

# Supply chain relationships and psychological distance: an experimental investigation

Cross Cultural &  
Strategic  
Management

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Received 30 August 2023  
Revised 19 August 2024  
25 September 2025  
Accepted 19 February 2026

## Abstract

**Purpose** – An inherent aspect of global supply chains is that psychological distances exist between supply chain partners. Drawing on construal-level theory, we examine the effect of spatial and social distances between supply chain partners to understand how psychological distances impact sequential supply chain pricing and profit distributions.

**Design/methodology/approach** – We hypothesise that closer psychological distances will increase fairness concerns, leading to lower prices and higher supply chain efficiency by overcoming double marginalisation issues. We test our hypotheses by conducting two online experiments with American and Indian participants.

**Findings** – Study 1 finds that a closer psychological distance (i.e. same-country pairs) leads to lower pricing and higher efficiency. However, the lower pricing is driven entirely by the first mover (e.g. the supplier) pricing more fairly, which results in a higher profit for the second mover (e.g. the retailer) and a higher channel profit. Study 2a analyses the two dimensions of psychological distance separately. Although we find that a closer distance leads to lower pricing and higher profits, the dimensions of psychological distance driving these effects differ between participants, with Indian [American] pricing decisions being more impacted by spatial [social] distances.

**Originality/value** – Our findings provide insights into how psychological distances that naturally exist in supply chains can substantially impact pricing decisions and profit distributions. Moreover, we present a novel cultural-dependent insight that the impacts of a partner's distance manifest through different dimensions of psychological distances.

**Keywords** Supply chain management, Psychological distance, Construal-level theory, Behavioural operations management, Behavioural science

**Paper type** Research article

## 1. Introduction

Supply chain pricing models typically conceptualise humans as rational and self-interested, with the ability to optimise decisions objectively. However, deviations from hyper-rational behaviour occur, in part, because of social preferences and emotions (Croson *et al.*, 2013). A supply chain partner's concerns for fairness imply that inequity in economic transactions can be the norm rather than the exception (Cui *et al.*, 2007), with 50–50 profit splits customarily being regarded as fair (Bolton and Chen, 2019). However, in practice, individuals often reach compromises deviating from equal shares to cope with tensions between fairness and self-interest (Bolton and Chen, 2019). Overall, behavioural deviations interest behaviour researchers, as understanding cognitive influences and behavioural elements can benefit economic relationships (Croson *et al.*, 2013; Schorsch *et al.*, 2017).

A primary challenge facing relationships between suppliers and their retail partners is that decentralised decision-making often leads to poor economic outcomes (Pavlov *et al.*, 2022). For example, a wholesale price contract between suppliers and retailers can lead to successive

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**Funding:** This work was supported by a UNSW BizLab grant and by the UNSW UNOVA Knowledge Hub.



Cross Cultural & Strategic Management  
Emerald Publishing Limited  
e-ISSN: 2059-5808  
p-ISSN: 2059-5794  
DOI 10.1108/CCSM-08-2023-0173

price mark-ups along the sale channel (i.e. double marginalisation), decreasing sales. Although social preferences, like fairness concerns, can mitigate the double marginalisation problem in a channel, conflicting fairness standards can lead to frictions in channel interactions (Cui *et al.*, 2007). These frictions may arise because decision-makers are often motivated by both profit and fairness considerations (Cui and Mallucci, 2016). It follows that studying the factors that affect fair pricing could be useful for understanding pricing strategies in the supply chain.

Social preferences affect fairness perceptions in supply chains. Loch and Wu (2008) provided experimental evidence on how social preferences can affect fairness concerns, ultimately impacting the joint profits of suppliers and retailers in a contracting game. The game involved two supply partners, sequentially setting prices, for a product with a linear demand function that decreased the product's total price (i.e. the sum of the player's pricing decision). Player A has a first-mover advantage, similar to a supplier setting a wholesale price, while Player B sets their price second, similar to a retailer in a standard two-tier dyadic supply chain setting. Theoretically, Player A can exploit its first-mover advantage, resulting in a double-marginalisation scenario. Alternatively, Player A could price more fairly, maximising joint profits. Despite the inefficiencies inherent in supply chains, Loch and Wu (2008) found that creating a social relationship between supply chain partners led to deviations from normative behaviour in a series of experiments. When partners established a relationship by being introduced to each other and shaking hands before participating in the game, they chose lower prices overall, leading to higher profits relative to a control treatment and a treatment that promoted competition. Loch and Wu (2008) concluded that social preferences can affect supply chain relationships. Physical and visual contact are not the only cues that could trigger social preferences. Accordingly, this work aims to ascertain whether being located in a different country and having a different nationality can impact supply chain fair pricing behaviour.

Sales and distribution of goods heavily rely on successful collaboration and coordination between national and international partners to efficiently manage the process of fulfilling demand. Contracts are commonly negotiated between companies that operate in multiple countries, giving way to interactions among a wide array of nationalities. As social concerns, like fairness, influence decisions, we investigate whether collaborating with national or international partners creates behavioural deviations from normative behaviour by experimentally exploring if interacting with national vs international partners impacts supply chain pricing decisions. Given globalisation and the importance of supply chain relationships, understanding differences between same-national and cross-national interactions is essential for effectively managing businesses that operate internationally (Gupta and Gupta, 2019; Ribbink and Grimm, 2014). Furthermore, there is a limited understanding of the negotiations, communications and interactions of individuals and organisations across borders and cultures (Liu *et al.*, 2018). Given that collaborations in international contexts bring forward perceptions of physical distances and social differences, exploring whether these perceptions influence the fairness of pricing can provide insights into differences between national and international supply chains.

Profits can see a substantial increase from trusting behaviour between supply chain partners (Choi *et al.*, 2020), but perceptions about trust and trustworthiness can be influenced by collaborating with international partners. For example, Özer *et al.* (2014) found that Chinese participants had lower levels of trust and trustworthiness than US participants in an inventory game where there were no assurances of maintaining a long-term interaction. Furthermore, Jukka *et al.* (2017) found that Chinese managers base trustworthiness on relationship-specific qualities like communication and benevolence, while Finnish managers lean towards organisational attributes like integrity and promise-keeping. Similarly, international contrasts in a supply chain context can affect trust levels during negotiations, leading to lower joint profits in a bargaining scenario (Ribbink and Grimm, 2014). In general, trusting behaviour can differ across nations (Hofstede *et al.*, 2010), and fairness towards other individuals can also

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depend on whether they are seen as in-group members (Boeckmann and Tyler, 1997). Furthermore, trusting behaviour is also contingent on the structures (e.g. businesses) in which the individual is embedded (Choi *et al.*, 2020).

This research adds to the literature on fairness and trust in international and multicultural supply chain partnerships by exploring how psychological distances influence procurement decisions, focusing on the context of international collaboration and wholesale pricing contracts. We consider the impact of nationality and location of both upstream and downstream supply chain actors on the fairness of contract pricing. Interestingly, this research complements earlier seminal studies, such as Özer *et al.* (2014) and Loch and Wu (2008). Özer *et al.* (2014) investigated the role of international collaboration in shaping trust and trustworthiness between procurement agents, manipulating whether supply chain partners were of the same or different nationality. While Özer *et al.* (2014) examined how downstream players may manipulate demand forecasts based on partners' nationality to secure supply, they assumed exogenously specified wholesale and retail prices. Many of their findings regarding trust between supply chain players are conditional on the partners' relative profit margins. Our research takes a step back by analysing how different countries (which incorporates a social and spatial psychological distance) affect how supply chain partners determine the wholesale and retail prices. Thus, following Loch and Wu (2008), we endogenise these decisions, and, by considering supply chain partners' nationalities, we build on Loch and Wu (2008) to examine how near and far psychological distances impact fair pricing behaviours in supply chain contracts. While Loch and Wu (2008) investigated the role of social cues in wholesale price setting, they did not consider the impact of nationality and location, leaving an unexplored area that our research aims to address, thereby filling a significant gap in the literature on fairness in international supply chain collaborations.

Unlike Cui *et al.* (2020), who explore how anchoring bias and supplier characteristics drive pricing and discrimination in global sourcing, particularly through race and social information, our study specifically addresses how psychological distances (related to nationality and location) impact fairness in pricing decisions, an aspect not deeply explored in Cui's work. Similarly, while Eroglu *et al.* (2023) examine longitudinal data to understand the influence of national culture on inventory decisions under demand unpredictability, this study does not examine how psychological distances affect fairness in contract pricing within supply chains, particularly in international partnerships. Our research offers a unique perspective by investigating how proximity, shaped by cultural and geographical factors, influences fairness and pricing strategies in global supply chains.

