elicited the kinds of belief statements we were hoping to capture. In CPT, patients are specifically asked *why* they think their trauma happened to them, which helps reveal potential causal attributions—particularly self-blame—that often reflect assimilated stuck points (Resick et al., 2016). Our prompt focused more generally on how their partner’s past affected their beliefs, and in doing so seemed to give participants license to describe in vivid, sometimes graphic detail what it was about their partner’s past that bothered them the most. While this provided rich content in terms of behavioral triggers or thematic concerns (e.g., specific acts, people, or events), it was not especially helpful for identifying participants’ articulated beliefs about themselves, their partner, or why they thought those events were morally wrong or distressing. Even in clinical settings, initial impact statements are rarely sufficient on their own. Therapists typically follow up with open-ended Socratic questioning to clarify and explore the patient’s beliefs more deeply (Resick et al., 2016). This kind of back-and-forth is central to CPT, and it could not be replicated in an online, one-time survey. Future work could address this limitation by using more targeted prompts or by collecting qualitative data in a format that allows for some degree of follow-up. Even conducting interviews or case studies with a small number of participants might allow researchers to more clearly identify stuck points and generate richer, more clinically relevant data.

Despite these limitations, the present findings offer an important step toward clarifying the cognitive mechanisms that may underlie retroactive jealousy. By combining self-report, behavioral, and computational methods, this study adds to the growing literature suggesting that retroactive jealousy may involve more than just obsessive-compulsive features. In particular, the links to cognitive inflexibility and belief rigidity offer potential targets for future interventions

and raise the possibility that cognitive therapies drawn from the trauma or schema therapy literatures may be especially well-suited to this population.

Chapter 5

General Discussion

Throughout this dissertation, we have aimed to explore retroactive jealousy from multiple methodological angles—network analysis, latent profile analysis, and cognitive-linguistic approaches—to address whether retroactive jealousy aligns more closely with established psychological disorders such as OCD, ROCD, or BPD. Our original hypothesis was that retroactive jealousy could perhaps be understood best as a variant or subtype of a known mental health condition, providing clearer guidance for clinical conceptualization and treatment.

In Study 1, we applied network analysis to test whether retroactive jealousy symptoms formed the kind of robust, mutually reinforcing network characteristic of recognized disorders like OCD. Contrary to our initial expectations, the resulting retroactive jealousy symptom network exhibited weak and fragile connectivity. Although symptoms such as intrusive thoughts, reassurance-seeking, and avoidance behaviors emerged as central to retroactive jealousy, their interconnections lacked the strong, self-reinforcing interactions typically seen in OCD or other mental disorders. Additionally, attempts to identify distinct symptom communities corresponding to OCD, ROCD, and BPD within the retroactive jealousy network produced unstable and inconsistent results. This evidence challenged the idea that retroactive jealousy neatly fits into established diagnostic frameworks, suggesting instead that retroactive jealousy may represent a loosely bound set of symptoms rather than a tightly integrated syndrome.

Following these results, Study 2 employed latent profile analysis to investigate whether distinct subtypes of retroactive jealousy might exist—perhaps some aligning more clearly with OCD or BPD. Again, results indicated that retroactive jealousy does not easily separate into meaningful subtypes. The clusters identified through latent profile analysis were subtle, characterized more by variations in severity and behavioral coping strategies (such as

reassurance-seeking versus avoidance) rather than clear, discrete diagnostic subgroups. Moreover, external validation tests showed no significant differences among these profiles regarding OCD, ROCD, or BPD measures, suggesting limited clinical utility in categorizing retroactive jealousy into subtypes. This further reinforced the idea from Study 1 that retroactive jealousy does not comfortably align with traditional categorical diagnoses.

In Study 3, we shifted focus toward cognitive and linguistic processes underlying retroactive jealousy. Employing computational linguistic analysis (LIWC), we examined the role of cognitive flexibility and schemas around romantic "specialness." Here, findings revealed a significant negative association between retroactive jealousy severity and self-reported cognitive flexibility, suggesting that individuals experiencing retroactive jealousy might struggle with schema accommodation—particularly when encountering schema-disrupting information about their partner's romantic past. Linguistically, retroactive jealousy severity correlated positively with certainty-focused language, indicative of cognitive rigidity or "black-and-white" thinking, and negatively with past-focused language, possibly reflecting avoidance of distressing memories or difficulty contextualizing past experiences. While some anticipated linguistic relationships were not observed, these findings provide initial evidence supporting the role of cognitive inflexibility and schema rigidity in maintaining retroactive jealousy distress.

