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Short-Term Effects of Authority Concessions to Terrorist Hostage-Takers: Stability and Generalizability of the Concession Effect

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Abstract

Should authorities concede to the demands of terrorist hostage-takers or not? Making this difficult decision requires accurate knowledge of the consequences of each alternative. A prior study suggested that authority concessions to terrorist hostage-takers reduce casualties among the hostages and overall (Mertes et al., 2020). We term this finding the concession effect. However, this previous study investigated relatively old data on exclusively international terrorist hostage-takings. Outdated findings could impair decision–making in life–threatening situations. Thus, we illuminate the stability and generalizability of the concession effect. We analyzed Global Terrorism Database (START, 2019b) data on domestic terrorist hostage-takings that occurred between 1970 and 2018. As hypothesized, we found that authority concessions increased the likelihood of a successfully completed hostage exchange and reduced the number of overall fatalities. Altogether, our findings suggest that the concession effect is a stable phenomenon that generalizes to domestic terrorist hostage-takings.

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In 2015, the militant group Abu Sayyaf abducted hostages from a tourist resort in the southern Philippines. Among the hostages were R. H. and J. R. from Canada as well as K. S. from Norway. R. H. and J. R. were beheaded after authorities refused to pay ransom. By contrast, K. S. was released after authorities met the terrorists' demands (Al Jazeera, 2016). Incidents like these raise a critical question: Is there a reliable relationship between authority concessions and peaceful conflict resolution in terrorist hostage-takings?

Authorities confronted with terrorist hostage-takings face a difficult and highly debated moral dilemma: Should they concede to the terrorists' demands or not (Borger et al., 2014)? Conceding has downsides from a strategic and political standpoint: Paying ransoms can provide terrorists with the financial means to continue their operations (Callimachi, 2014), provoke future attacks (Arin et al., 2019; Brandt et al., 2016), and ascribe legitimacy to the terrorists, their cause, and their means. Yet, although authorities often doubt that terrorists can be trusted to keep their promises (e.g., Bapat, 2006), fulfilling the terrorists' demands may help to save the hostages' lives, which should not be taken lightly (e.g., Schmid & Flemming, 2010).

Notably, Mertes et al. (2020) provided initial insights into the short-term effects of authority concessions in terrorist hostage-takings. In accordance with *social exchange theory* (SET; Blau, 2017; Homans, 1974), they observed that conceding to terrorist hostage-takers' demands reduced casualties among the hostages and in general. We term this finding the *concession effect*. In the present research, we use data from the *Global Terrorism Database* (GTD; START, 2019b) to conduct a generalizability study (or "conceptual replication"; see Hüffmeier et al., 2016; LeBel et al., 2019) with the same constructs and equivalent hypotheses, but differing operationalizations and a different sample (LeBel et al., 2018). Hereby, we test the stability, generalizability, and replicability of the concession effect. Replicability, or rather the lack thereof, has become a growing concern in specific fields, such as psychology and in science overall (e.g., Lilienfeld, 2017; Nelson et al., 2018). Examining the replicability of the concession effect is particularly important because terrorist hostage-takings pose a major threat to innocent people's lives. Thus, it is critical to have reliable knowledge to best inform authorities' decision-making processes.

By examining the generalizability of the concession effect, our study addresses three important limitations of the initial knowledge on this effect: First, Mertes et al. (2020) only examined *international* terrorist hostage-takings (i.e., hostage-takings in which at least two different nationalities were involved). However, domestic terrorist events are estimated to occur about eight times more frequently than international terrorist events (Enders & Sandler, 2011). Thus, it is unclear whether the concession effect actually generalizes to the majority of cases of terrorist events. Considering the potential costs of concessions to terrorist hostage-takers (see above), knowledge—and not just assumptions—about generalizability should guide the decision–making process. Second, the data analyzed by Mertes et al. (2020) were limited to terrorist hostage-takings that occurred between 1983 and 2005. However, terrorism and government responses to terrorism have undergone changes that might be relevant to the concession effect. For example, the average number of fatalities in terrorist attacks has fluctuated over the years (e.g., Masters, 2008; START, 2019b). Moreover, many countries, including the UN members and the G8 countries, have officially committed to no longer pay ransoms (e.g., Borger et al., 2014; UN General Assembly Resolution 2133; 2014). This raises the question of whether the extant knowledge on the concession effect might be outdated. Once again, the key decision of whether or not to concede should be made based on up-to-date data to prevent the worst-case scenario: making concessions that do not, or no longer, help to save lives. Therefore, to examine the generalizability of the concession effect and to address the limitations of the extant knowledge, in the current study, we used data on domestic terrorist hostage-takings that occurred from 1970 up to 2018. Altogether, by illuminating whether the concession effect generalizes to domestic and recent

cases, we advance the knowledge on the consequences of conceding to terrorist hostage-takers, which may inform authority decision–making.

Third, Mertes et al. (2020) used casualty counts (i.e., the number of individuals who died during the incidents) as a proxy for the degree of violence with which hostage situations were resolved. The problem with counting casualties as recorded in terrorism databases, however, is that the exact circumstances of the deaths are mostly unknown. For example, it is unclear whether a person reported dead is a hostage who was executed after failed negotiations or a bystander who was killed during the initial attack on the hostages. Thus, casualties unrelated to the negotiation and the hostage exchange process may bias the results and complicate their interpretation. We extend past research by analyzing the arguably most informative, relevant, and valid criterion variable reporting the core outcome of the hostage situation: the hostages' fate. Thus, in addition to examining the replicability of an analysis using casualty counts, we analyze whether the hostage situation ended specifically with the hostage-takers killing or releasing the hostages. This criterion variable allows for a more focused test and unambiguous interpretation of the effect of authority concessions on the likelihood of peacefully completed hostage exchanges—the key research question in this emerging domain of research (Mertes et al., 2020).

Terrorism and Hostage-Takings

According to the revised academic consensus definition, *terrorism* is "on the one hand [...] a doctrine about the presumed effectiveness of a special form or tactic of fear-generating, coercive political violence and, on the other hand, [...] a conspiratorial practice of calculated, demonstrative, direct violent action without legal or moral restraints, targeting mainly civilians and non-combatants, performed for its propagandistic and psychological effects on various audiences and conflict parties" (Schmid, 2011, pp. 86-87). Schmid (2011) elaborated that acts of terrorism (a) are politically motivated, (b) involve the use or threat of violence, (c) can be carried out by individuals, groups, or international networks, who can act on behalf of or be supported by a state, (d) target civilians or non-combatants who are immediate victims, but typically not the ultimate target, (e) intend to spread fear or intimidate a population or conflict party to achieve favorable outcomes for the terrorists, and (f) are usually part of campaigns that serve long-term goals.