Our work provides a psychological explanation for the observed variations in fairness in pricing, influenced by social and physical distances. The understanding we provide may help firms better manage these international processes. Additionally, our experiments contribute to the growing literature on the effects of social cues on procurement decisions by specifically examining the impact of psychological distances on supplier preferences. These psychological distances operate independently of other contextual factors, offering a distinct perspective on fair pricing dynamics in procurement. For example, our approach differs from recent studies that have focused on cultural preconceptions (Jukka *et al.*, 2017; Özer *et al.*, 2014), the influence of attractiveness and trustworthiness on pricing decisions (Starostyuk *et al.*, 2023, 2024) or supply price discrimination based on buyers' racial characteristics (Cui *et al.*, 2020).

Drawing on construal-level theory (CLT) of psychological distances, we explore the effects of national and international business collaborations to understand the psychological mechanism through which differences affect an individual's preferences, relating to self and joint profits. Working with local or international supply chain partners can create different perceptions of psychological distance, which refers to "the subjective experience that something is close or far away from the self, here and now" (Trope and Liberman, 2010, p. 1), and includes temporal distances (e.g. 1 day vs 1 month), spatial distances (e.g. 1 mile vs 1,200 miles away), social distances (e.g. friend vs stranger) and hypothetical distances (e.g. high vs

low likelihood). CLT research consistently shows that far [close] psychological distances raise [lower] the mental construal of an individual's preferences (Trope and Liberman, 2010).

Psychology and management research using CLT demonstrates that spatial and social distances can substantially affect decision-making (Danziger *et al.*, 2012; Genschow *et al.*, 2019; Kirshner and Moritz, 2023; Liberman and Trope, 2009; Trope and Liberman, 2010; Wiesenfeld *et al.*, 2017). Researchers have investigated how psychological distances impact views on the fair treatment of individuals in an international setting (Mentovich *et al.*, 2016). For example, increasing social distance can lead to lower (unfairer) offers in the dictator game (Bolton and Chen, 2019). Accordingly, this study will examine whether decision-makers interacting with international [national] suppliers may be influenced by spatial (i.e. geographic) and social (i.e. different nations) dimensions of psychological distance. We hypothesise that close psychological distances will lead to fairer (lower) pricing decisions by supply chain partners and that the higher demand instigated by the lower, fairer prices will lead to higher joint profits.

To test these hypotheses, we designed two studies using a game similar to the experiments by Loch and Wu (2008), where participants were paired and allocated roles equivalent to a supplier or a retailer. Different from Loch and Wu's studies, this experimental setting was a one-shot game, and the participants were from two psychologically distant nations: India and America. These two countries are socially distant, since they differ strongly in terms of cultural dimensions, like collectivism-individualism and power distance (Hofstede, 1983), which reflect differences in social organisation and patterns of interaction. The countries are also spatially different, being on opposite sides of the globe. Thus, the psychological distance was manipulated between participants, with nationality as Indian or American (social psychological distance) and location as situated in India or the USA (spatial psychological distance).

In our experiments, participants sequentially set a product's price. Following Loch and Wu (2008), the product's total price determines the demand and the joint profit. In Study 1, participants were allocated to either the first mover (e.g. the supplier) or the second mover (e.g. the retailer). Participants were recruited from India and the USA, creating supply chains that featured close psychological distances (i.e. same-country pairings) or far psychological distances (different-country pairings). Thus, there were four potential supplier-retailer arrangements, close pairings in India and the USA, as well as distant pairings, where the first mover was in India or the USA and the second mover was in the USA or India, respectively. We found that the first mover priced higher when paired with a partner from a far psychological distance compared to a close social distance. Also, the second mover did not respond differently across the distance treatments. Instead, the second mover took advantage of the first mover's low pricing, obtaining a higher individual profit while also creating a higher joint profit. Thus, the results support the expectation of lower pricing at a close distance. However, this only holds for the first mover (e.g. the supplier) and the total price, but not for the second mover (e.g. the retailer). Similarly, support is found for the second hypothesis of higher profits at a close distance, but only for the second mover and the supply chain in total.

Study 1 tests the differences between close and far psychological distances, testing spatial and social distance together. However, it is unclear whether the results are driven primarily by spatial distance (i.e. the distance between India and the USA) or by social distance (i.e. cultural differences between Indians and Americans). Thus, we examined the impacts of social and spatial distances individually in Study 2. Participants from India and the USA were enlisted to play as the first mover against a computerised partner framed as being socially close (same nationality) or socially far (different nationality) and close or far spatially (same country or different country). For example, for an Indian [American] participant, the socially close but spatially far treatment was an Indian [American] partner located in the USA [India]. Consistent with Study 1, we found that a far psychological distance led to higher prices. Interestingly, the results indicated that Indian participants were inclined to price higher at a far spatial distance but were indifferent to changes in social distance. Conversely, American participants priced

higher at a large social distance but did price differently in response to changes in social distance. Overall, our research deepens the understanding of the impact of international collaborations on joint profits in supply chain relationships.

This paper is organised as follows: [Section 2](#) reviews the relevant literature on fairness in supply chains and introduces the theoretical framework of CLT and psychological distance in the context of supply chains, leading to our hypotheses. [Section 3](#) presents the design, methods and results of our first study, which examines the role of psychological distances in global and local supply chains using participants from India and the USA. [Section 4](#) outlines the design, methods and results of our second study, which differentiates the effects of spatial and social psychological distances across both nationalities and locations. [Section 5](#) concludes by discussing the implications of our findings for supply chain management and international business collaborations, detailing our contributions to the literature and suggesting directions for future research.

## 2. Related literature and hypothesis development

### 2.1 Behavioural supply chain pricing and fairness

There are several studies examining fairness in supply chain relationships. Pavlov, Katok and their co-authors have explored supply chain fairness in different contexts. [Pavlov and Katok \(2011\)](#) have shown that when suppliers have information on what retailers consider to be fair, the suppliers make contract offers that are less likely to be rejected by the retailers for being unfair, which promotes the capacity to achieve higher profits. [Katok and Pavlov \(2013\)](#) found that a strong explanatory factor of suboptimal profit efficiency is the supplier's lack of knowledge regarding the retailer's fairness considerations. [Katok et al. \(2014\)](#) found that mild fairness concerns can enable coordination and that complete information on fairness concerns somewhat lowers channel efficiency. [Haruvy et al. \(2020\)](#) extended the bargaining process when retailers decided whether to accept a contract beyond ultimatum offers that would allow the supplier to make concessions. Similar to the present research, the improved channel efficiency primarily benefits the retailer. Regarding profits, [Pavlov et al. \(2022\)](#) incorporated information about fairness preferences into a retailer-supplier contract, suggesting that an optimal split between supplier and retailer can enhance supply chain performance.

Beyond Pavlov and Katok, researchers have explored other aspects of how fairness contributes to maximising performance in supplier-retailer relationships. [Wu \(2013\)](#) performed a study regarding several types of contracts and found that repeated interactions reinforced social preferences for fairness, leading to a higher channel performance, which constituted deviations from normative one-shot models. Contrastingly, our work shows that even in a one-shot game, social preferences can be increased by choosing a closer psychological distance between partners. While revenue sharing and buyback mechanisms can provide greater efficiency than wholesale price contracts (e.g. [Loch and Wu, 2008](#)), [Cui and Mallucci \(2016\)](#) conclude that a simple wholesale price set by the supplier, instead of an elaborate contract, can help coordinate the supply chain interactions and maximise efficiency in dyadic partnerships.

[Qin et al. \(2016\)](#) considered the influence of private information regarding cost. They found that private information on costs weakens fairness considerations, suggesting that disclosing costs can improve efficiency. More recently, [Spiliotopoulou and Conte \(2021\)](#) determined that a retailer's ideals of fairness can change according to a shortage or surplus of inventory and an allocation of supply is considered fair in relation to the realised demand. Furthermore, they determined that whether the supply was allocated by a rule or by a decision-maker did not affect the perception of fairness.

Regarding social and behavioural cues in supply chain pricing and contractual relationships, [Starostyuk et al. \(2024\)](#) expanded on the role of fairness by examining how visual cues, specifically facial appearance, influenced pricing and contract terms in supply chain settings. Conducting experiments in a newsvendor setting, their study showed that suppliers tended to offer lower wholesale prices to attractive faces, and women were generally

offered better terms than men. This suggested that fairness in supply chain relationships could be affected not only by structural factors like contract types or information asymmetry but also by the psychological and social cues present during interactions.