Taken together, these three studies collectively suggest that retroactive jealousy does not neatly map onto existing mental disorders nor easily divide into meaningful subtypes. Rather, retroactive jealousy appears best conceptualized as a loosely connected, context-dependent phenomenon characterized primarily by intrusive preoccupations, maladaptive coping behaviors, and cognitive rigidity, particularly surrounding beliefs about romantic exclusivity and relationship ideals. Thus, rather than adapting treatment protocols designed specifically for OCD,

ROCD, or BPD, our findings suggest therapeutic strategies directly targeting cognitive flexibility, schema accommodation, and maladaptive beliefs may hold greater promise for retroactive jealousy.

Given these conclusions, the question naturally arises: if retroactive jealousy does not comfortably align with known disorders, where exactly does it originate, and why has it gained recognition seemingly recently? This question leads us to consider whether Ian Hacking's concept of transient mental illnesses offers a compelling framework for understanding the contemporary emergence and manifestation of retroactive jealousy.

Ian Hacking introduces the compelling concept of "transient mental illnesses," describing psychological conditions that emerge during specific historical and cultural moments and then fade away as their sustaining conditions shift (Hacking, 1998). He stresses that these illnesses aren't imaginary—the distress people experience is genuine—but their expression is deeply influenced by cultural context. Hacking likens this phenomenon to an "ecological niche," a unique blend of social, cultural, and linguistic factors that enable certain illnesses or behaviors to flourish (Hacking, 1998). When these conditions change, the disorders often disappear as well. To illustrate, Hacking highlights the case of dissociative fugue—or "mad traveling"—which emerged prominently in late 19th-century Europe before nearly vanishing in the 20th century as its cultural niche dissolved (Hacking, 1998). Another striking example he presents is multiple personality disorder (now dissociative identity disorder), which rose significantly in North America during the 1980s and 1990s (Hacking 1995). This phenomenon flourished due to a unique intersection of cultural narratives emphasizing childhood trauma, therapists' expectations, sensational media representations (notably, the book and film *Sybil*), and supportive diagnostic

frameworks. Collectively, these elements created an environment in which distressed individuals expressed their suffering through multiple personalities.

Central to Hacking's analysis is the "looping effect," a dynamic interaction in which individuals, aware of diagnostic categories, may unconsciously adapt their behavior and symptoms to match these classifications (Hacking, 1995). Once the category of "multiple personality disorder" became broadly recognized, for instance, both therapists and patients began interpreting dissociation or trauma symptoms through this lens, often shaping their behavior to align with expected patterns. Thus, the diagnostic label and the individual's self-understanding continually influence and reinforce each other.

Hacking's core insight emphasizes the powerful role that social and cultural contexts play in shaping certain mental illnesses. He provocatively asks, "What makes it possible, in a particular time and place, for this to be a way to be mad?" (Hacking, 1998). His answer points to a convergence of factors, including dominant cultural narratives, influential media and technology, the availability of diagnostic categories, the authority of professional experts, and a population experiencing subjective distress that resonates with these new labels. Together, these forces can amplify an illness, making it tangibly real for both sufferers and observers. In other words, transient mental illnesses emerge from an interplay between individual minds and the surrounding culture, creating temporary "ecological niches" where specific psychological expressions thrive (Elliott, 2000).

Though feelings of retroactive jealousy—such as envy, insecurity, and possessiveness regarding a partner's past—have likely existed in various forms for a long time, the explicit naming and framing of "retroactive jealousy" as a distinct experience is surprisingly recent. Its emergence can be clearly traced to the Internet era. According to one in-depth journalistic

exploration, the term "retroactive jealousy" first gained noticeable traction around 2008 within online relationship forums (Lucas, 2022). For instance, a user on the dating advice site Dear Cupid articulated his experience vividly: "My jealousy consumes me, I obsess over it. It affects me in ways I would have never imagined," capturing exactly the obsessive and painful nature now associated with retroactive jealousy. Soon after, this phrase spread through similar online spaces like LoveShack, providing a new, relatable term for those struggling with distress over their partners' romantic histories—a phenomenon one writer described as a "catchy pseudo-psychological term" (Lucas, 2022).