In terrorist *hostage-takings*, terrorists abduct innocent people and threaten to kill them unless authorities fulfill their demands (e.g., ransoms, release of prisoners, or political change; Wilson, 2003). Hostage-takings can be categorized as *kidnappings*, *hijackings*, and *barricade situations* (e.g., Faure & Zartman, 2010). In kidnappings, terrorists abduct the hostages and hold them captive in an unknown location. In hijackings, terrorists take control of an airplane or other means of transportation, making the passengers their hostages. In barricade situations, the terrorists barricade themselves together with the hostages in a known location, typically besieged by authority forces. Hostage-takers are not always terrorists, but sometimes "ordinary" criminals. However, criminal hostage-takings differ from terrorist hostage-takings in several ways: Criminal hostage-takers usually are neither politically motivated nor part of networks or state-sponsored groups. In addition, criminal hostage-takings are typically "standalone" events that serve no superordinate goal other than to receive what was demanded, whereas terrorist hostage-takings typically also involve long-term goals (see above). In this manuscript, we focus on terrorist hostage-takings.

Prior Research on Hostage Situation Outcomes

Few studies have attempted to describe and explain the outcomes of terrorist hostage-takings (Wilson, 2019). Most of these studies treated authority concessions to terrorists as the solution and end point to the hostage-taking situation (e.g., Atkinson et al., 1987; Friedland & Merari, 1992), investigating antecedents of authority concessions or the decision-making process leading to authority concessions. However, it is important to stress that the hostage situation may not be actually resolved when authorities have decided whether or not to concede, but, rather, when the fate of the hostages is decided (i.e., when the hostages have been released or killed). Thus, we focus on the *consequences* of authority concessions below (for the literature on antecedents, see Atkinson et al., 1987; Gaibulloev & Sandler, 2009; Lapan & Sandler, 1988; Sandler & Scott, 1987).

Friedland and Merari (1992) investigated factors associated with violent and non-violent outcomes in hijackings and barricade situations. The authors defined non-violent outcomes as incidents in which either the terrorists surrendered peacefully or the authorities made partial or complete concessions. Due to this confounding, their study cannot clearly speak to the relationship between authority concessions and safe hostage release.

Donohue and Taylor (2003) also investigated hijackings and barricade situations. They coded the actions of both parties in hostage incidents using specific scales, including a scale for the terrorists' hostage release behavior (coded 0 = *retention*, 1 = *release women/children*, 2 = *release some passengers*, 3 = *release all passengers*) and another scale for the authorities' conciliation behavior (coded 0 = *attrition*, 1 = *offers*, 2 = *concessions*, 3 = *allowed escape*). The authors found a small to medium-sized correlation (r = .28) between these scales. However, the scale measuring the authorities' conciliation behavior is described as reflecting "the actions of the authorities in response to the terrorists" (i.e., their hostage release behavior, among others; Donohue & Taylor, 2003, p. 536). Thus, it is unclear whether the significant correlation can be interpreted as evidence that authority concessions led to safe hostage-releases or as evidence that initial releases of hostages made authorities less reluctant to concede. It should also be considered that neither of these studies investigated kidnappings, which are structurally different from hijackings and barricade situations (see above) and make up the majority of hostage situations (START, 2019b).

In his Government Capitulation Model, Corsi (1981) theorized that terrorists would agree to release the hostages unharmed once the government conceded to all demands. However, his empirical analysis of this tenet was restricted to a total of four barricade situations in which government capitulation led to a safe release of the hostages. Thus, the available evidence was clearly limited.

Mertes et al. (2020) investigated the effects of authority concessions on short-term consequences in the form of (hostage) casualties. Analyzing ITERATE data on international terrorist hostage-takings that occurred between 1983 and 2005, they compared (hostage) casualty counts between cases in which the authorities fulfilled none, some, or all of the terrorist hostage-takers' demands. Their results showed that even partial fulfillment reduced the number of hostage casualties, and a complete fulfillment reduced the number of casualties in general. These effects were mediated via reciprocated concessions that the terrorists made to the authorities. This study provided first evidence that terrorist hostage-takers adhere to commitments and even reciprocate concessions to facilitate negotiated agreements.

The research by Mertes et al. (2020), however, was once again limited. First, by focusing on data from the ITERATE database, Mertes et al. (2020) only analyzed international terrorist hostage-takings. This raises questions about the generalizability of their concession effect to purely domestic terrorist hostage situations. This is an important limitation because, according to estimations,

domestic terrorist events occur about eight times more frequently than international terrorist events (Enders & Sandler, 2011). Second, Mertes et al. (2020) analyzed data limited to terrorist hostage-takings from the years 1983 to 2005. This limitation is problematic because the nature of terrorism itself and the procedures of both authorities and terrorist hostage-takers may have changed in recent years. Given the fatal threat that terrorist hostage-takings pose to innocent people, our understanding of the effects of concessions to terrorist hostage-takers should be based on data including recent cases to account for current developments. Third, and especially notably, the criterion variables that Mertes et al. (2020) used (i.e., casualty counts) do not allow for an unambiguous interpretation of their findings. When a person is reported as dead in databases such as the ITERATE, the circumstances of their death are unclear. As a result, it is unknown whether and in how far casualties were related to the outcome of the negotiation process (see above).

Terrorist Hostage-Takings as Situations of Social Exchange

SET does not refer to a single theoretical model but rather to a family of related theories (Blau, 2017; Foa, 1971; Homans, 1974; Mitchell et al., 2012; Thibaut & Kelley, 1959; 1978). The broad scope of the theoretical framework allows for application to a wide variety of situations, such as workplace behavior (e.g., Bishop et al., 2000), religion (Corcoran, 2013), and terrorist hostage-takings (Mertes et al., 2020). Yet, SET was initially not meant to explain the outcomes of "extreme" and violent events. Thus, the SET framework and its boundaries need to be extended to account for terrorist hostage-takings. Given that terrorist hostage-takings constitute a very specific kind of exchange situation, we will explain how we extend SET to terrorist hostage-takings below.

A social exchange takes place when an *actor* (i.e., a party participating in an exchange) seeks to attain resources that another actor controls (Molm et al., 2000). Actors need to participate voluntarily for the exchange to be considered social (Blau, 2017). As Mertes et al. (2020) noted, authorities are not under physical coercion themselves and can choose to engage in an exchange with the hostage-takers or not, even though refusing to engage may have negative consequences. In terrorist hostage-takings, the terrorists seek to gain from an exchange with the authorities. Hostage-exchanges qualify as *negotiated exchanges* (e.g., Molm, 2003). The specific terms under which the actors exchange resources in discrete bilateral transactions are agreed upon in a *negotiation*, which represents an attempt to resolve a conflict through discussion (see Pruitt & Carnevale, 1993). This means that the parties involved in the exchange know what they are expected to contribute and what they can expect in return (Molm, 2003). These negotiations are initiated when terrorists make demands and thereby declare which resources they want to receive in an exchange with the authorities.