In a related study, [Starostyuk et al. \(2023\)](#) examined how facial traits during virtual interactions affected trust and pricing decisions in supply chain contracting. Using laboratory experiments, the study found that visual cues, such as attractiveness and trustworthiness, significantly influenced economic behaviour, with more attractive partners often receiving less favourable pricing. This research highlighted cognitive biases in remote business interactions, revealing that these biases extend beyond face-to-face settings and influence decision-making in virtual environments. Similarly, [Cui et al. \(2020\)](#) explored how anchoring bias and supplier characteristics influenced pricing and discrimination in a global sourcing context, particularly through race and social information on platforms like <http://Alibaba.com>. They found that while market information could reduce price discrimination by providing a clear benchmark, social information influenced by race could either mitigate or exacerbate discriminatory pricing. For instance, White buyers were often quoted higher prices than Black and Asian buyers due to perceived willingness to pay.

Building on these insights, our research shifted the focus from visual cues to explore how spatial and social cues between supply chain partners impacted pricing strategies and profit distribution. [Cui et al. \(2020\)](#), [Starostyuk et al. \(2023, 2024\)](#) findings highlighted how cultural and social biases could manifest in pricing decisions across international supply chains, affirming the importance of considering both psychological and social cues, alongside traditional economic factors, in understanding fairness in supply chain pricing and contract negotiations. Moreover, the above studies on fairness concerns feature participants from the same country. Despite the number of studies researching fairness in supply chain relationships, the role of international collaboration on the fairness between supplier and retailer, as it pertains to its psychological causes, has yet to receive more attention. We contribute to the body of research on fairness in decision-making by studying how both spatial and social psychological distances can influence fair pricing behaviour.

The behavioural operations management literature that experimentally examined the effects of international collaboration on wholesale pricing, profits and demand is still limited. However, related empirical studies shed light on key aspects of this field. For instance, [Goudarzi et al. \(2021\)](#) investigated how culturally influenced risk attitudes and individualism impacted supply contracts, particularly in the context of demand and wholesale price uncertainty. Their study emphasised the importance of understanding behavioural factors like risk attitudes and cultural orientations when making contract decisions. Similarly, [Eroglu et al. \(2023\)](#) analysed longitudinal data to explore the influence of national culture on inventory decisions under demand unpredictability. This research highlighted how dimensions such as uncertainty avoidance and long-term orientation shaped managers' perceptions and decision-making processes, stressing the need to consider cultural factors in inventory management across different countries.

[Ribbink et al. \(2022\)](#) explored how loss aversion could cause suppliers to deviate from profit-maximising strategies when bidding for revenue-sharing contracts, stressing the importance of understanding behavioural and contextual factors in complex supply chain environments. Meanwhile, [Kosgoda et al. \(2024\)](#) examined how goal framing effects, as decision biases, influenced managers' adjustments to system-recommended order quantities in inventory management, highlighting the significant impact of cognitive biases on inventory decisions. Thus, we contribute to building the body of behavioural literature featuring national and international supply chain partners.

## 2.2 Construal-level theory and psychological distance

CLT, which states that the mental representation of objects, people and situations is represented on a continuum between high (i.e. abstract) and low-level (concrete) construals

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(Trope and Liberman, 2010), provides insights into individuals' preferences and choices in response to spatial or social distance cues, which impact organisational decisions (Wiesenfeld *et al.*, 2017). Moreover, CLT notes a bi-directional relationship between the construal levels and psychological distance, where increases [reductions] in psychological distance raise [lower] construal levels (Trope and Liberman, 2010).

A far [close] psychological distance increases attention to a situation's general [contextual] characteristics (Trope and Liberman, 2010). Given that contextual characteristics, like nationality, group affiliation or country of residence, can constitute parameters of similarity among individuals (Loewenstein and Small, 2007), a close psychological distance could make them salient in a social setting. Interpersonal similarity (i.e. social psychological distance) based on incidental circumstances also relates to levels of abstraction (i.e. mental construals). For example, the participants described individuals who had supposedly attended the same university courses (close social psychological distance) in more concrete (low construal) terms compared to those who did not attend the same courses (Liviatan *et al.*, 2008). Therefore, individuals tend to depict the actions of similar persons (close psychological distance) in more concrete terms (low-level construal) compared to depictions of dissimilar individuals. The relationship between psychological distance and similarity extends to nationality, as people who are depicted as having the same nationality or as belonging to the same group may elicit preferential treatment from their in-group (rather than their out-group) counterparts.

Construal levels and psychological distances influence the evaluation of information and decision-making, with several studies also suggesting that high construal levels and farther psychological distances can improve decision-making, leading to higher payoffs. For example, greater social distances can decrease risk aversion, which leads to higher profits. Li *et al.* (2021) found that people are more risk-averse when the decision is framed for oneself as opposed to deciding for another party when making a decision that involves a shared payoff. Similarly, Pick-Alony *et al.* (2014) found that a far psychological distance can promote the selection of value-maximising alternatives by inducing a global perspective that facilitates greater consideration of alternatives, leading to earnings maximisation. The finding that psychological distances can shift from a narrow to a broad perspective in a decision scenario is further supported by Kogut *et al.* (2017), who found that farther temporal distances led to considering ideological attributes and values (normative expectations, overarching rules), and a close distance led people to focus on pragmatic concerns (implementation minutiae, viability).

Within supply chain research, Cantor and Macdonald (2009) found that priming a higher-level construal promoted greater system thinking, which minimised costs in the Beer Game. Similarly, Kirshner and Moritz (2023) hypothesise that a far psychological distance could increase order quantities in the newsvendor game since farther distances increase risk affinity and regret ex-post errors of omission. They found that further psychological distances triggered by longer lead times and farther supplier locations led to higher inventory levels by decreasing risk aversion and increasing profits for high-profit margin products, where risk aversion hampers performance.

Recent studies have explored the impact of psychological distances on supply chain decisions using CLT. Balaguer-Mercado *et al.* (2024) found that temporal distance influenced preferences in dual sourcing, with decisions made further in advance favouring low-cost suppliers, while more immediate decisions leaned towards reliable suppliers. Similarly, Balaguer-Mercado *et al.* (2023) found that greater psychological distances, including spatial, social and temporal factors, led to a preference for low-cost suppliers, while closer distances encouraged choosing sustainable options, particularly during the COVID-19 crisis. Both studies show how psychological distances shaped supply chain decisions in complex scenarios.

Altruistic behaviour and generosity towards people are related to the perception of others as outsiders or as out-group members. People regarded as more proximal or in closer proximity elicit greater sympathy, which implies that generosity and altruism tend to decline with social

distance or anonymity (Loewenstein and Small, 2007). As a result, people care more about individuals in their in-group than those in the out-groups (Loewenstein and Small, 2007). For example, people view outsiders who share similar values as less deserving of procedural justice and protection (Boeckmann and Tyler, 1997). Psychological distances emphasise the salience of low-level, concrete characteristics such as nationality, group affiliation or place of residence that can define people as outsiders.

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### 2.3 Hypotheses development

In the context of supply chain relationships, partner interactions provide opportunities for unfair selfish gains or fairer joint gains. In their experiments, Loch and Wu (2008) introduced supply chain partners (e.g. a supplier and a retailer) to each other, establishing a relationship, which led to fairer pricing and a higher combined profit (best joint outcome). Introducing partners face-to-face creates a concrete representation of the interacting partner compared to the control group, where the participants never meet their counterparts, forcing participants to think of their counterparts in abstract terms. Thus, treatments where supply partners had concrete [abstract] representations were associated with lower [higher] pricing.

