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In a Double-Bind: Time-Space Distanciation, Socioeconomic Status, and Coping With Financial Stress In the United States

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Short title: *In a Double-Bind*

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Abstract:
Psychological research has shown that lower socioeconomic status (SES) individuals experience higher levels of stress and tend to cope in more present-oriented ways. While some research in the field has sought to, for instance, increase future-oriented ways of being among lower SES individuals, we argue that such approaches may come at significant cost. We consider the construct of time-space distanciation (TSD) – the normative way in which time and space are abstracted from one another at cultural and individual levels – as a way to complicate psychological research on social class, stress, and coping. Across four studies, we present research on US geographical regions (Studies 1-2) and US participants (Studies 3-4) suggesting that adopting normative high-TSD orientations represents a double-bind for lower SES individuals: it allows one to enact more proactive coping strategies in the face of financial stressors such as debt (Studies 1-3), but it is also a source of disproportionate stress itself (Study 4), given the burdens faced by lower SES individuals trying to navigate time and space in culturally hegemonic ways in spite of precarity and material insecurity. We discuss how TSD offers a means of situating psychological research into precarity within the broader structural context of flexible capitalism.
Keywords:
time and space; socioeconomic status; stress; coping; debt

Data availability statement:
The data that support the findings for Studies 1-2 were derived from the following resources available in the public domain:
Study 1: https://journals.sagepub.com/doi/10.1177/0961463X17716736, https://www.newyorkfed.org/microeconomics/databank.html, https://www2.census.gov/library/publications/2014/acs/acsbr13-02.pdf, https://doi.org/10.1111%2Fj.1745-6924.2008.00084.x, https://doi.org/10.18128/D060.V2.8

Study 2: https://doi.org/10.17016/2380-7172.2138, https://apps.urban.org/features/debt-interactive-map/?type=overall&variable=pct_debt_collections, https://www.countyhealthrankings.org/explore-health-rankings/rankings-data-documentation, https://data.census.gov/cedsci/

The data that support the findings for Studies 3-4 are openly available in OSF at https://osf.io/kg9ve/

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In recent years, there has been a resurgence of research in psychology on social class, which can be conceived as the manifestation of divisions in a society based on differential access to economic, social, and cultural capital. Past literature consistently documents class disparities in stress and health, often focusing on measures of socioeconomic status (SES) to demonstrate that people who are worse off economically experience more stress, lower perceived control, and worse stress-related health outcomes (Adler et al., 2000; Gallo et al., 2005; McLaughlin et al., 2011; Reiss, 2013; Singh-Manoux et al., 2003). There is also ample evidence that coping tendencies fall along class lines, such that lower SES individuals tend to cope with stress via emotion-focused, avoidant, and communal strategies, while higher SES individuals tend to use problem-focused, proactive, and individualistic strategies (Caplan & Schooler, 2007; Kraus et al., 2012). Such research runs parallel to the concept of *precarity*. As outlined in the Introduction to this Special Issue, cross-disciplinary conceptualizations of precarity span a continuum from more objective/material – as a set of structuring relations – to more subjective/affective – as the phenomenological experience of hopelessness. As an example, one major approach to precarity comes from philosophy, whereby theorists try to understand how our general existential experience of "precariousness" (e.g., mortality) is shaped by social structural factors into differential experiences of precarity (e.g., health disparities; see Schippers, 2014).

A related but distinct approach has emerged in fields such as sociology and cultural geography, which – as described in the Special Issue Introduction – attends to precarity as an ongoing, contingent process. As noted in another contribution to this Special Issue, a processual approach to precarity fits well with assemblage theory, which contends that "the social world is

[best] conceptualized as a contingent and emergent ecosystem that is comprised of a nexus of interacting assemblages that are reproduced through ongoing social relations, human and non-humane interactions, and institutional practices" (**107**, p. 4). Assemblage theory perspectives are currently burgeoning in social psychology (e.g., Cikara et al., 2022; Hodgetts et al., 2022; Sullivan et al., 2022) which suggests the time is ripe for moving the field toward a more processual, material, and fluid comprehension of how factors like SES impact psychology. Precarity appears to be an important construct for facilitating such a transition in our theoretical approach to social class.

Accordingly, the present paper adopts an understanding of precarity as arising from the spatial and temporal vulnerabilities of (certain) lower-SES individuals (Apostolidis, 2018; Carvounas & Ireland, 2008; Lesutis, 2021; Standing, 2011). This temporal-spatial approach to precarity makes two fundamental assumptions. The first is that we are currently living under a regime of *flexible capitalism*, which leverages technology and new financial systems to foster continuous and fast-paced change in modes of productivity and employment (Snyder, 2016). The second is that based on historical disparities in social factors and material resources, certain individuals are socialized to operate more or less effectively under this regime; and, based on this socially acquired level of efficiency, tend to experience differing levels of stress while navigating the system of flexible capitalism.