From these grassroots beginnings, retroactive jealousy rapidly took hold. Self-help entrepreneurs quickly recognized a growing demand, and by 2013, figures like blogger Frank Morrison (later revealed to be author Zachary Stockill) established websites like RetroactiveJealousy.com, promoting themselves as guides who could help people "get over [their] partner's past relationships and/or sexual history" (Stockill, 2013). Concurrently, numerous other sites and ebooks promising solutions appeared, further cementing the idea that retroactive jealousy was not merely typical jealousy or a personal quirk but rather a definable, treatable condition (Billings, 2016; Lucas, 2022).

By the mid-2010s, the term "retroactive jealousy" had firmly entered public discourse, increasingly linked with obsessive-compulsive disorder (OCD) in relationships—particularly Relationship OCD (ROCD), characterized by intrusive thoughts and preoccupations related to a partner's perceived flaws or past. Popular media outlets such as CBS News began referencing retroactive jealousy in discussions of relationship obsessions, effectively blurring distinctions between ordinary jealousy and clinical disorders (Lucas, 2022).

By 2016, mainstream digital platforms like Huffington Post explicitly labeled retroactive jealousy as a psychological "condition," often equating it with OCD and presenting it as an issue needing intervention (Billings, 2016). Many of these articles, notably written by individuals lacking formal psychological training, were connected to the burgeoning retroactive jealousy self-help industry. For example, Jeff Billings, founder of Retroactive Jealousy Crusher, actively promoted books and online courses promising cures for this condition, further solidifying its perceived legitimacy (Billings, 2016). Although the scientific basis at this stage was tenuous ("it's unclear where the scientific basis for the 'disorder' came from," as one journalist dryly noted), this did not prevent the idea from becoming widely accepted. Indeed, the first academic paper explicitly mentioning "retroactive jealousy" appeared only in 2018, authored by communication scholars, highlighting its initial framing as a social and media phenomenon rather than a clinical pathology (Frampton & Fox, 2018).

Since that initial scholarly recognition, academic interest has steadily grown. Communication researchers Jessica Frampton and Jesse Fox notably examined the role of social media in fostering retroactive jealousy (Frampton & Fox, 2018). Clinical researchers have also recently begun investigating it through established psychological frameworks. Our own attempts at researching this phenomenon through a clinical psychological lens marks a clear shift toward clinical legitimization (Osorio & McNally, 2023). While still not formally recognized in diagnostic manuals like the DSM, retroactive jealousy is growing increasingly embedded in both academic discussions and popular understanding, especially in North American and Western European contexts. Thus, in just fifteen years, retroactive jealousy evolved from a niche online complaint to a recognized, though still controversial, psychological concept backed by self-help literature, supportive communities, and increasing academic scrutiny.

Applying Ian Hacking's perspective, this evolution—from unnamed personal distress to a socially recognized syndrome—provides a strong indication that retroactive jealousy might be another culturally constructed category of "made-up people" (Hacking, 1995). The emergence of this term has shaped individual experiences into a unified narrative, influencing how individuals perceive themselves. To understand the potential for a retroactive jealousy ecological niche, we must explore the specific modern Western conditions that enabled the rapid acceptance of this phenomenon, particularly emphasizing the critical roles of social media, online communities, and changing cultural norms around relationships and sexuality.

Social media has aptly been called both the "source and obsession" of retroactive jealousy (Lucas, 2022). The unique features of platforms like Facebook, Instagram, and TikTok amplify feelings of jealousy by providing an endless, searchable archive of people's social histories—old photos, tagged posts, and connections remain visible indefinitely (Frampton & Fox, 2018). For someone prone to retroactive jealousy, this digital archive creates an ideal environment for obsessive thoughts: never have partners had such effortless access to vivid, persistent reminders of each other's romantic pasts.