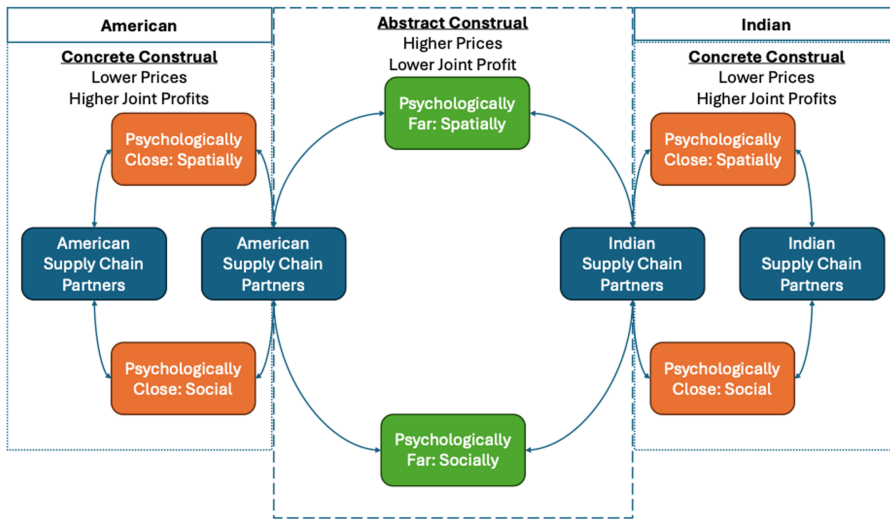
Combining the findings of Loch and Wu (2008) with the bi-directional relationship between close psychological distances and concrete representations, it follows that a close psychological distance may lead to fairer (i.e. lower) pricing. In contrast, an abstract representation of a supply chain partner is more likely to be associated with a farther distance, which should lead to more profit-maximising behaviour (i.e. higher pricing). Similar relationships have been reported in the literature by Kim *et al.* (2013), who found that farther social distances in the Ultimatum game led to fewer fairness concerns. This is also consistent with the reports in the literature where counterparts that are seen as in-group members tend to receive fairer treatment than out-group members (Boeckmann and Tyler, 1997; Loewenstein and Small, 2007). Thus, we posited that a close psychological distance increases the salience of identity and particular context-dependent features, such as nationality or place of residence. In addition, we posit that there is an association between psychological distance and fairness, whereby a supply chain partner that is closer [farther] psychologically, due to a close [far] social and spatial distance, will increase [reduce] the tendency towards fairer pricing. Consequently, we hypothesised:

*H1.* A close [far] psychological distance will lead to lower [higher] pricing.

Normative behaviour leads to higher pricing due to double marginalisation, implying that joint profits are typically higher when the partner sets lower prices. We also note that psychological distances can impact profit maximisation goals, by influencing how the profit maximisation goal is attained: either a zero-sum game logic (goal-relevant) or fair treatment (goal-irrelevant) of their supply chain partner. Evidence supports that psychological distances favour the salience of primary (goal-relevant) or secondary features (goal-irrelevant) of an objective (e.g. Liberman and Trope, 2009; Trope and Liberman, 2010). The theory states that as social (Liviatan *et al.*, 2008; Lu *et al.*, 2013) and spatial (Agrawal and Trope, 2006, as cited in Trope *et al.*, 2007) psychological distances are increased [reduced], the importance of primary [secondary] features becomes more salient. Thus, a close [far] psychological distance will favour the secondary [primary] features of the objective, and the fair/unfair treatment of a supply chain partner [achieving high profits]. Therefore, the second hypothesis is presented:

*H2.* A close [far] psychological distance will lead to higher [lower] joint profits.

We summarise the relationship between our theory and hypotheses in Figure 1. The figure illustrates that when the supply chain consists of an American and an Indian partnership, the psychological distance between them is far. We predict that this will lead to behaviours aligned with more abstract construals, resulting in higher prices and lower joint profit. When partners are both American or both Indian, the psychological distance between partners is much closer,



**Figure 1.** Relationship between distance, construals and supply chain partners. Source: Authors' own work

which we propose will result in behaviours aligned with more concrete construals, i.e. lower prices and higher joint profits. As we describe in detail below, Study 1 manipulates the overarching psychological distance through the partnership dyads. Study 2 focuses on the decisions of a single American or Indian supply chain partner and manipulates both the spatial and social distance to their partner to provide a more detailed examination of the impact of the two key dimensions of psychological distance.

### 3. Study 1

#### 3.1 Overview

Supply chains often stretch across countries, which differ culturally and geographically. When manufacturing and sourcing operations occur in distant countries or continents from the firm's headquarters, social and spatial psychological distances may manifest in the managers involved in these operations. To test the hypotheses on the influence of psychological distances on supply chain relations, we developed a study to explore whether behaviour differs in global vs local supply chains. Similar to [Loch and Wu \(2008\)](#), this study considers a problem featuring double marginalisation, where two supply chain partners must jointly set a product's price. The price determines consumer demand and profit, and each player can set prices to try to maximise their profits or cooperate to maximise their joint profits. The game is equivalent to a two-tier supply chain where a supplier and a retailer select the wholesale and retail prices, respectively.

#### 3.2 Participants

This sample consisted of 200 "Player A" and "Player B" dyads (i.e.  $N = 400$ ) ( $Age: M_A = 36.475, SD_A = 9.952, M_B = 36.245, SD_B = 9.346$ ;  $Female_A = 66, Female_B = 75, Non-binary_B = 3$ ) recruited from India and the USA through Amazon's Mechanical Turk (MTurk). For more details on the participant demographics (for both studies) and exclusion criteria, please see Online [Appendix B](#). MTurk is reliable and widely used for behavioural research in psychology ([Buhrmester et al., 2011](#)) and operations management ([Lee et al., 2018](#)). In total, 102 dyads were randomly assigned to the close psychological distance treatment group and 98

dyads to the far psychological distance treatment group. The study included attention check questions. Failing the attention checks prevented participants from completing the survey (and did not count towards the final sample size).

### 3.3 Design

In our study, a single product, comprised of one component supplied by each player, was sold to a market. The product's demand was  $D = 16 - p_A - p_B$ , where  $p_A$  and  $p_B$  are the component prices selected by Player A and Player B (following Loch and Wu, 2008). Player A first sets their price, creating a first-mover advantage (similar to a supplier determining the wholesale cost), and Player B sets the price for their component second (similar to a retailer setting the product's price). Thus, the profit for player  $i$  is  $\pi_i = p_i(16 - p_A - p_B)$  for  $i \in \{A, B\}$  and the channel profit is  $\pi_C = p_C(16 - p_C)$ , where  $p_C = p_A + p_B$ . The higher the price, the lower the demand from the buyer. Thus, players could either cooperate to maximise their joint profit or act selfishly to maximise their own profit.

This experiment mostly followed an online version of Loch and Wu (2008), except that we recruited participants to play the roles of players A and B using MTurk from the USA or India (i.e. two spatially and socially distant countries) and used a one-shot game. Rather than creating social relationships by using mechanisms like competition, participants were allocated to either same-country or cross-country partnerships. Thus, we designed a 2 (Player A Location: USA vs India)  $\times$  2 (Player B Location: USA vs India) between-subject study. The pairs (India, India) and (USA, USA) formed the close treatment groups, and the pairs (India, USA) and (USA, India) formed the far psychological distance groups (i.e. social distance, which was based on the societal differences, and spatial distance, which was based on geographical location). Both players in the pair were informed of their partner's location and that their payoffs would be influenced by their partner's decisions. The main independent variable was operationalised by pairing the participants with players in either another country or the same country, thereby incorporating (spatial and social) psychological distances. The dependent variables were each supplier's price, the channel price and the corresponding profits.

### 3.4 Method and materials

In our experiment, participants were tasked with sequentially setting a product's price in a two-player game, which simulated a supply chain scenario. Following the framework of Loch and Wu (2008), the study emphasised that the total price of the product, which is the sum of prices set by both players, determined the demand and joint profit. This setup allowed us to examine how psychological distance, influenced by the players' locations, impacted their pricing decisions.

Participants were recruited from two countries: India and the USA. They were randomly assigned to one of two roles: Player A (first mover, e.g. the supplier) or Player B (second mover, e.g. the retailer). The participants were then paired based on their assigned roles and locations, creating either a close psychological distance (same-country pairings) or a far distance (different-country pairings), resulting in four possible supplier-retailer pairings.

The experiment involved two different vignettes, one for Player A and one for Player B. The vignettes provided the players with a detailed scenario in which they, along with their counterparts, were responsible for selling a product composed of two parts. Player A set the price for part A ( $p_A$ ) first, and this price, along with Player A's location, was then fed into Player B's vignette. Player B, after learning Player A's location and price, set the price for part B ( $p_B$ ). The final price of the product ( $p_C$ ) was the sum of both players' prices  $p_C = p_A + p_B$ . The quantity sold, and thus the profits, depended on this combined price. To ensure realistic decision-making, participants were economically incentivised based on their performance in the game. Their earnings were directly proportional to the profit generated by their pricing

decisions, motivating them to carefully consider both their own price and the potential reaction of their counterpart.

The manipulation in this study was the psychological distance, instantiated through the display of national flags and contextual information about the counterpart's location. This was visually represented in [Figure 2](#). Specifically, after reading the vignette, Player A was shown a screen with the flag of Player B's country, along with a brief explanation of Player B's location. This treatment was randomly assigned, so Player A might see either an Indian or an American flag, depending on the pairing. See [Figures 2\(a\)](#) and [2\(b\)](#). For Player B's, after reading their vignette and learning Player A's location and price, Player B saw a similar screen displaying Player A's national flag and location, along with the price that Player A had set. See [Figures 2\(c\)](#) and [2\(d\)](#).