This understanding of temporal-spatial precarity highlights an understudied area for psychology: the role of temporal and spatial orientations in the relationships between SES, stress, and coping. While an existing tradition of research suggests that intervening upon more present-oriented "mentalities" in lower SES individuals to increase future-oriented thinking should ameliorate class disparities, we assert that such research has underplayed the role of structural

affordances in these orientations, as well as in class disparities themselves. With an eye toward building interdisciplinary perspectives into psychological research, we argue that the sociological construct of *time-space distanciation* (TSD) represents an integrative cultural and individual difference variable that can nuance our understanding of class disparities in stress and coping. TSD represents access and habituation to affordances of culturally normative spatiotemporal orientation which have important implications for coping with the precarity of flexible capitalism. We will present theory and research suggesting that TSD interacts with SES to differentially determine experiences of stress and coping. To foreshadow our findings, TSD represents a double-bind for lower SES individuals: it allows one to enact more proactive coping strategies in the face of financial stressors, but it is also a source of disproportionate stress itself, given the substantial burdens faced by lower SES individuals trying to navigate time and space under flexible capitalism.

Time-Space Distanciation

Rooted in sociological theorizing (Giddens, 1990; Harvey, 1990), the construct of time-space distanciation (TSD) represents "the extent to which (1) time and space are abstracted from one another within a society through their precise measurement and control as separate, quantifiable dimensions… and (2) activities tend to be abstracted and organized across large distances and long spans of time" (Sullivan et al., 2016; p. 451). Lower-TSD cultures conceive of and utilize time and space in ways that are intimately bound together, such that time spent doing an activity is entwined with the specific place at which it is spent. The flow of time is often determined by the flow of social events and by natural temporal rhythms (e.g., daylight, seasons), rather than by externally delineated time on clocks and calendars (Levine, 2008). Alternatively, in higher-TSD cultures, technologies that quantify time and space afford

conceptions of time as delineated by "emptied" hours on the clock to be filled with productive activity, and of space as abstracted lines on a map that can be purchased and profited on.

It can be assumed that in a capitalist society in the Global North "high-TSD" represents the normative (or hegemonic) spatiotemporal orientation (Schmitt et al., 2021). TSD is closely related to the advancement of globalized neoliberal and flexible capitalism, as this process facilitates the commodified use of space (e.g., real-estate) and time (e.g., hourly wage labor), and necessitates the complex coordination of times and spaces across great distances (Birth, 2007; Sullivan et al., 2016). Of course, the developments of neoliberal capitalism – and by proxy TSD – have hardly been equitable (Harvey, 2007), and there have been many sites of active resistance to TSD (e.g., Nanni, 2011), resulting in continued variation of spatiotemporal organization between and within cultures.

Accordingly, the social scientific study of TSD and related processes must distinguish between three critical levels (Sullivan et al., 2016): (a) distal, social structural affordances; (b) cultural-level TSD; and (c) individual-level TSD. Here, we employ a socioecological approach to culture (Oishi, 2014; Oishi & Graham, 2010) in that we are interested in culture understood as a collective pattern of activity in a particular geographic area, as afforded by more distal factors. In the present paper, this allows us to empirically distinguish "culture" from individual psychological processes, and to assess culture as the aggregate activity of and the material affordances available to an assemblage of individuals.[1]

[1] Clearly, this is only one of at least a dozen prominent ways of defining and examining culture (e.g., Jahoda, 2012). We are not arguing that our socioecological approach is the only correct understanding of culture, nor that it comprehensively accounts for all phenomena that constitute culture. Rather, we are simply clarifying how we are utilizing and examining this variable in the present context. Notably, our approach is distinct from traditional cross-cultural psychology (Berry, 2000), in that we can distinguish cultural patterns between any meaningful geographically defined collectives (e.g., US states, counties), not just between nations or ethnic groups.

In empirical operational terms, distal affordances for TSD (a) may be studied by examining the relative distribution of *disembedding devices* that necessitate and facilitate the exact measurement and coordination of time and space (Palitsky et al., 2016). Historically, prominent examples of disembedding devices have been railway, financial, and banking systems; more recently, perhaps the most prominent such device would be internet access, which can be considered both in terms of broadband connectivity and the availability of internet-capable devices (e.g., smartphones, computers). Cultural-level TSD (b) manifests as the organization of behavioral patterns of groups of people in a social environment. Past research (Keefer et al., 2019) has used indices of spatial mobility to gauge the extent to which the activities of individuals are 'stretched' across space and time at the cultural or group level. Finally, individual-level TSD (c) has been examined as the extent to which time and space are understood as commodified and instrumentalized dimensions, and to which activities and goals are performed across temporal and spatial distance (e.g., planning through disembedding devices; spatial flexibility in daily routines).