Foa (1971) established a taxonomy of exchangeable *resources*, which comprises (a) money, (b) goods, (c) services, (d) information, (e) status, and (f) love. Most of the demands typically made by terrorist hostage-takers can be located in these six categories. These demands typically consist of ransoms, release of (specified or unspecified) political prisoners, safe conduct, publicity, political change, and political recognition (Wilson, 2000; Wilson, 2019). Foa (1971) describes the resources on two dimensions: *concreteness* (i.e., how tangible the resource is) and *particularism* (i.e., how universal the value of the resource is). For example, money classifies as a moderately concrete and highly universal resource because it can be tangible or intangible and its value is independent of who provides it. Love, on the other hand, classifies as low on concreteness and universalism because it is intangible and may be valued coming from a certain source, but not others.

One resource relevant to hostage situations that is not described in Foa's (1971) taxonomy is human life. Please note that we do not, by any means, intend to devalue human life by describing

people (or their lives) as "resources." However, to understand a hostage-taking within the context of SET, it is necessary to define hostages as the resource that terrorists contribute to the exchange (thus, "resource" is a purely technical term that follows from the SET framework). On the dimensions advanced by Foa (1971), hostages differ from any other resource because they are highly concrete and particular: They are valuable to the authorities, but not necessarily to the terrorists. The value that terrorists ascribe to hostages depends on what authorities are willing to concede in order to ensure their safe release. This is reflected in the fact that terrorists almost universally threaten (and often proceed) to kill the hostages if the authorities do not meet their demands. In doing so, they do not only deprive the authorities of the resource, but destroy it entirely. It is noteworthy that although it is not always explicitly demanded (e.g., in the form of political acceptance), status is always part of exchanges with terrorist hostage-takers because accepting terrorists as negotiation partners ascribes legitimacy to their means and cause (Mertes et al., 2020; Toros, 2008). Terrorists may, however, also experience a change in status due to the mere media coverage of hostage-taking events (see also Wilson, 2019).

Interdependence theory (as a part of the broader SET framework) can be used to theorize how actors adapt their behavior as a result of the experiences they make in social interactions (Thibaut & Kelley, 1959; 1978). This requires an understanding of the situation and the actors. In the context of interdependence theory, terrorist hostage-takings are characterized by high levels of interdependence. For the terrorists to get what they demand, the authorities must concede. For the authorities to recover the hostages safely, the terrorists must let the hostages go unharmed. Thus, both parties can only achieve their goals through an exchange (see also Sandler & Scott, 1987). This exchange typically takes place in a sequential process in which the authorities have to concede first, which leaves room for the terrorists to hold up their end of the bargain or not. Both parties know about their interdependence and the opportunities that will be made available or eliminated through their actions. However, they do not know about the other party's motives (e.g., the terrorists do not know whether the authorities maintain negotiations to prepare for a military strike and the authorities do not know whether the terrorists intend to kill the hostages for publicity). Due to the way the terrorists acquire the resources they bring to the exchange (i.e., the hostages; see above), the interests of both parties cannot be aligned. By taking hostages, terrorists violently and wrongfully acquire resources in order to coerce authorities into participating in an exchange.

Interdependence theory assumes that behavioral adaptations are the result of experienced gratification and satisfaction (or the lack thereof). Although both parties can achieve their goals by exchanging resources with each other, only the hostage-takers stand to gain from the exchange, whereas the authorities incur a net loss (Mertes et al., 2020). Thus, after a successful hostage exchange, terrorists are more likely to experience satisfaction and to engage in more hostage-takings with these or other authorities in the future (see also Arin et al., 2019; Brandt et al., 2016). By contrast, authorities are unlikely to experience any satisfaction and, thus, will not seek to exchange with these (or other) hostage-takers again unless the hostage-takers' actions make it necessary (i.e., if they take hostages again). The same principle can be applied to other outcomes of hostage exchanges: When authorities refuse to concede, terrorists may adapt their behavior to reduce the frequency with which they engage in hostage-takings because they experience less or no satisfaction (see also Brandt et al., 2016). When authorities concede, but the terrorists kill the hostages anyway, authorities may adapt their behavior to no longer concede to these or any other terrorist hostage-takers.

In turn, a key proposition in SET is that actors choose to perform those actions that promise the highest likelihood of maximizing the value that they receive (Emerson, 1976; Homans, 1974). Following this notion, Mertes et al. (2020) argued that the most rational course of action for terrorist hostage-takers would be to release the hostages after their demands have been fulfilled. Killing the

hostages upon having their demands fulfilled could yield short-term benefits, such as publicity to intimidate a broader audience (see also Schmid, 2011), but doing so could also decrease their chances of authorities conceding to future demands and additionally make them the target of military action (see also Bapat, 2006; Pronin et al., 2006). Conversely, releasing the hostages could contribute to the terrorists' reputation as reliable negotiators, so that authorities might become less reluctant to engage in future exchanges. Based on this theoretical rationale, making concessions is proposed to lead terrorist hostage-takers to release the hostages safely—a mechanism that should overall lead to more completed exchanges with fewer casualties as compared to when no concessions are made.

H1. Authority concessions to terrorist demands are negatively linked to the likelihood of the hostage-situation ending with the hostages being killed (rather than released).

H2. Authority concessions to terrorist demands are negatively linked to the number of fatalities in a hostage-situation.

Method

Below, we report how we determined our sample size, all data exclusions, and all measures (Simmons et al., 2012).

Preregistration

This study was preregistered at the Open Science Foundation (http://osf.io). The preregistration is accessible under https://osf.io/r4aun. All deviations from the preregistration are disclosed. To follow Mertes et al.'s (2020) approach as closely as possible, we originally included a preregistered hypothesis stating a negative relationship between authority concessions and property damages in the hostage-taking situation. However, the GTD, just like the ITERATE (Mickolus et al., 2006) as used by Mertes et al. (2020), offers insufficient data on property damages to enable meaningful statistical analyses. This was not known at the time of the preregistration. Thus, for the sake of conciseness, we dropped this hypothesis and all related reasoning from the manuscript.

We also initially preregistered a second study, which aimed to extend the findings by Mertes et al. (2020) using the rest of the data available in the ITERATE database (1968-1982). This preregistration is accessible under https://osf.io/wyt3e. However, due to differences in the data structure between the 1968-1977 and 1978-1982 segments of the ITERATE, which were unknown at the time of preregistration, we could not process the data to enable a combined analysis. Both segments yielded insufficient cases for meaningful statistical analysis when analyzed separately. Consequently, we did not conduct this planned second study.

Data Source

We used data from the GTD (START, 2019b), a database that has been used in many studies since its establishment (e.g., Findley & Young, 2012; Freytag et al., 2011).1 In the GTD's definition, a terrorist attack is "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation" (START, 2019a; pp. 10-11). For an event to be recorded in GTD, it has to be intentional, entail some level of violence or immediate threat of violence, and the perpetrators must be sub-national (i.e., groups

[1] A comprehensive list of publications using GTD data can be accessed as per https://www.start.umd.edu/.

within states) actors. Furthermore, at least two of the following three criteria must apply: (a) The act must be aimed at attaining a political, economic, religious, or social goal; (b) there must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience than the immediate victims; (c) the act must be outside of the context of legitimate warfare activities. Events not matching at least two of these three criteria are still recorded in the database, but flagged accordingly. Thus, as the GTD's working definition of terrorism shares most of its attributes with the revised academic consensus definition (see above; Schmid, 2011), the GTD appears to represent a suitable database for examining our hypotheses.