The matching process was designed to maintain the psychological distance manipulation. Player A's data (price and location) was matched with Player B's based on the location indicated by the flag. If Player A was shown an Indian flag, their data was paired with a Player B from India, and similarly for the American flag. This matching was randomised within the respective location groups to ensure fairness and avoid any systematic biases. [Table 1](#) presents the study's operation sequence. The experiment started by deploying the vignette and collecting the responses from Players A. Based on the flags shown in Player A, we ensured to collect a matched participant for Players B as per [Table 1](#). After both players completed their decisions, then they were paid their bonus.

Before the treatment section, participants were subjected to attention checks to ensure they understood the experiment and were engaged. After passing these checks, participants proceeded to the treatment phase, where the location of their counterparts was revealed. This was followed by the pricing decision, where both players had to strategically set their prices considering the psychological distance and their desire to maximise profits.



**Figure 2.** Study 1 treatment examples for Players A and B. Source: Public domain images of the Indian and American flags, sourced from Wikimedia Commons

**Table 1.** Study 1 experimental procedure

Stage	Main steps
Player A Data Collection	<ul style="list-style-type: none"> <li>Collect Player A data for 100 American participants and 100 Indian participants</li> </ul>
<i>Player A's Experiment Procedure</i>	A.1 Introduction and Scenario Setup for Player A <ul style="list-style-type: none"> <li>Player A reads the vignette to understand the game scenario and pricing dynamics</li> <li>Player A is informed that they will set a price for part A of a product, which will then influence the pricing decision of Player B for part B</li> </ul>
	A.2 Treatment Application <ul style="list-style-type: none"> <li>Attention checks</li> <li>Player A is shown the treatment screen, which includes a flag and contextual information about Player B's nationality and location</li> <li>Depending on random assignment, Player A sees either               <ol style="list-style-type: none"> <li>Treatment 1: An Indian flag (if paired with an Indian Player B)</li> <li>Treatment 2: An American flag (if paired with an American Player B)</li> </ol> </li> </ul>
	A.3 Pricing Decision <ul style="list-style-type: none"> <li>After viewing the treatment, Player A sets a price for part A (<math>p_A</math>)</li> </ul>
	A.4 Finalisation for Player A <ul style="list-style-type: none"> <li>Player A is informed that they will learn their bonus after Player B makes their pricing decision</li> </ul>
Player B Data Collection	<ul style="list-style-type: none"> <li>Player Bs are matched with a Player A</li> <li>Player B's vignette is prepared with Player A's price and nationality</li> <li>Collect 200 observations for Player B</li> </ul>
<i>Player B's Experiment Procedure</i>	B.1 Introduction and Scenario Setup for Player B <ul style="list-style-type: none"> <li>Player B reads the vignette to understand the game scenario and the pricing dynamics</li> <li>Player B is informed that they will set a price for part B of a product after learning Player A's location and price set by Player A</li> </ul>
	B.2 Treatment Application <ul style="list-style-type: none"> <li>Attention checks for Player B</li> <li>Player B is shown the treatment screen, which includes a flag and contextual information about Player A's nationality and location, along with the price set by Player A</li> <li>Depending on random assignment, Player B sees either               <ol style="list-style-type: none"> <li>Treatment 1: An Indian flag (if paired with an Indian Player A)</li> <li>Treatment 2: An American flag (if paired with an American Player A)</li> </ol> </li> </ul>
	B.3 Pricing Decision <ul style="list-style-type: none"> <li>After viewing the treatment and learning Player A's price (<math>p_A</math>), Player B sets their price for part B (<math>p_B</math>)</li> </ul>
	B.4 Finalisation for Player B <ul style="list-style-type: none"> <li>Player B's pricing decision is finalised, and Player B is informed of their bonus based on the players' performances calculated using the price (<math>p_C = p_A + p_B</math>) and random demand</li> </ul>
Payment for both Players A and B	<ul style="list-style-type: none"> <li>Player A receives a bonus payment proportional to their and Player B's economic performance in the game</li> <li>Player A receives a bonus payment proportional to their and Player A's economic performance in the game</li> </ul>

**Source(s):** Authors' own work

To reinforce the treatment, each participant was asked to answer attention check questions on the nationality and location of their counterpart. Next, participants were reminded about the nationality and location of their peers, and we explained that the number of units sold would depend on the joint price of A + B. A table was provided which explained the following relationship between price and demand: Units Sold = 16 - (p<sub>A</sub> + p<sub>B</sub>). Next, the players were asked to set a price between 1 and 16 experimental currency units. Two treatment checks were administered on a 7-point scale, asking how similar or different (Very Similar to Very Different) and how spatially close or far away (Very Close to Very Far Away) the other player seemed to them. Finally, demographics were collected.

### 3.5 Results

The social distance manipulation check reflected a difference between the far and close conditions, suggesting the treatment was effective. For Player A, the far distance condition mean was higher ( $M = 4.265, SD = 1.447, 95\% CI [3.979, 4.551]$ ) than the close distance treatment condition ( $M = 3.078, SD = 1.132, 95\% CI [2.858, 3.298]$ ),  $t(198) = 6.745, p < 0.001, d = 0.916$ . Likewise, the mean for Player B in the far distance condition was higher ( $M = 4.347, SD = 1.663, 95\% CI [4.018, 4.676]$ ) than in the close distance condition ( $M = 3.451, SD = 1.710, 95\% CI [3.119, 3.783]$ ),  $t(198) = 3.754, p < 0.001, d = 0.531$ . There was also a difference between treatments for the spatial distance manipulation check. For Player A, the far distance treatment presented a higher mean ( $M = 5.908, SD = 1.547, 95\% CI [5.602, 6.214]$ ) than in the close distance treatment ( $M = 3.255, SD = 1.467, 95\% CI [2.970, 3.540]$ ),  $t(198) = 12.448, p < 0.001, d = 1.761$ . Similarly, for Player B in the far distance treatment, the mean was also higher ( $M = 5.612, SD = 1.584, 95\% CI [5.298, 5.926]$ ) than in the close distance treatment ( $M = 3.157, SD = 1.494, 95\% CI [2.867, 3.447]$ ),  $t(198) = 11.282, p < 0.001, d = 1.596$ . These differences suggest that participants in the far treatment regarded themselves as socially and spatially farther away than their partners compared to the close distance treatments.

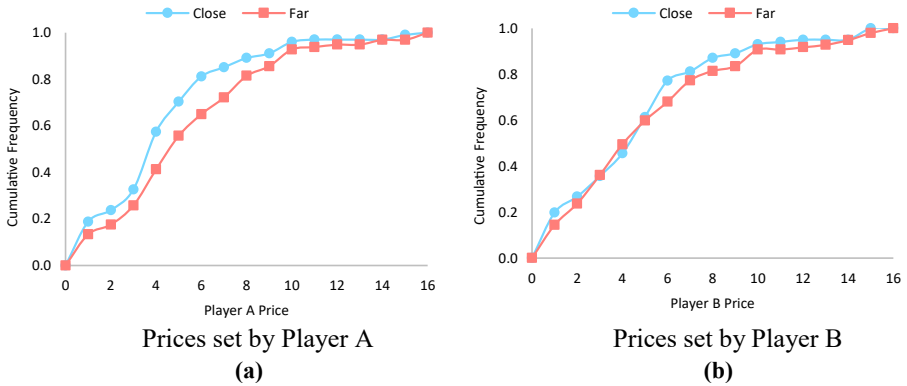
Table 2 presents the average prices for Players A and B and the channel. Player A's price  $p_A$  in the far distance treatment ( $M = 5.816, SD = 3.693, 95\% CI [5.085, 6.547]$ ) was higher than in the close distance treatment ( $M = 4.657, SD = 3.113, 95\% CI [4.053, 5.261]$ ),  $t(198) = 2.404, p = 0.017, d = 0.340$ . Interestingly, Player B's price  $p_B$  did not differ between the far treatment ( $M = 5.571, SD = 4.021, 95\% CI [4.775, 6.367]$ ) and the close distance treatment ( $M = 5.010, SD = 3.511, 95\% CI [4.329, 5.691]$ ),  $t(198) = 1.053, p = 0.293, d = 0.149$ . The joint price  $p_c$  was higher in the far distance treatment ( $M = 11.388, SD = 6.054, 95\% CI [10.189, 12.587]$ ) than in the close treatment ( $M = 9.667, SD = 4.873, 95\% CI [8.721, 10.613]$ ),  $t(198) = 2.219, p = 0.028, d = 0.314$ . In short, both the first mover and joint prices were higher in the far treatment compared to the close treatment, but the second mover (i.e. Player B) prices were not seen as higher.