The pivotal 2018 study published in *Social Media + Society*, mentioned earlier, identified specific social media characteristics—persistence, visibility, and association—that actively foster retroactive jealousy (Frampton & Fox, 2018). Participants described how encountering old affectionate posts or images of their partner with an ex triggered intense social comparisons, relational uncertainty, and an obsession with these "digital remnants" (Frampton & Fox, 2018). They questioned their own attractiveness or significance compared to past partners, became unsettled by visible reminders of their partner's history, and struggled with trust after discovering previously unknown details online.

Participants admitted engaging in compulsive online "investigations," meticulously scrolling through their partner's profiles or even the ex-partners' pages to gather more information. Such obsessive behavior included "hate-stalking" to identify flaws in exes or fact-checking their partner's past stories, unintentionally intensifying feelings of inadequacy and anxiety rather than alleviating them. One participant described confronting their partner with inconsistencies discovered online, illustrating how digital scrutiny often backfires, feeding deeper insecurity rather than resolving it (Frampton & Fox, 2018).

Personal accounts vividly illustrate this dynamic. "Isaiah," a young man interviewed about his retroactive jealousy, admitted becoming consumed by tracking his girlfriend's ex online (Lucas, 2022). Spending hours analyzing social media content, Isaiah fixated obsessively on details, comparing himself constantly to the ex and recognizing the damaging, addictive quality of this behavior. "Social media is just the perfect, toxic poison that I can access at any time. I'm kind of addicted to it," he confessed, highlighting how social media fuels obsessive preoccupation and emotional distress (Lucas, 2022).

Historically, partners had far fewer resources for investigating each other's pasts. Previously, individuals either asked directly, relied on gossip, or tormented themselves with imagination. Many couples traditionally avoided detailed discussions of past relationships precisely to prevent jealousy (Psychology Today, n.d.). But today, even if someone remains discreet, social media often reveals past relationship details inadvertently through mutual friends, lingering tags, or old posts—creating unprecedented potential triggers (Lucas, 2022; Frampton & Fox, 2018).

Frampton, who is a communications scholar, succinctly captures the modern dilemma, noting that social media has effectively erased temporal boundaries, making the past continually

present (Frampton & Fox, 2018). Former partners become vivid digital presences capable of provoking real emotional responses long after relationships have ended. Scholars rightly identify retroactive jealousy as a distinctly online phenomenon: without social media, it would likely diminish significantly (Lucas, 2022). In Ian Hacking's terms, social media serves as a key part of the ecological niche enabling this new psychological experience—creating conditions where obsessive jealousy about past relationships thrives (Hacking, 1998).

Social norms around discussing past romantic experiences have simultaneously shifted toward greater openness yet remain ambivalent. Historically, societal standards discouraged sharing detailed romantic or sexual histories—especially for women—due to entrenched double standards (Psychology Today, n.d.). Today, openness about past relationships has become more common, aligning with cultural values around authenticity and trust. Yet caution persists. Full disclosure can lead to unintended judgments or insecurities, compelling many to disclose their past selectively, balancing honesty with discretion (Leahy, 2019).

Despite more permissive attitudes, many people strategically limit the details they share about past relationships. Therapists frequently advise that oversharing about past loves rarely benefits new relationships, often triggering unnecessary jealousy or comparisons (Leahy, 2019). This nuanced disclosure reflects contemporary norms: honesty about significant life events is expected, while detailed personal histories remain subject to careful negotiation, particularly when fears of judgment or insecurity linger (Psychology Today, n.d.).

Ultimately, social media's omnipresence means complete ignorance of a partner's past is increasingly unrealistic. The availability of digital footprints from past relationships necessitates a delicate balancing act: couples must navigate openness about their histories while protecting their relationships from unnecessary harm (Frampton & Fox, 2018; Lucas, 2022). Successfully

managing this tension often requires establishing clear boundaries (e.g., avoiding deep dives into old posts) and consistently affirming the primacy of the current relationship. Thus, in today's connected world, openness about one's romantic past is no longer merely a personal choice—it is often an inevitable reality shaped profoundly by the digital age.