Data in the GTD stem from publicly available, unclassified sources such as media articles, electronic news archives, existing datasets, books, journals, and legal documents (START, 2019a). Inclusion in the database requires events to be reported by at least one high-quality source. The GTD defines such high-quality sources as "those that are independent (free of influence from the government, political perpetrators, or corporations), those that routinely report externally verifiable content, and those that are primary rather than secondary" (START, 2019a; p. 9). In total, the GTD lists 192,212 terrorist events that occurred between 1970 and 2018. In the GTD, data on terrorist demands and authority concessions are restricted to ransoms. No other demands (e.g., release of prisoners, publicity) are systematically recorded, and authority concessions to such demands are not documented.

Sample

To maximize statistical power, we included all available data matching the following inclusion criteria: First, we only included hostage-related events (i.e., kidnappings, hijackings, and barricade situations). The GTD uses three different variables to determine terrorist incident types: "*attack type 1*," "*attack type 2*," and "*attack type 3*." Attack types are sorted in a hierarchical classification (i.e., highest to lowest priority): (a) assassination, (b) hijacking, (c) kidnapping, (d) barricade incident, (e) bombing/explosion, (f) armed assault, (g) unarmed assault, (h) facility/infrastructure attack, and (i) unknown. In cases where multiple attack types apply, the attack type with the highest priority is recorded as attack type 1, the one with the second highest priority is recorded as attack type 2, and so forth. As only assassinations are higher in priority than the three kinds of hostage-related events, a hostage-related attack type is bound to appear on either attack type 1 or attack type 2 at the latest. Thus, we included all cases that were recorded as hostage-related events on either of these variables (i.e., attack type 1 and 2).

Second, we only included cases in which it is clear that the hostage-taking was a terrorist act. The GTD includes the variable "*doubt terrorism proper?*" to record potential uncertainty as to whether an incident meets the necessary criteria for clear classification as terrorist acts (see the Data Source section above). Third, we only included logistically "successful" hostage-takings, in which the terrorists managed to take at least one hostage. Fourth, we included only cases in which the hostage-takers made ransom demands (see the Authority concessions section below).

Fifth, we included only domestic terrorist hostage-takings. The GTD records whether hostage-takings are domestic or international in four different variables: (a) "*International (logistical)*" records whether the perpetrators crossed a border to carry out the attack; (b) "*international (ideological)*" records if the perpetrator group attacked a target of a different nationality or not; (c) "*international (miscellaneous)*" records whether the incident was international on either the logistical or the ideological dimension, but does not require specific information on which nations were involved; (d) "*international (any of the above)*" records whether the incident was logistically, ideologically, or miscellaneously international. Notably, due to similarities in the data collection procedures for both

the GTD and the ITERATE database, international cases are likely to be included in both databases. Thus, we refrained from using international cases to ensure independence of samples between the current study and the study by Mertes et al. (2020) that used the ITERATE database. Specifically, we used the "international (any of the above)"-variable (see above) for excluding international cases because its definition of internationality is as liberal as the ITERATE's working definition of internationality, which states that at least two different nationalities must be involved (see also Mertes et al., 2020).

Our approach to the GTD data yielded *N* = 403 incidents. However, due to missing data on the criterion, predictor, and control variables, none of our analyses below features all of these 403 cases. Thus, to be fully transparent in our reporting, we describe (a) the number of valid cases available for each variable (see Table 1) and (b) the number of cases with which each analysis was conducted (see Tables 2, 3, and 4).

Variables

If not stated otherwise, data were used and analyzed as recorded in the GTD. We describe all recordings and transformations applied to the data below.

Fatalities

This variable records the total number of individuals who died during the hostage-taking incident (see also Young, 2019). We used this variable to conduct the closest possible replication of the analysis provided by Mertes et al. (2020) in a different context: domestic terrorist-hostage takings. The number of fatalities as recorded in the GTD is equivalent to the number of casualties as recorded in the ITERATE used by Mertes et al. (2020).

Hostage Situation Outcome

The GTD provides the variable "*kidnapping/hostage outcome*," which records the fate of the hostages. In its original form, values on this variable represent the following outcomes: 1 = *attempted rescue*, 2 = *hostage(s) released by perpetrators*, 3 = *hostage(s) escaped (not during rescue attempt)*, 4 = *hostage(s) killed (not during rescue attempt)*, 5 = *successful rescue*, 6 = *combination*, 7 = *unknown*. We recoded this variable into a new, dichotomous variable with the following values: 0 = *hostage(s) killed (not during rescue attempt)* and 1 = *hostage(s) released by perpetrators*. On this new variable, all other categories from the original variable were coded as missing information. This allows us to provide a neat test of the effect of authority concessions on the likelihood of a completed hostage exchange.

This variable has several advantages over casualty/fatality counts (see the Fatalities section above). The variable "fatalities" records the number of lives lost during the terrorist hostage-taking irrespective of the exact circumstances of death. Thus, it is unclear (a) how many of the reported fatalities were hostages, (b) when they died, and (c) whether they were killed by the hostage-takers because of failed negotiations. These uncertainties clearly complicate the interpretation of findings with regard to the hypothesized concession effect. However, the variable "hostage situation outcome" clarifies these issues and, thus, allows for unambiguous interpretations because (a) it describes the fate of the hostages, (b) it describes how the hostage situations ended, and (c) it only records outcomes that can be directly attributed to the actions of the hostage-takers. This makes the "hostage situation outcome" arguably the most informative and specific criterion variable for examining the concession effect.

Authority Concessions

We calculated the degree to which the authorities fulfilled the terrorists' ransom demands by dividing the "*total ransom amount paid (in USD)*" by the "*total ransom amount demanded (in USD)*." We multiplied the result by 100 so that numbers can be interpreted as percentages. We excluded cases in which ransom demands were recorded as $0. These implausible demands likely result from the GTD's data recording approach: When there are conflicting reports and no ransom amount is backed by a majority of independent sources, the lowest reported figure is recorded (START, 2019a). This operationalization of authority concessions differs from the operationalization used by Mertes et al. (2020). In their study, authority concessions were operationalized as a nominal variable recording whether the terrorists received none of their demands, some of their demands (i.e., more than nothing but less than everything), or all of their demands. Our operationalization only accounts for ransom demands, but allows for a more fine-grained analysis.

Control Measures

Following Mertes et al.'s (2020) procedure, we included several variables that might influence the outcome of a hostage-taking situation as potential control variables.

Year

This variable records the year in which the hostage-taking was initiated. We included the year because of the possibility that the outcomes of terrorist incidents change over time. For example, the average number of fatalities (per incident) in terrorist attacks has fluctuated over time (Masters, 2008; START, 2019b).