Figure 3 contrasts the cumulative frequency charts of price. Figure 3(a) shows that the prices set by Player A in the close treatment were consistently lower than in the far treatment. Thus, the conclusion is that Player A's response to the treatment is not driven by a small set of outliers. Similarly, Figure 3(b) shows that the cumulative frequencies of both treatments

**Table 2.** Study 1 means and *t*-tests for far and close conditions for prices

	Far distance		Close distance		<i>t</i> -tests		
	Mean	95% CI	Mean	95% CI	<i>t</i> (198)	<i>p</i>	<i>d</i>
$p_A$	5.816	[5.085, 6.547]	4.657	[4.053, 5.261]	-2.404	0.017	0.340
$p_B$	5.571	[4.775, 6.367]	5.010	[4.329, 5.691]	-1.053	0.293	0.149
$p_C$	11.388	[10.189, 12.587]	9.667	[8.721, 10.613]	-2.219	0.028	0.314

**Source(s):** Authors' own work



**Figure 3.** Cumulative frequencies for prices across treatments. Source: Authors’ own work

appear closer compared to [Figure 3\(a\)](#), consistent with a lesser response from Player B to the treatment.

[Table 3](#) presents the profits and t-stats testing for any significant differences between treatments. Regarding  $\pi_A$ , the far treatment ( $M = 21.592$ ,  $SD = 16.495$ , 95%  $CI$  [18.326, 24.858]) was not significantly different from the close treatment ( $M = 21.961$ ,  $SD = 13.766$ , 95%  $CI$  [19.289, 24.858]),  $t(198) = 0.172$ ,  $p = 0.863$ ,  $d = 0.024$ . However,  $\pi_B$  was lower in the far treatment ( $M = 17.98$ ,  $SD = 14.07$ , 95%  $CI$  [15.194, 20.766]) compared to the close treatment ( $M = 23.147$ ,  $SD = 15.408$ , 95%  $CI$  [20.157, 26.137]),  $t(198) = 2.474$ ,  $p = 0.014$ ,  $d = 0.350$ . Similarly, the joint profit  $\pi_C$  was somewhat lower for the far treatment ( $M = 39.571$ ,  $SD = 23.341$ , 95%  $CI$  [34.95, 44.192]) with respect to the close treatment ( $M = 45.108$ ,  $SD = 21.99$ , 95%  $CI$  [40.841, 49.375]),  $t(198) = 1.727$ ,  $p = 0.086$ ,  $d = 0.244$ . Thus, the second mover and joint profits were lower in the far treatment, but this was not the case for the first mover’s (i.e. Player A) profit.

The treatments for the second mover did not produce a statistically significant difference in prices. Contrary to expectations, profits for the second mover were higher in the close treatment, which suggests that the second mover took advantage of the first mover’s lower price in the close condition to increase profits. Similarly, the channel profits were higher in the close treatment. Therefore, the first hypothesis ([H1](#)) held for Player A and the channel price, but not for Player B, and the second hypothesis ([H2](#)) held for Player B and the channel price, but not for Player A.

The joint profits were higher in the close treatment since Player B could obtain higher profits by taking advantage of Player A’s fair behaviour. Each of the Player Bs was able to optimise for their profit because they knew Player A’s price. Therefore, the higher joint profits in the close treatment are a spill over of Player A’s fairer, lower prices and are driven mainly by

**Table 3.** Study 1 means and t-tests for far and close conditions for profits

	Far distance		Close distance		t-tests		
	Mean	95% CI	Mean	95% CI	t (198)	p	d
$\pi_A$	21.592	[18.326, 24.858]	21.961	[19.289, 24.633]	0.172	0.864	0.024
$\pi_B$	17.980	[15.194, 20.766]	23.147	[20.157, 26.137]	2.474	0.014	0.350
$\pi_C$	39.571	[34.95, 44.192]	45.108	[40.841, 49.375]	1.727	0.086	0.244

**Source(s):** Authors’ own work

the higher profits achieved by Player B. The fact that Player A did not receive, on average, higher profits in any of the treatments also underpins this idea. Additional robustness checks are reported in Online [Appendix C](#). We re-estimated the models with covariates for age and gender, and then with the further inclusion of the country of the decision maker. The results remain substantively unchanged, indicating that the main findings are not sensitive to these controls.

## 4. Study 2

### 4.1 Overview

In Study 1, the Player A was either spatially and socially close or spatially and socially far from Player B. However, social and spatial psychological distances do not occur simultaneously. We separate the effects of spatial and social psychological distances in a second study largely based on Study 1. The aim was to explore whether the relative importance of each dimension of psychological distances differed across nationalities. In this study, the players were not matched with a partner, they played against a hypothetical partner enacted by a pre-programmed algorithm.

### 4.2 Participants

We recruited 201 participants: 101 from India and 100 from the USA ( $\text{Female}_{\text{India}} = 31$ ; Age:  $\text{Male}_{\text{India}} = 36.347$ ,  $\text{SD}_{\text{India}} = 6.728$ ) and 100 from the USA ( $\text{Female}_{\text{USA}} = 31$ ,  $\text{Non-binary}_{\text{USA}} = 1$ ; Age:  $M_{\text{USA}} = 36.323$ ,  $\text{SD}_{\text{USA}} = 10.763$ ). All the participants played as Player A, the first mover, and were randomly assigned to their treatments. This experiment also included attention check questions, where, again, failing the attention check questions excluded participants from completing the experiment and the sample size.

### 4.3 Design

The participants from India and the USA played the role of Player A with a hypothetical Player B partner whose location was either in India or the USA, and whose nationality was either Indian or American. The study has a 2 (Player A location: American in the USA vs Indian in India)  $\times$  2 (Player B location: the USA vs India)  $\times$  2 (Player B nationality: American vs Indian) between-subject design. The American participants can be paired with socially and spatially close Player Bs (American, the USA), socially close and spatially far Player Bs (Indian, American), socially far and spatially close Player Bs (American, India), or both socially and spatially far (Indian, India). Similarly, the Indian participants could be paired with socially and spatially close Player Bs (Indian, India), socially close and spatially far Player Bs (American, India), socially close and spatially far Player Bs (Indian, the USA) or both socially and spatially far (American, the USA). This way, the study had 8 cells depicted in [Table 4](#). Note that the price set by Player B was based on the best response function with noise, i.e.  $p_B = 8 - \frac{p_A}{2} + \epsilon$  where  $\epsilon \in \{-1, 0, 1\}$ .

### 4.4 Methods and materials

The vignette was largely based on Study 1, where the nationality and country of residence were used to manipulate social and spatial distances, respectively (please see Online [Appendix A](#) for details). The main difference between Study 1 and the current study is that Player B was simulated and relied on the use of national identity colours and national flags to create the desired treatments. We ran this vignette with Indian Participants as Players A and American Participants as Players A.

To emphasise the nationality of the hypothetical player, the legend “Player B is Indian (American)” was displayed in large letters textured with corresponding Indian flag colours (American: white, red, blue; Indian: green, white, orange). To emphasise the country of residence, the legend “Player B lives in India (the United States)” was displayed, along with

**Table 4.** Study design cell matrix

Cell	Player A		Player B		Psychological distance	
	Nationality	Location	Nationality	Location	Spatial	Social
1	American	USA	American	USA	Close	Close
2	American	USA	Indian	USA	Close	Far
3	American	USA	American	India	Far	Close
4	American	USA	Indian	India	Far	Far
5	Indian	India	Indian	India	Close	Close
6	Indian	India	American	India	Close	Far
7	Indian	India	Indian	USA	Far	Close
8	Indian	India	American	USA	Far	Far

**Note(s):** **Social Distance:** Indicates whether Player B's nationality is the same as (Close) or different from (Far) Player A's nationality. **Spatial Distance:** Indicates whether Player B's location is the same as (Close) or different from (Far) Player A's location

**Source(s):** Authors' own work

the respective flag. Figure 4 presents the layouts used across the four randomly assigned treatments. When Player B was described as an Indian living in the USA, Figure 4(a) was shown; when an Indian living in India, Figure 4(b) was shown; when an American living in India, Figure 4(c) was shown; and when an American living in the USA, Figure 4(d) was shown.

Next, participants were reminded to imagine that Player B was an American or an Indian and worked in the USA or in India to reinforce the treatment. A table was provided, outlining the relationship between joint price and demand, and participants were asked to set their price between 1 and 16 experimental currency units. Immediately after, the participants completed treatment checks based on a 7-point Likert scale (Social: 1 = Very similar . . . 7 = Very Different; Spatial: 1 = Very Close . . . 7 = Very Far Away) as well as demographics. Finally, they were debriefed regarding Player B's price and reward.