Beyond simply triggering retroactive jealousy, the internet has provided something equally crucial: a community and a language for those experiencing it. This communal aspect is central from a sociocultural standpoint because it transforms isolated suffering into shared, validated experiences. Online forums, support groups, and self-help websites have significantly contributed to turning retroactive jealousy from private pain into a recognized psychological phenomenon (Reddit, n.d.; Stockill, 2013; Billings, 2016). In other words, the internet has not just intensified retroactive jealousy—it has actively named and reinforced it as a distinct condition.

As discussed earlier, the phrase “retroactive jealousy” initially emerged around 2008 on online relationship advice forums. Within these forums, individuals troubled by their partner's past discovered others sharing remarkably similar experiences. By exchanging narratives—such as “I can't stop picturing my girlfriend with her ex”—participants found validation and comfort, crucially assigning a label to their suffering. Having a name provided profound relief: it confirmed to sufferers that they weren't alone and that their struggle was an identifiable, shared condition (Elliott, 2000; Lucas, 2022). This aligns closely with Ian Hacking's concept of the looping effect and “making up people”: forum participants began identifying explicitly as “retroactive jealousy sufferers,” embedding the diagnosis into their self-perceptions and explanations for their behaviors (Hacking, 1995).

This self-categorization carries both advantages and pitfalls. On one hand, labeling oneself reduces shame and isolation—knowing others share your problem is validating. However, it can also become a justification for ongoing obsessive behaviors (“I interrogate you because I have retroactive jealousy and can't help it without treatment”). Forum interactions thus actively shaped retroactive jealousy into a tangible, recognized condition—creating what Hacking terms a new “way to be a person” (Hacking, 1995). Previously, a jealous partner might simply wonder about their irrational jealousy; now, they could diagnose themselves as a retroactive jealousy sufferer and find an identity within this emerging community (Reddit, n.d.). The growth of dedicated websites and self-help influencers in the 2010s further entrenched this identity. Communities like the subreddit r/RetroactiveJealousy emerged, with thousands of users sharing triggers, coping strategies, and personal narratives (Reddit, n.d.). Uncredentialed yet influential figures like Zachary Stockill and Jeff Billings positioned themselves as expert coaches, reinforcing retroactive jealousy as a legitimate psychological condition through their blogs, books, and videos (Stockill, 2013; Billings, 2016). By consistently framing it as a subtype of obsessive-compulsive disorder (OCD) or similar psychological conditions, these self-help entrepreneurs solidified its recognition in popular culture, effectively creating a folk version of a diagnostic manual.

Interestingly, this online grassroots recognition preceded academic acknowledgment. Popular media and self-help resources treated retroactive jealousy as an established condition well before formal psychological research began (Lucas, 2022). When clinical psychologists eventually started investigating, they encountered well-developed vocabularies and peer-support networks already in place—terms like “retroactive jealousy OCD,” “triggers,” and “intrusive thoughts about exes” were already common. Thus, an informal but powerful support and

knowledge network effectively took on roles traditionally reserved for mental health professionals.

From a sociocultural perspective, these online communities played roles analogous to institutions described by Hacking in cases like multiple personality disorder. Just as clinics and conferences once validated and disseminated MPD, Reddit threads, advice columns, and online coaching sessions now served as institutional supports for retroactive jealousy (Hacking, 1995; Reddit, n.d.). They provided detailed scripts about symptoms, expected behaviors, and coping methods, effectively enabling individuals to self-diagnose through online quizzes and checklists well before any official psychological definitions were created.

This communal dynamic also contributes to the self-perpetuating nature of retroactive jealousy. An individual experiencing jealousy, who might otherwise perceive themselves simply as insecure, may instead discover an online community and identify as a sufferer. This identification, while supportive, can also deepen the looping effect: newcomers reading others' anxieties may inadvertently adopt new worries (e.g., "Others checked their partner's old tagged photos—should I do that too?"). Thus, online communities can unintentionally teach participants how to fully embody retroactive jealousy, echoing how historically, cultural scripts taught individuals to manifest "multiple personalities" (Hacking, 1995)

In essence, online communities have become the cultural incubator where retroactive jealousy was both named and normalized. They provided language, validation, and social reinforcement. By openly sharing once-private fears, these communities established retroactive jealousy as a legitimate, discussable issue worthy of professional attention (Billings, 2016; Reddit, n.d.; Stockill, 2013). This communal aspect is pivotal in shaping the ecological niche that sustains retroactive jealousy: without such communities, it might have remained merely

individual angst, unnamed and unnoticed. With their presence, however, it has flourished into a socially acknowledged psychological phenomenon.