Total Duration in Hours

This variable records the total duration of the incident in hours. We calculated this variable by multiplying the "*days of kidnapping/hostage incident*" by 24 and adding the "*hours of kidnapping/hostage incident*" to the resulting product. A longer duration might affect the outcome of the hostage-taking situation: For example, Gaibulloev and Sandler (2009) found longer incident durations to be positively associated with negotiation "success" (i.e., the authorities fulfilling the terrorists' demands). Terrorists might experience increasing pressure to act on deadlines set during the negotiations, whereas authorities might face bad press when hostage-takings endure.

Number of Hostages

This variable records the total number of individuals who were successfully taken hostage. In situations with a higher number of hostages, more lives are at stake. As a result, the authorities may be under higher pressure to fulfill the terrorists' demands (e.g., Gaibulloev & Sandler, 2009). This, in turn, could influence the outcomes of the hostage-takings.

Number of Perpetrators

This variable records the number of perpetrators who were part of the attack force. The higher the number of parties involved in a team, the more individual interests need to be integrated (see also

Thompson, 2009). Consequently, larger teams might require more communication and coordination to find consensus (see also Thompson, 2009), which could lower the likelihood of reaching an agreement. Another consideration is that trust in an opposing team is determined by the amount of trust in the opposing team's leadership or in the least trusted member (Naquin & Kurtzberg, 2009; see also Hüffmeier et al., 2019). A greater number of terrorists in the attack team might thus increase the likelihood of having a team member that is perceived as untrustworthy, thereby decreasing the overall level of trust. As a result, authorities might become more hesitant to make concessions (see Bapat, 2006).

Results

Table 1 shows descriptive statistics and intercorrelations for all variables of this study.

Hypothesis Testing

Hypothesis 1

Hypothesis 1 stated that authority concessions to terrorist demands would be negatively linked to the likelihood that the hostage situation ends with the hostages being killed (vs. released) by the perpetrators. To test this hypothesis, we conducted a logistic regression analysis with the hostage situation outcome as the binary criterion variable and authority concessions as the metric predictor (n = 71). Please note that due to the way the hostage situation outcome variable is coded, we tested for a positive relationship between authority concessions and hostage releases rather than a negative relationship between authority concessions and hostage executions. The results are presented in Table 2, Model 1. The model was superior to the null-model, omnibus-test: $\chi^2(1) = 9.68$, $p = .002$. Following Nagelkerke's R^2, the model explained 20.2 percent of variance, which constitutes a medium-to-large sized effect. Our finding showed that authority concessions had a significant influence in the hypothesized direction: The higher the degree of demand fulfillment, the higher was the likelihood of the hostages being released rather than killed by the perpetrators. The effect size e^b is the odds ratio, which indicates how the likelihood of the hostages being released safely changes when the degree of demand fulfillment increases by one percent.

An odds ratio greater than 1 indicates that the likelihood increases, whereas an odds ratio smaller than 1 indicates that the likelihood decreases. The deviation of the odds ratio from the value one can be interpreted as a percentage change in the likelihood. For this analysis, we find that a one-percent increase in demand fulfillment increases the likelihood of a safe hostage release by 2.4 percent. This finding supports Hypothesis 1.

Hypothesis 2

Hypothesis 2 stated that authority concessions to terrorist demands would be negatively linked to the number of fatalities in a hostage-situation. As the number of fatalities is available as count data, we conducted a negative binomial regression analysis with the number of fatalities as the criterion variable and authority concessions as a metric predictor (n = 121). The results are presented in Table 3, Model 1. The omnibus-test showed that the model was superior to the null-model, $\chi^2(1) = 3.89$, $p = .049$. Authority concessions were a significant predictor of fatalities: The higher the degree of demand fulfillment, the fewer people were killed during the incident. The odds ratio indicates that

a one-percent increase in demand fulfillment reduces the likelihood of a fatality occurring by one percent.2 This finding supports Hypothesis 2.

Sensitivity Analyses

We conducted a series of sensitivity analyses to test the robustness of our findings. For instance, the results regarding fatalities described above might be driven by influential cases (i.e., hostage-takings situations with high numbers of fatalities). To address this issue, we dichotomized the number of fatalities (0 = *there were no fatalities*; 1 = *there was at least one fatality*) to test the robustness of the analysis of Hypothesis 2 presented above. We ran a logistic regression analysis using this dichotomized variable as the criterion variable and authority concessions as the predictor (n = 121; see Table 4). The model was superior to the null model, omnibus-Test: $\chi^2(1) = 6.36$, $p = .012$. Following Nagelkerke's R^2, the model explained 7.4 percent of variance, which constitutes a small-to-medium sized effect. The results showed that authority concessions were a significant predictor of fatalities: The higher the degree of demand fulfillment, the lower the likelihood of a hostage-taking resulting in at least one (vs. no) fatalities. A one-percent increase in demand fulfillment decreased the likelihood that there was at least one fatality by 1.3 percent. This finding, again, supports Hypothesis 2.

Control Variables

As recommended by Becker (2005), we used significant intercorrelations to identify potentially relevant control variables. As can be seen in Table 1, we found a significant positive correlation between the year in which the incident took place and the hostage situation outcome. We also found significant positive correlations between both the number of hostages as well as perpetrators and the number of fatalities. Thus, we reran the analyses testing Hypotheses 1 and 2 including these variables.

Hostage Situation Outcome

Rerunning the logistic regression with the hostage situation outcome as the criterion variable and authority concessions as the predictor including the year as a control variable showed similar results (n = 71; see Table 2, Model 2). The model was superior to the null-model, omnibus-test: $\chi^2(2) = 10.03$, $p = .007$. Following Nagelkerke's R^2, the model explained 20.9 percent of variance, which constitutes a medium-to-large sized effect. Authority concessions again had a significant influence in the hypothesized direction. A one-percent increase in demand fulfillment increased the likelihood of a safe hostage release by 2.5 percent. The control variable year had no influence on the likelihood of completed hostage exchange. This finding suggests that the concession effect generalizes to cases more recent than 2005 (cf. Mertes et al., 2020) and provides additional support for Hypothesis 1.

[2] As can be seen in Table 3, Model 1, both ends of the 95% confidence interval for the odds ratio are below the value 1. Thus, our findings show an actual decrease in the likelihood of fatalities by one percent when the degree of demand fulfilment increases by one percent.

Table 1

Means, Standard Deviations, Sample Sizes, and Intercorrelations of All Variables

		n	*M* (*SD*)	Intercorrelations					
				1	2	3	4	5	6
1	IV Authority concessions	134	33.82						
			(45.71)						
2	DV Hostage situation outcome	208	0.84	.35					
			(0.37)	.003					
3	DV Number of individuals killed	319	0.51	-.16	-.64				
			(1.48)	.082	< .001				
4	Year	403	1999.86	-.37	.17	-.05			
			(16.35)	< .001	.014	.350			
5	Number of hostages	398	10.73	-.06	.10	.27	-.08		
			(65.55)	.473	.170	< .001	.094		
6	Number of perpetrators	134	10.77	-.20	-.06	.34	-.05	.06	
			(17.68)	.151	.621	< .001	.562	.469	
7	Total duration of the incident	70	775.10	-.35	.04	.10	-.06	-.11	-.51
			(1856.60)	.107	.769	.401	.615	.366	.009

Note. *p*-values under the respective intercorrelations.