#### 4.5 Results

Participants perceived that their partners framed as being in a country different to theirs as being farther away spatially compared to counterparts situated in their same country, regardless of nationalities. Similarly, social treatment checks reflected that the participants perceived their counterparts of a different nationality to be more dissimilar from them, regardless of their location (see Tables 5 and 6). Thus, the spatial and social manipulation checks support that the treatments were effective.

We conducted two regressions, one for Player A located in India (see Table 7) and one for Player A located in the USA (see Table 8). Each specified price  $p_A$  as the dependent variable, and the far spatial and social distances as independent variables [1]. The regression for the Indian participants indicated that Indian Player As priced higher by over 2.5 dollars when Player B was spatially distant (i.e. located in the USA). However, there was no significant change in price when Player B was socially distant (i.e. American). In contrast, we found from the regression for American participants that American Player A priced higher (by 1.33 dollars) when Player B was socially distant (i.e. Indian). However, when Player B was spatially distant (i.e. located in India), there was no statistical difference in pricing. As a robustness check, we re-estimated both regressions to include age and gender as covariates (see Online Appendix C) and the results remained stable, indicating that our findings are not affected by these controls.

Further detail on how the American and Indian players responded to the social and spatial distant treatments can be visualised in Figures 5 and 6. The response from Player A's recruited



**Figure 4.** Study 2 treatments for players A. Source: Authors’ own work and public domain images of the Indian and American flags, sourced from Wikimedia Commons

**Table 5.** Treatment checks. Means and *t*-tests for American participants

	Far distance		Close distance		<i>t</i> -tests <i>t</i> (98)	<i>p</i>	<i>d</i>
	Mean	95% CI	Mean	95% CI			
Social	4.469	[4.015, 4.923]	3.373	[2.989, 3.757]	-3.624	<0.001	-0.725
Spatial	6.122	[5.795, 6.445]	3.160	[2.751, 3.569]	-11.105	<0.001	-2.221

**Source(s):** Authors’ own work

in the USA can be visualised in the cumulative distribution charts in Figure 5, where the hypothetical Player B would be in the USA (Figure 5(a)) or India (Figure 5(b)). In Figure 5, the American players’ responsiveness to the social psychological distance can be inferred by

**Table 6.** Treatment checks. Means and *t*-tests for Indian participants

	Far distance		Close distance		<i>t</i> -tests <i>t</i> (99)	<i>p</i>	<i>d</i>
	Mean	95% CI	Mean	95% CI			
Social	4.020	[3.597, 4.443]	3.280	[2.896, 3.664]	-2.534	0.013	-0.504
Spatial	4.774	[4.33, 5.218]	3.542	[3.098, 3.986]	-3.837	<0.001	-0.765

**Source(s):** Authors' own work

**Table 7.** Study 2: price regression for Player A's recruited in India

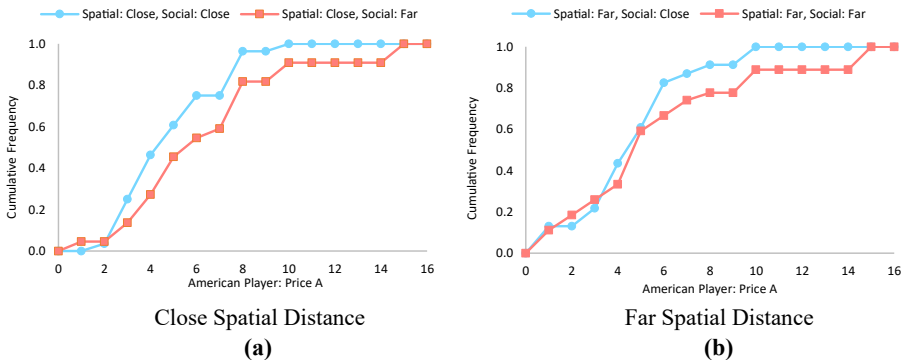
	B	Std. error	Standardised	<i>t</i>	<i>p</i> -value
(Constant)	5.826	0.697		8.359	<0.001
Spatial far	2.730	0.782	0.331	3.492	0.001
Social far	-0.825	0.781	-0.100	-1.057	0.293

**Source(s):** Authors' own work

**Table 8.** Study 2: price regression for Player A's recruited in the USA

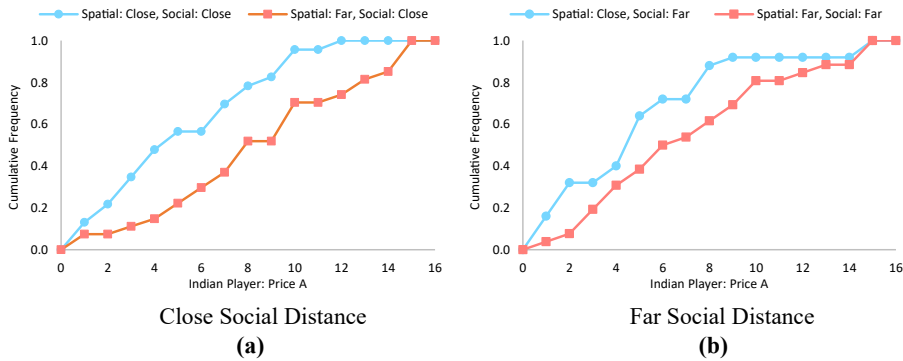
	B	Std. error	Standardised	<i>t</i>	<i>p</i> -value
(Constant)	5.293	0.522		10.143	<0.0001
Spatial far	-0.433	0.629	-0.069	-0.689	0.492
Social far	1.333	0.629	0.211	2.119	0.037

**Source(s):** Authors' own work



**Figure 5.** Cumulative frequency distribution for prices set by American first movers. Source: Authors' own work

the separation between the lines corresponding to each treatment (socially close and socially far). In [Figure 5\(b\)](#), the separation is noticeable beyond a price of 5. Given that the optimal price for maximising joint profit is 4, this suggests an association with more self-profit maximisation behaviour at a far social distance. Similarly, the higher responsiveness from Indian participants to the spatial distance treatment, compared to the social distance treatment,



**Figure 6.** Cumulative frequency distribution for prices set by Indian first movers. Source: Authors' own work

can be visualised in Figure 6, where the cumulative frequency lines show a tendency to price higher when the counterpart was in India (close) vs the USA (far). These differences hold across the social distance when the counterpart is either Indian (Figure 6(a)) or American (Figure 6(b)).

## 5. Conclusion

### 5.1 Contributions to the literature

Despite the volume of research on psychological distances across domains like organisational behaviour and marketing, applications of psychological distance that explore fairness in supply chain partnerships remain largely understudied. In this paper, psychological distances were explored within the context of supply chains, focusing on psychological distances inherent in national and international trade relationships. Specifically, the research examines the impact of social and spatial psychological distances in a one-shot decision-making task related to wholesale pricing, exploring the underlying role of psychological distances in influencing fairer pricing decisions.

This research addresses calls to investigate the role of fairness in supply chain management. For example, Donohue and Siemsen (2011) call for further work on collaborative supply chain interactions, and Schorsch *et al.* (2017) present an opportunity to examine the role of fairness in terms of reciprocity between individuals in supply chain interactions. This research also answers calls from the OM literature to apply CLT and psychological distance to supply chain problems. Gligor *et al.* (2019) showed that CLT has been used in leading management and marketing journals and put forward CLT as a prospect to advance supply chain research. Cantor *et al.* (2014) recognised that temporal distance impacts decisions in mitigating supply chain disruptions and then called for an extension of their work by using CLT.

Across two studies involving participants from the USA and India, we found that increased spatial and social distances influence price setting in a supplier-retailer system. The first study shows that the first mover (Player A) sets higher prices when paired with a distant partner, lowering the overall channel price and leading to higher demand. However, the second mover took advantage of Player A's lower price in the close condition to capture higher profits. These findings complement Loch and Wu's (2008), who obtained similar results, since their treatment elicited a lesser response from the second mover (i.e. Player B), compared to the first mover.

Player B's fairness considerations were likely played down because the experiment was a one-shot game. Thus, Player B, unlike Player A, would be free from any retaliatory or rewarding response from their counterpart, diminishing Player B's relational concerns, and favouring selfish gain (i.e. individual profits). In contrast, Player A had to anticipate that their counterpart could respond in kind. The anticipation of reprisal becomes more focal at a close

social distance since it is common to have higher expectations of reciprocity (reward or retaliation) from socially close individuals. In this regard, other works found that a reduced social distance (i.e. knowing the trustee in some capacity) elicits more trusting behaviour (Binzel and Fehr, 2013; Fiedler and Haruvy, 2009) but also induces a harsher response to unfair actions (Kim *et al.*, 2013).