Over recent decades, attitudes toward premarital sex and multiple sexual partners have dramatically liberalized. In the early 1970s, only about 29% of Americans viewed premarital sex as "not wrong at all," but by the 2010s, this number had risen above 55% (Twenge, Sherman & Wells, 2015). Reflecting these shifts, premarital sexual activity is now nearly universal; by age 44, approximately 95% of Americans have engaged in premarital sex (Finer, 2007). Today's typical adult has had multiple sexual partners, with median lifetime numbers around four for women and six for men. Indeed, about two-thirds of men and over half of women report five or more lifetime partners, illustrating how multiple romantic and sexual relationships have become the norm rather than the exception (CDC, n.d.)

Parallel to this liberalization is the rise of serial monogamy and cohabitation. Rather than a single lifelong romantic partnership, people now typically experience a series of committed relationships—a pattern often described as serial monogamy (Glamour, 2016). Anthropologists and sociologists point out that serial monogamy has become the new relationship standard, with most individuals expecting several significant relationships over their lifetime. This pattern is reinforced by divorce and re-partnering trends: around 40% of first marriages (and approximately 60% of second marriages) end in divorce, leading many to form subsequent long-term relationships. Cohabitation before (or instead of) marriage has also significantly increased. Most young adults today live with a romantic partner at least once before their 30s—a sharp rise compared to past generations—and these cohabiting unions are lasting longer and less frequently transitioning into marriage (Population Reference Bureau, 2019). Consequently, by the time

people commit to a long-term partner, they typically carry histories involving multiple past relationships (CDC, n.d.).

Despite these evolving patterns, cultural ideals around romantic relationships still emphasize finding a singular, transcendent love. A substantial majority (60–73%) of Americans continue to believe in the idea of soulmates, viewing love as something uniquely destined (YouGov, 2015; CBS Minnesota, 2013). Even individuals who have experienced prior relationships tend to regard their current partnership as uniquely special, often entering marriage with the genuine belief it will last forever. Western culture heavily romanticizes monogamous love as an unparalleled emotional bond, wherein each partner is expected to be the other's "one and only"—the most significant person in their lives.

This ideal of romantic uniqueness means that individuals often desire to feel uniquely valued by their partners, even knowing their partner has loved others in the past. Monogamy is prized precisely because it supposedly guarantees an unrivaled position in one's partner's affections—free from direct comparison with others. Yet, research reveals persistent anxieties: individuals generally view potential partners less favorably if they have an extensive sexual history. Some experience is viewed positively, but having "too many" past partners tends to reduce interest in pursuing long-term relationships (Leahy, 2017; Psychology Today, n.d.). Essentially, people prefer a modest romantic history in partners because excessive past relationships can threaten the sense of specialness expected in a current relationship. This cultural expectation of being a partner's "most special" love is especially visible in the phenomenon of retroactive jealousy—jealousy about a partner's romantic past. Even distant ex-partners can provoke insecurity if their memory remains present or influential. Leahy (2019) notes that merely encountering reminders of a partner's previous relationships, such as old

photographs or social media posts, can trigger strong feelings of jealousy or threat. Such reminders can challenge the perceived uniqueness of the current relationship by implying that similar intense feelings were previously experienced with someone else. In short, Westerners frequently grapple with reconciling their partner's past relationships with cultural ideals that insist present love must be uniquely special and unmatched by any past loves.

Integrating these various threads, we clearly see how retroactive jealousy fits Ian Hacking's concept of a transient mental illness—a condition deeply shaped by its cultural context and unlikely to appear in the same form elsewhere or in different historical periods (Hacking, 1998). To understand retroactive jealousy fully, it helps to unpack its "ecological niche" and compare it to Hacking's classic examples like dissociative fugue or multiple personality disorder (Hacking, 1995).