Table 2

Logistic Regression of the Hostage Situation Outcome on Authority Concessions (Model 1), Controlling for Year (Model 2)

	Model 1 (n = 71)		Model 2 (n = 71)	
Variable	b	e^b	b	e^b
Constant	0.66		-22.30	
	(0.36)		(39.05)	
Authority concessions	0.02*	1.024	0.03*	1.025
	(0.01)	[1.006; 1.043]	(0.01)	[1.006; 1.044]
Year			0.01	1.012
			(0.02)	[0.974; 1.051]

Note. * $p < .05$. Standard errors in parentheses. 95% confidence intervals of odds ratios in brackets. Model 1: Cox and Snell R^2 = .127, Nagelkerke's R^2 = .202. Model 2: Cox and Snell R^2 = .132, Nagelkerke's R^2 = .209.

Table 3

Negative Binomial Regression of Fatalities on Authority Concessions (Model 1), Controlling for the Number of Perpetrators and Number of Hostages (Model 2)

	Model 1 (n = 121)		Model 2 (n = 47)	
Variable	b	e^b	b	e^b
Constant	-0.34	0.714	-1.12	0.327
	(0.24)	[0.447; 1.140]	(0.75)	[0.075; 1.417]
Authority concessions	-0.01*	0.990	-0.04	0.964
	(0.01)	[0.981; 0.999]	0.02	[0.923; 1.006]
Number of perpetrators			0.10	1.100
			(0.08)	[0.950; 1.274]
Number of hostages			0.00	1.001
			(0.00)	[0.997; 1.006]

Note. * $p < .05$. Standard errors in parentheses. 95% confidence intervals in brackets. Dispersion coefficients and their 95% confidence intervals indicated that negative binomial regression was better suited to account for overdispersion in the count data than Poisson regression.

Table 4

Logistic Regression of Fatalities (Dichotomized) on Authority Concessions (Sensitivity Analysis)

Variable	*b*	SE	Wald-$\chi^2(1)$	*p*	e^b	e^b 95% CI
Constant	-0.64	0.24	7.13	.008		
Authority concessions	-0.01	0.01	5.44	.020	0.987	[0.977; 0.998]

Note. n = 121. Cox and Snell R^2 = .051, Nagelkerke's R^2 = .074

Fatalities

When we added the number of hostages and the number of perpetrators as control variables to the negative binomial regression of fatalities on authority concessions, the number of resulting cases dropped from n = 121 to n = 47 due to missing values on the included control variables, which results in reduced statistical power. In this model, neither authority concessions nor any of the included control variables had a significant influence on the number of fatalities (see Table 3, Model 2). As already mentioned, this result may well be due to the low power for this analysis: At least descriptively, the coefficient for authority concessions became even *larger* without being significant when including the control variables. Nevertheless, this finding does not support Hypothesis 2.

Discussion

We analyzed data from the GTD (START, 2019b) to illuminate the stability and generalizability of the concession effect (Mertes et al., 2020). In accordance with our hypothesis, we found that authority concessions were negatively linked to the likelihood that the terrorists killed the hostages (rather than releasing them). A one percent increase in demand fulfillment lead to a 2.4 percent higher likelihood of safe hostage-release. Importantly, this finding was robust and observed even when we controlled for the year in which the hostage-taking took place. We further found that authority concessions were negatively linked to the number of fatalities, such that a one percent increase in demand fulfillment reduced likelihood of fatalities by one percent. This finding was confirmed in a sensitivity analysis testing the effect of authority concessions on the likelihood of having any fatalities (vs. no fatalities), yet it was not found when controlling for the number of hostages and number of perpetrators. The latter analysis is, however, compromised by low statistical power resulting from missing data.

Theoretical Implications

Given that this study is a replication and extension of Mertes et al.'s (2020) original study, we discuss the theoretical implications of our work in two steps. First, we use a comparative lens and discuss theoretical implications that arise from replicating and extending Mertes et al.'s (2020) study. Second, we discuss implications based on our extension of the SET as the theoretical framework guiding this research.

Using a different dataset, our results were in line with Mertes et al.'s (2020) findings showing that authority concessions to terrorist hostage-takers lead to fewer fatalities in hostage-taking situations. However, our study advances the knowledge beyond the results by Mertes et al. (2020), because in our study, authority concessions were operationalized as the degree of demand fulfillment as a percentage, based on exact reported amounts of ransom money demanded by terrorists and paid by authorities. Although our data were restricted to ransoms and could not consider other demands (e.g., release of prisoners, publicity),

as these demands are not included in the GTD, this operationalization allowed for a more fine-grained analysis of the concession effect than could be obtained with the operationalization as used by Mertes et al. (2020). In their study, authority concessions were recorded in broader categories (i.e., terrorists received either nothing, something, or everything they demanded). We found that a one percent increase in demand fulfillment reduced likelihood of fatalities by one percent.

This effect size is smaller than the effect size found by Mertes et al. (2020), who reported that in hostage-takings where all terrorist demands were fulfilled the incident rate for casualties was only two percent of the incident rate for casualties in hostage-takings where no demands are fulfilled. When some demands were fulfilled, the incident rate was 29.21 times higher than when all demands are fulfilled. It is likely that Mertes et al.'s (2020) found stronger effects because the ITERATE data they analyzed includes different types of demands, whereas the GTD data we analyzed only includes ransom demands. Although our data did not allow for a meaningful statistical analysis of some control variables (i.e., the number of perpetrators and the number of hostages), the finding that authority concessions lead to fewer casualties was confirmed in a sensitivity analysis in which all cases with at least one casualty were treated as equivalent. This lends support to our hypothesis stating that authority concessions lead to fewer fatalities and the concession effect.

We further advanced the knowledge by testing the effect of authority concessions on the likelihood of a completed exchange with the hostage-takers, which is arguably the most informative criterion variable in this context. Mertes et al. (2020) used the number of casualties (in total and among those who they presumed to be hostages) as the criterion variable to investigate the short-term effects of authority concessions. Yet, as we explained above, casualty counts only allow for ambiguous interpretations of their findings because the circumstances of the recorded deaths are unclear. In other words, it is not known if those reported dead were actually hostages and if they were executed after failed negotiations between authorities and hostage-takers. Thus, other casualties (e.g., bystanders killed during the attack on the hostages or fighters on either side who died during potential shootouts) might have biased the results. By testing the effect of authority concessions on the hostage situation outcome, however, we addressed this ambiguity and provided first unambiguous evidence for the concession effect. We found a medium-to-large sized effect showing that a higher degree of demand fulfillment led to a higher likelihood that the perpetrators released (vs. killed) the hostages, which remained robust when we controlled for the year in which the incident took place. This finding supports the concession effect and provides the needed unambiguous evidence for a key proposition within our theoretical rationale as derived from SET: That terrorist hostage-takers complete the hostage exchange once they have received authority concessions (Emerson, 1976; Homans, 1974).