The results are also related to Lee *et al.* (2018) study, which replicated one of the follow-up studies conducted by Loch and Wu (2008) that used a verbal cue to instantiate the relationship condition, instead of a physical handshake. Therefore, Lee *et al.* (2018) used MTurk as it is an appropriate platform for an experimental treatment based on a verbal cue. However, Lee *et al.* (2018) determined that the relationship and status treatments did not produce statistically significantly different results in pricing decisions, concluding that the MTurk replication attempt was not successful. They concluded that the social preference treatments in question (i.e. status-seeking and relationship) were not effective in driving behavioural differences and that the original experiment was inherently difficult to replicate. Interestingly, in this study, it was found that the treatments based on levels of social and spatial psychological distances were effective in producing pricing differences of the first mover when reciprocity could be expected. Therefore, the results suggested that psychological distances have a stronger influence on behaviour than verbal cues.

The second study untangles the different effects of social and spatial distances, demonstrating that different dimensions of psychological distances may drive the behaviour observed in Study 1. For Americans, it was found that a farther social distance between Americans and Indians resulted in higher prices. In contrast, it was found that the spatial distance between India and the USA resulted in higher prices for Indians. Conceivably, the difference in the role of social distance is rooted in national idiosyncrasies. For example, India has a higher power distance than America, and countries with higher power distances experience greater within-country social distances (Daniels and Greguras, 2014), which would account for the absence of a response from the Indian participants to the social distance treatment, leaving the spatial distance as the most influential variable.

The finding in Study 2 that social distance had more impact on the pricing decisions of Americans compared to Indians resembles a previous study that manipulated social distance using nationalities (Buchan *et al.*, 2006). In Buchan *et al.*'s (2006) study, the American players observed higher Other-Regarding Preferences (ORP) towards in-group members (i.e. close social distance), whereas subjects from more collectivist countries, like India, did not observe a clear ORP bias towards experimental in-group members. According to Buchan *et al.* (2006), the robust bias observed in Americans arose because these participants conceived the experimental (i.e. artificial) groups more easily than the participants from collectivist countries (e.g. Japan, China, India, etc.). These collectivist nations, which would otherwise observe a strong in-group bias among naturally formed groups, are unlikely to have observed a sway in their ORP when groups were formed artificially (i.e. experimental setting) (Buchan *et al.*, 2006). Therefore, American participants in our study may have instantaneously identified the Indian participants as out-group members; thus, the influence of the social distance was strong enough to render spatial distance irrelevant. Whereas the Indian participants, who belong to a more collectivist society (Hofstede, 1983), were swayed considerably less by the social distance treatment, as such societies are barely influenced by concerns about artificially formed groups, leaving room for the spatial treatment to manifest more strongly. This relates to Study 2, where the group of the second mover was artificial because it was formed by hypothetical players enacted by a computer algorithm. Therefore, the Indians could have regarded this pairing as an artificial grouping, which would account for their unresponsiveness to the social distance treatment.

### 5.2 Contributions to the practice

Drawing from CLT, this research offers valuable insights into supply chain efficiency within cross-country buyer-supplier relationships. We found that psychological distances in

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international collaborations lead to biases towards higher prices, which can affect both organisational profits and demand levels. In trade between developed and developing countries, the [International Trade Centre \(2010\)](#) recommends that pricing should ensure fair profits and decent work across developing nations. Our research contributes to this understanding by highlighting the role of psychological distance in pricing fairness and channel profits between these nations.

Our results show that supply chain participants without a first-mover advantage should focus on reducing psychological distance from their counterparts to secure a fairer share of profits. Central planners, too, should work to minimise psychological distances between supply chain partners to boost overall channel profits. Importantly, our findings reveal that lower prices are more likely to emerge in cross-cultural relationships when decision-makers experience close social and spatial psychological distances. Specifically, decision-makers from India are more affected by spatial distance, while those from the USA are more influenced by social distance.

Based on these findings, several strategies can be implemented to help second movers achieve lower prices from suppliers, leading to stronger demand and higher channel profits for both parties. Companies can reduce social distances by fostering relationships between procurement agents of different nationalities through business seminars, conferences, networking dinners and joint training workshops. Building social connections outside of formal negotiations allows decision-makers to see beyond nationality and focus on shared traits and commonalities, which can help mitigate the effects of social distance, resulting in more favourable pricing outcomes.

Firstly, organisations can practice cultural matching by pairing decision-makers who share cultural backgrounds, when possible, to reduce social distances. For example, selecting a procurement agent who shares the same nationality as the manufacturer or speaks their language can reduce social distance and, as our results suggest, contribute to securing lower prices from the first mover. Secondly, establishing a physical presence near the manufacturer, such as setting up a small satellite office close to their location, can help promote lower wholesale prices. This proximity fosters more face-to-face interactions, reducing both social and spatial distances. When in-person meetings are not feasible, regular video conferences can simulate these interactions. Seeing the counterpart's face during virtual meetings can help reduce perceived distance and lead to more equitable pricing strategies.

Additionally, our research provides additional evidence on the value of investing in relationship building. Companies should continue to allocate time and financial resources to build strong working relationships with their counterparts. This might involve sending retailer agents to visit the manufacturer's location, immersing themselves in the local culture and inviting the manufacturer's procurement and sales teams to visit the retailer's country and location to do the same. Although this has been a longstanding practice, our research suggests an increased emphasis in the post-pandemic era, where business travel and face-to-face encounters have declined. When travel is not possible, using personalised communication channels with adjusted communication styles to the target culture, including engaging in the manufacturer's native language, can help lower psychological distances and create a more collaborative atmosphere.

To maximise the effectiveness of these strategies, our findings indicate that if the manufacturer is American, the focus should be on reducing social distance. Conversely, if the manufacturer is Indian, the focus should be on reducing spatial distance. These practical interventions provide companies with actionable ways to apply our research findings in real-world supply chain management. By addressing the cognitive influences on pricing decisions and lowering psychological distances, organisations can enhance equity in the supply chain and improve the success of international collaborations.

### 5.3 Future research and limitations

This research has several limitations that also open avenues for future work. First, the study relies on online experiments with participants recruited from the USA and India. While this

design provides clean identification of the effects of psychological distance, it limits generalisability. MTurk participants are not professional supply chain managers, and decision-making in real buyer–supplier relationships may differ due to organisational, relational and reputational pressures. Moreover, focusing only on two national contexts provides a sharp contrast in psychological distance but does not capture the full diversity of cultural settings in which global supply chains operate. Future studies should expand to additional countries and participant pools, including managers in field settings, to assess the robustness and practical applicability of our findings. The experimental task also abstracts supply chain interaction into a simple sequential pricing game. Although this abstraction is well-suited for testing theory, it omits many real-world features such as quality concerns, delivery reliability and relationship-specific investments that may shape fairness perceptions. Field studies and richer laboratory designs would therefore provide valuable tests of the external validity of our results.

Beyond these limitations, our work lays the groundwork for further exploration of the effects of psychological distance in supply chains. For example, while a one-shot game was considered, future research could investigate repeated interactions to see whether multiple rounds can foster relationships underpinned by fairness. In addition, our design did not allow for contract rejection or bargaining. Since psychological distance may affect how fair or unfair offers are perceived, future studies could explore the acceptance or rejection of contracts and bargaining dynamics. Construal levels and psychological distance also influence negotiation processes and outcomes (Wiesenfeld *et al.*, 2017), which creates opportunities to extend our design to bargaining scenarios. Other work could develop and test decision frameworks that explicitly incorporate psychological distance as a lever to mitigate biases towards higher, unfair pricing. Finally, future research should examine the moderating role of socio-cultural factors such as collectivism and power distance, which may shape responses to social or spatial distance in supply chain contexts.

#### **Data availability statement**

The data, SPSS analysis code and files for this study are available on the “Files” section of this project on Open Science Framework at:

[https://osf.io/nzbm9/?view\\_only=826ed15d64554a93a1c67289bb750ed0](https://osf.io/nzbm9/?view_only=826ed15d64554a93a1c67289bb750ed0).

#### **Acknowledgments**

The authors have no relevant financial or non-financial interests to disclose and no competing interests to declare that are relevant to the content of this article. The authors thank the Associate Editor Manish Popli and the anonymous review team for their feedback, which helped improve the quality of the manuscript. The authors also thank the UNSW Business School, the UNSW BizLab and the UNOVA Knowledge Hub for supporting the research.

The data collection and experiments for this research were done under authorisation from the UNSW Human Research Ethics Committee reference number HC210291.

#### **Note**

1. We tested the interaction between Spatial Far  $\times$  Social Far. However, we do not report the results because it did not improve the significance of any of the coefficients in both regressions.

#### **Supplementary material**

The supplementary material for this article can be found online.

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