Retroactive jealousy provides a new cultural script for expressing anxieties about intimacy, exclusivity, and self-worth within romantic relationships. It is particularly resonant in our era of serial monogamy and omnipresent social media (Frampton & Fox, 2018; Glamour, 2016). Hacking's core question—"Why is this a way to go mad now?"—is especially relevant here. Social media uniquely amplifies jealousy by making a partner's past constantly visible. Simultaneously, online communities have created and disseminated the label "retroactive jealousy," offering people a language and narrative to understand their distress (Reddit, n.d.; Stockill, 2013). Cultural ideals of romantic exclusivity and uniqueness further amplify these anxieties, as they clash with the reality that most people today have had previous romantic relationships (Finer, 2007; Twenge, Sherman, & Wells, 2015).

The ecological niche for retroactive jealousy includes several interrelated elements. Central to its existence is the specific terminology: the phrase "retroactive jealousy," first coined

and popularized online, allows individuals to identify their feelings clearly, transforming vague unease into a recognized condition (Lucas, 2022). The internet and social media platforms serve as powerful communication channels, rapidly spreading awareness and normalizing the concept in ways previously restricted to medical journals or professional conferences (Frampton & Fox, 2018). Online support groups and self-help communities provide crucial social validation, reinforcing the idea that retroactive jealousy is a legitimate, shared condition with predictable symptoms and experiences (Billings, 2016; Reddit, n.d.; Stockill, 2013).

Informal experts, initially self-help authors and coaches, played a significant role in shaping perceptions of retroactive jealousy, paving the way for academic researchers and clinical psychologists to eventually study and address it. This trajectory mirrors how clinicians historically reinforced conditions like MPD simply by taking them seriously (Hacking, 1995). Furthermore, technology is essential to retroactive jealousy's niche; social media uniquely enables continuous access to a partner's past, paralleling how the industrial age facilitated the wandering behaviors characteristic of dissociative fugue (Hacking, 1998).

Cultural tensions further intensify retroactive jealousy: society's conflicting ideals of romantic exclusivity versus sexual freedom, and openness versus insecurity, create a powerful emotional charge around the topic. The idealized narrative of a soulmate relationship makes past romantic relationships feel particularly threatening, adding psychological depth and complexity to retroactive jealousy experiences (Selo, 2025; YouGov, 2015).

A key mechanism in the development and persistence of retroactive jealousy is Hacking's looping effect. As awareness of retroactive jealousy spreads, it shapes how individuals experience jealousy. Previously, jealousy about a partner's past might have been vague or expressed differently. Today, however, people quickly find online communities offering specific

narratives and symptom descriptions, such as intrusive thoughts and compulsive social media checking. Awareness and behavior thus reinforce each other, intensifying the experience and making retroactive jealousy symptoms standardized and recognizable (Hacking, 1995; Reddit, n.d.).

Retroactive jealousy closely parallels other culture-bound transient disorders studied by Hacking, such as MPD and dissociative fugue. MPD diagnoses exploded when media narratives and therapist expectations aligned around childhood trauma, just as retroactive jealousy has grown through the convergence of social media visibility, community validation, and contemporary romantic ideals (Hacking, 1995). Similarly, the cultural fascination with travel and psychiatric categories in the 19th century fostered dissociative fugue, much like today's fascination with digital archives and psychological self-diagnosis fosters retroactive jealousy (Hacking, 1998). Conditions such as internet addiction and social media envy further illustrate how new technologies create distinct forms of psychological distress, placing retroactive jealousy at the intersection of relationship anxiety and digital obsession (Lucas, 2022).

Finally, retroactive jealousy's persistence or disappearance depends heavily on whether its supporting conditions continue or shift. If social media platforms increasingly emphasize ephemeral or private content—as younger generations prefer—the triggers for retroactive jealousy might diminish, reducing its prevalence (Lucas, 2022). Alternatively, cultural shifts toward greater acceptance of romantic histories could mitigate the emotional impact of partners' past relationships, potentially rendering retroactive jealousy obsolete (Leahy, 2019). Conversely, increased digital documentation or technological advances like lifelogging could exacerbate retroactive jealousy symptoms, although heightened awareness might also lead to healthier coping norms.

Currently, retroactive jealousy remains uniquely tied to modern Western contexts, thriving precisely because the necessary conditions align perfectly here. It has notably not clearly emerged in cultures with arranged marriages or minimal premarital relationships, suggesting its transient and culturally specific nature (Finer, 2007). Just as dissociative fugue thrived in the wandering age of late 19th-century Europe, retroactive jealousy finds its perfect home within today's uniquely digital and romantic landscape.