Furthermore, our research addressed two important limitations of the extant knowledge on the concession effect: Mertes et al. (2020) analyzed only international incidents because internationality was an inclusion criterion for terrorist acts to be recorded in the database they used (ITERATE; Mickolus et al., 2006). However, international events appear to constitute only a small fraction of the entirety of terrorist hostage-takings, as domestic terrorist events are estimated to greatly outnumber international cases (Enders & Sandler, 2011). Further, Mertes et al. (2020) only analyzed data on terrorist hostage-takings that occurred between 1983 and 2005. However, terrorism not only remained a major societal issue, but it has also undergone significant changes. For example, the violence of terrorist attacks as measured by casualties have consistently changed (Masters, 2008; START, 2019b), and many nations have officially adopted the no-concessions policy since 2005 (e.g., Borger et al., 2014; UN General Assembly Resolution 2133, 2014). In light of the significant consequences that both the decision to concede and the decision not to concede to terrorist hostage-takers can have, authority decision-making should ideally be informed by research based on up-to-date and most relevant and informative data (i.e., the most recent data on domestic events when making a decision regarding such an event). Therefore, we investigated domestic terrorist hostage-takings from a time

period (i.e., 1970–2018) that is more than twice as long as in the initial study (Mertes et al., 2020). Our findings are the first to suggest that time and internationality can be ruled out as boundary conditions of the concession effect: The concession effect is a time-consistent phenomenon that generalizes to domestic events.

Using SET to explain the outcomes of terrorist hostage-takings requires a definition and specification of the hostage-taking situation within the terminology of SET. The specifications we made extend SET by adding to Foa's (1971) taxonomy of exchangeable resources. This taxonomy accounts for most of the resources, both symbolic and concrete, that are typically transferred from one party to another in hostage exchanges (e.g., money, goods). The hostages and human life in general, however, are not part of in Foa's (1971) taxonomy. The hostages play a key role in exchanges between terrorists and authorities: They constitute the terrorists' only contribution to the exchange and differ from any other resource with regard to their degrees of particularism and concreteness (Foa, 1971). Hostages are highly valuable to the authorities, but their worth to the terrorists depends on what authorities are willing to concede for their safe release. Our findings show that SET can be used to explain exchanges of resources not originally defined in the theoretical framework. This underscores the adaptability of SET for an application in the extreme situation of terrorist hostage takings.

Both studies on the concessions effect, ours and Mertes et al.'s (2020), also speak to literature outside of SET. As Mertes et al. (2020) noted, the concession effect adds to the literature on terrorist rationality by showing that terrorists act in accordance with the rationality proposition in SET (Emerson, 1976; Homans, 1974): They maximize their long-term value by releasing the hostages once concessions are received. In the past, terrorist rationality has been called into question based on the false assumptions that terrorists are generally afflicted by psychological disorders and thus unable to behave rationally (e.g., Silke, 1998). Although neither ours nor Mertes et al.'s (2020) study speak directly to terrorist mental health, the shared findings add to a stream of literature suggesting rational decision making among terrorists (e.g., Corner & Gill, 2015; Gill et al., 2014).

Our findings further support the broader idea that parties involved in violent encounters play by certain rules (i.e., reciprocity; Gouldner, 1960) despite the fact that even engaging in these encounters violates a variety of other rules, norms, or laws.[3] Taking hostages and extorting others for ransom is universally outlawed and, of course, morally unacceptable. Authorities involved in terrorist hostage-takings are often the declared enemies of the terrorists holding the hostages and the hostage-takings themselves are often only small operations in ongoing campaigns against authorities (see also Schmid, 2011). Betraying authorities and killing hostages after receiving ransoms might even yield short-term or long-term benefits in the form of publicity for intimidation or an increase in status with the terrorists' followers. Yet, both studies investigating the concession effect (i.e., Mertes et al., 2020, and our study) find that terrorists adhere to their commitments and release the hostages upon receiving concessions. There are other examples demonstrating that there is frequently "order" or rules in otherwise highly violent encounters that violate many norms: Soccer hooligans often abide by an honor code, prescribing how fights are to be initiated (i.e., what constitutes a proper challenge) and which weapons are permitted in brawls (Leeson et al., 2012). Similarly, the principle of medical neutrality, which states that parties should not interfere with medical services in violent conflicts (Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 1949), is often upheld even though attacks on enemy medical facilities could yield tactical advantages in warfare. Our findings suggest that certain social norms, such as the norm of reciprocity (Gouldner, 1960), which states that people should repay others for what they have received,

[3] We thank an anonymous reviewer for encouraging us to think in this direction.

might govern people's behavior even in extreme situations that are characterized by strong transgressions of other norms. Further investigations into this phenomenon could increase our understanding of the dynamics in violent encounters.

Practical Implications

Whether or not authorities should concede to terrorist hostage-takers' demands is a sensitive and difficult decision. Although conceding to terrorists can have positive short-term effects, as we showed here (see also Mertes et al., 2020), doing so can prove harmful in the long run (e.g., Borger et al., 2014; Brandt et al., 2016; Callimachi, 2014). Therefore, authorities facing terrorist demands have to assess the benefits *and* costs that are associated with the decision to make concessions. Terrorist hostage-takings may meaningfully differ on a multitude of dimensions that should be considered when making such a decision (Gaibulloev & Sandler, 2009): Has the terrorist group been involved in other hostage-takings, and are they known for adhering to their commitments? Are other options available (e.g., attempting a rescue)? Given this variety of factors, it is not sensible to postulate universal action recommendations for authorities and policy makers based on our findings.

Thus, we focus on providing only tentative practical implications that should be viewed in concert with additional considerations (see above) and that may or may not be usable for authorities that need to make a decision in a hostage-taking situation with potentially unique characteristics. Our study provided vital evidence for the generalizability and replicability of the concession effect (Mertes et al., 2020). However, typically, the decision whether or not to concede to terrorist demands is understood as a moral dilemma under uncertainty. Bapat (2006) argued that authorities often hesitate to negotiate or concede because they do not trust terrorists to keep their promises. Our study speaks to this uncertainty as it showed that authority concessions to terrorist hostage-takers led to more completed hostage exchanges. Thus, authorities facing terrorist demands may consider conceding a viable strategy to save lives, especially in situations in which other options, such as rescue attempts, are not available or in which the costs for conceding are manageable (e.g., when the terrorists' demands are low). Our work further suggests that the concession effect generalizes to recent and domestic cases of terrorist hostage-takings. Consequently, authorities may consider concessions to be viable in these situations, which were not investigated in the original study by Mertes et al. (2020).