Appendices

Please find the following appendices attached:

- A.** Borderline Symptom List (BSL-23): Subscale Structure, Internal Consistency, and Factor Structure (Bohus et al., 2007)
- B.** Romantic Beliefs Questionnaire (Adapted from Frampton, 2018)

Appendix A

Borderline Symptom List (BSL-23): Subscale Structure, Internal Consistency, and Factor Structure

To reduce redundancy and improve interpretability in network analyses, four theory-driven subscales were created from the BSL-23, based on both prior literature and empirical evaluation. Each subscale demonstrated adequate internal consistency and generally supported a unidimensional factor structure. Subscale definitions, reliability indices, and exploratory factor analysis (EFA) results are reported below.

Emotional Dysregulation Subscale

BSL items included: 9, 10, 11, 14, 15, 16, 17, 20, 23

Cronbach's α :

EFA (1-factor solution):

- ¶ Proportion of variance explained: 55%
- ¶ RMSR = .05; RMSEA = .15 [90% CI: .13, .17]
- ¶ TLI = .86
- ¶ Loadings ranged from .45 to .85

This subscale captures affective instability, intense emotional reactions, and difficulty with mood regulation.

Interpersonal Difficulties Subscale

BSL items included: 6, 8, 13, 19, 21

Cronbach's α :

EFA (1-factor solution):

- ¶ Proportion of variance explained: 50%
- ¶ RMSR = .04; RMSEA = .08 [90% CI: .03, .13]
- ¶ TLI = .97
- ¶ Loadings ranged from .54 to .86

These items reflect distrust, fears of abandonment, and distress in interpersonal contexts.

Impulsivity and Self-Harm Subscale

BSL items included: 5, 12

Cronbach's α :

EFA (1-factor solution):

- ¶ Proportion of variance explained: 77%
- ¶ Item loadings: .88 for both items

Although limited to two items, this subscale captures impulsive and self-injurious behavior with high internal consistency.

Cognitive Dysfunctions and Dissociation Subscale

BSL items included: 1, 2, 3, 18, 22

Cronbach's α :

EFA (1-factor solution):

- ¶ Proportion of variance explained: 52%
- ¶ RMSR = .04; RMSEA = .08 [90% CI: .04, .11]
- ¶ TLI = .97
- ¶ Loadings ranged from .53 to .90

This subscale assesses dissociation, cognitive confusion, and disturbances in attention or identity.

Appendix B

Romantic Beliefs Questionnaire (Adapted from Frampton, 2018)

This 17-item self-report measure was adapted from Frampton (2018) to assess participants' beliefs about love, sex, exclusivity, and emotional intimacy in romantic relationships.

Participants responded to each statement using the following 5-point Likert scale:

- ¶ a) Strongly disagree
- ¶ b) Disagree
- ¶ c) Neither agree nor disagree
- ¶ d) Agree
- ¶ e) Strongly agree

Items marked with *(R)* are reverse-scored.

1. One-night stands can be enjoyable for me. *(R)*
2. I do not need to be committed to another person to have sex with him or her. *(R)*
3. Sex does not need to be special or personal to be enjoyable to me. *(R)*
4. It is difficult to have a sexual experience with someone without becoming emotionally attached.
5. It is possible to enjoy sex with a person and not like that person very much. *(R)*
6. It is okay to have ongoing sexual relationships with more than one person at a time. *(R)*
7. Sex is the closest form of communication between two people.
8. At its best, sex seems to be the merging of two souls.
9. A sexual encounter between two people deeply in love is the ultimate human interaction.
10. When I am in a romantic relationship, I like to think the relationship is special or unique.

11. The best relationships depend on being absolutely loyal to one another.
12. When you are in a romantic relationship, your romantic partner should be the most special person in your life.
13. In successful relationships, partners constantly show how much they love one another.
14. I expect my current or future spouse to think I am the most amazing person they have ever been with.
15. A person will have only one real love.
16. Once I experience “true love,” I could never experience it again, to the same degree, with another person.
17. It is possible to truly love more than one romantic partner in one’s lifetime. (*R*)

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