We also want to stress the role of status as a resource that is always part of hostage exchanges, even if it is not specifically demanded by the terrorists (e.g., in the form of political recognition). It has been argued that accepting terrorists as negotiation partners ascribes legitimacy to the terrorists and their means (e.g., Bapat, 2006; Toros, 2008). However, ascribed legitimacy as an outcome of terrorist hostage-takings is difficult to measure, and the immediate (and tangible negative) consequences of ascribing legitimacy to terrorists are unclear. Terrorist hostage-takers may also receive status as a result of publicity from mere media coverage (see also Wilson, 2019). This may help them to intimidate the public, undermine public support of the authorities (e.g., Knowlton, 2014), and find new recruits and supporters. Nevertheless, authorities may be well-advised to be aware of the omnipresence of status approval as a risk in hostage situations and should take measures to reduce this risk accordingly, for instance by negotiating or conceding in secret (e.g., Callimachi, 2014; Faure & Zartman, 2010).

Limitations

Our study has two limitations that result from the database we used. First, due to the sources from which databases on terrorist events draw, missing data is a common issue. This affected our study in different ways. Just like Mertes et al. (2020), we had to drop our preregistered hypothesis regarding the effect

of authority concessions on property damages because there were too few cases in which data on property damages were recorded. This is likely due to the fact that property damages are rarely a priority in the news coverage that terrorist hostage-takings receive. Second, although 403 cases matched our inclusion criteria (see the Sample section above), case numbers dropped considerably within the analyses. Missing data on the control variables specifically prevented us from conducting a more robust and informative sensitivity analysis for Hypothesis 2 when controlling for the number of perpetrators and the number of hostages.

A second limitation concerns the data structure of the GTD, in particular, how terrorist demands and authority concessions are recorded. In the GTD, information on terrorist demands and authority concessions is restricted to ransoms. Thus, the database does not incorporate data on other important demands that occur frequently in terrorist hostage-takings, such as the release of (specified or unspecified) prisoners, publicity, or means of travel for safe passage (Wilson, 2000; 2003). As a result, data in the GTD provides incomplete accounts of the exchange situations that happened and does not allow for tests of SET beyond the exchanges of ransom money for hostages.

However, we argue that this is not particularly problematic for our interpretation of the concession effect because the ITERATE database, which Mertes et al. (2020) used in their original study, included other demands than those for ransoms, and these authors found converging results, such that a higher degree of demand fulfillment led to fewer casualties among the hostages and in general. Thus, our study and the original work by Mertes et al. (2020) complement each other in this regard. Furthermore, as we discussed above, the higher level of detail in the GTD data (i.e., the exact amounts of ransoms demanded by the terrorists and paid by the authorities) allowed us to analyze how additional percentages of demand fulfillment affect the likelihood of successful hostage exchanges and fatalities, which expands our knowledge of the concession effect.

Future Research

Although the value of the databases available to terrorism researchers and the insights they can provide cannot be overstated, the limitations we discussed reveal that available data on terrorist events are not perfect. With regard to future investigations into the concession effect and how SET can help to understand terrorist hostage situations, different improvements are desirable. First, in order to fully understand how different resources may affect the success of an exchange in terrorist hostage situations, more detailed data on terrorist demands (i.e., what was demanded?) and authority concessions (i.e., what was conceded?) are needed. This information would enable investigations into potential determinants of successful hostage exchanges. For example, Wilson (2000) found that certain combinations of demands occurred more frequently than others and suggested that such insights might be used to predict the outcomes of hostage events. Second, more detailed accounts of the course of events during hostage situations would be valuable because such information would allow the field to gain a deeper understanding of the dynamics in hostage negotiation processes and interpret findings more clearly. As we explained above, casualty/fatality counts may bias interpretations because fatalities might be unrelated to the hostage negotiation outcome. Recorded accounts detailing, for example, when and how hostages died or escaped, or when certain concessions were made, would reduce such ambiguities.

Another important avenue for future research lies within further investigations into the antecedents of completed hostage exchanges. A factor that should be investigated as an antecedent of completed hostage exchanges is the terrorist groups' reputation (e.g., Akcinaroglu & Tokdemir, 2018). Some groups, like the Abu Sayyaf militants mentioned in the opening paragraph, have turned kidnapping for ransoms into a profitable business model (e.g., Whaley, 2016). They might have been able to do so because of the consistency in their exchange behavior. Such consistency is important for terrorists because once they have shown erratic exchange behavior (e.g., by killing hostages after ransom was paid), they become

untrustworthy as negotiators and authorities should become less likely to engage in future exchanges. However, if authorities are more likely to negotiate with terrorists who have shown consistent and reliable exchange behavior in the past, it would be important to test whether the outcomes of earlier exchanges with a terrorist group have predictive value for the outcomes of later exchanges with that group. This research could help prevent authorities from making high-stakes decisions based on misinformed assumptions.

Discussing status as an omnipresent resource in hostage exchanges raises the question about popular support for terrorist groups as another potential predictor and outcome of terrorist exchange behavior (e.g., Bhattacharya, 2017). Supporters often provide terrorists with money, goods, and shelter, but they can also show support by tolerating the groups' activities or displaying passive consent (Paul, 2009). Support towards terrorist groups might affect the exchange behavior of terrorist hostage-takers in important ways. Highly supported groups might not engage in hostage-takings as often as groups experiencing less support because they are less dependent on the resources that a hostage exchange might grant them. In turn, this could mean that such groups are less dependent on coming to an agreement with the authorities, leading them to engage in more assertive negotiation strategies that might jeopardize an agreement and the hostages' lives. However, it is also conceivable that highly supported terrorist groups are more likely to release hostages after receiving concessions because their supporters might not agree with the violence of irrational exchange behavior. Terrorists not implementing agreements might lose their support, just as governments might lose popular support for conceding to terrorists (see also Brandt et al., 2016; Mertes et al., 2020). Thus, the degree of support a terrorist group receives might affect—and be affected by—that group's exchange behavior. Investigating popular support towards terrorist groups could thus provide valuable insights into a potential antecedent and consequence of hostage exchanges.

A third interesting avenue for future research would be to investigate the influence of cultural aspects, such as individualism/collectivism (Triandis, 2018) or cultural tightness/looseness, on terrorist exchange behavior. Relative to loose cultures, tighter cultures are, for instance, characterized by stronger norms and lower tolerance for violations of these norms (Gelfand et al., 2011). Social exchanges depend on adherence to certain norms, such as the norm of reciprocity (Gouldner, 1960). Thus, perpetrators from tighter cultures (vs. looser cultures) might be more inclined to adhere to their commitments in hostage negotiations.

Conclusion

Our study extends social exchange theory and broadens the knowledge about the concession effect. Addressing important limitations of past research, we showed that authority concessions can lead to more completed hostage exchanges and fewer fatalities in domestic terrorist hostage-takings, although the results on the latter variable were not fully consistent across our analyses. These findings provide evidence that authorities confronted with terrorist demands can use to make informed decisions that could save hostages' lives.

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