Variability at the individual level stems largely from access to disembedding devices and cultural-level TSD. Historical data show that increased use of telecommunications (disembedding devices) is associated with more population-level spatial mobility (cultural TSD; Graham & Marvin, 1996; Sullivan et al., 2015); and prior research has shown that increased use of internet, smartphones, and GPS (disembedding devices) is also associated with greater individual-level TSD (Keefer et al., 2019). Thus, the construct of TSD offers a way to connect broad historical and structural processes with phenomenological experiences of time and space.

TSD, Social Class, and Socioeconomic Status

Temporal and spatial orientations covary consistently with indices of social class and SES. In terms of temporal orientations, higher SES individuals tend to plan and save for the future more, discount delayed rewards less, and see the future as more predictable than lower SES individuals (Fieulaine & Apostolidis, 2015; Guthrie et al., 2009; Whitaker et al., 2011). In terms of spatial orientations, higher SES individuals tend to have less residential mobility, higher likelihood of home ownership, and higher likelihood of commuting to work (Clark, 2018; Fuguitt, 1991; Lewicka, 2011). These findings can be understood to reflect the reality that differential access to technology and economic, cultural, and social capital affords higher SES individuals the opportunity to better adopt TSD. Importantly, the impact of differential access is reinforced by differential socialization. Children raised in higher class settings receive earlier and more frequent exposure to disembedding devices, as well as education in planning and pursuing long-term goals (Heft, 2013). Such affordances allow higher SES individuals to embody a sense of agency experienced as perceptions of control over the future and the movement of the body through space. Inversely, lower SES individuals who often lack such affordances experience diminished agency: the future is more uncertain and outside one's control, and the movement of the body through space is often constrained by the demands of flexible capitalism (Apostolidis, 2018; Fieulaine & Apostolidis, 2015).

These differences in spatiotemporal orientations in turn predict more proactive coping for higher than for lower SES individuals (Caplan & Schooler, 2007; Griskevicius et al., 2011; Kraus et al., 2012; Kruger et al., 2008; Wills et al., 2001). Proactive coping has been shown to be effective in lessening the psychological burden of financial stressors (Serido et al., 2010; Viseu et al., 2021) and in recovering from their material impacts (Hu & Gan, 2011; Solove et al., 2015), and is particularly relevant to TSD in that it concerns behavioral responses to temporally

distant, anticipated threats (Aspinwall & Taylor, 1997). For example, debt represents an especially significant potential threat to financial, physical, and psychological well-being, but this threat is exacerbated among lower SES individuals (Schmitt et al., 2020). The fact that SES moderates debt's negative psychological impact can be explained in part by the differential affordances indexed by TSD. Because higher TSD individuals habitually view time as a resource and organize time use over extended periods, they should be able to cope with debt more effectively by, for instance, entering into debt when it is advantageous in the long-term and paying off debts routinely. Lower SES individuals – who are often targeted by creditors, subject to higher interest rates, and trapped in cycles of predatory lending (Leicht & Fitzgerald, 2006; Mann, 2008) – may find themselves unable to effectively cope with debt, given material constraints and lack of access to affordances for planning and proactive coping.

Seemingly ubiquitous access to disembedding devices in Western societies may tempt some to assume that the proactive coping strategies predicted by higher TSD are attainable for anyone, regardless of SES. As such, lower SES people who struggle to adopt normative spatiotemporal orientations are often dismissed as "the lazy poor" (Elias, 1992). At the same time, individualistic forms of spatiotemporal agency are often touted by researchers and laypeople as the "adaptive" way of being, though they may not in fact be feasible in a given ecological context (Pepper & Nettle, 2017; Sheehy-Skeffington, 2020). For instance, Epel and colleagues' (1999) work with homeless individuals found that future orientation and self-efficacy predicted proactive coping strategies (e.g., more time spent searching for jobs, less time watching TV) at the homeless shelter, but *did not* predict whether individuals attained stable housing. The unpredictability of homelessness – and lower-class contexts in general – often renders the future legitimately precarious and uncontrollable (Fieulaine & Apostolidis, 2015).

Thus, it should neither be assumed that poverty results from "laziness", nor that it can simply be remedied by the adoption of certain spatiotemporal orientations. We highlight a need for social scientists to investigate more nuanced relationships between SES, spatiotemporal orientations, and coping. Specifically, we propose that while adopting a higher TSD orientation may facilitate proactive coping for lower SES individuals, this may come at a significant psychological cost in the form of increased stress.

Temporal-spatial precarity: The role of TSD in stress and coping

In the present research and theorizing, we conceive of precarity as a complex social process. Just as coloniality is the "darker side" of modernity (Mignolo, 2011), precarity is the darker side of flexibility in capitalism. Flexible capitalism exploits technology to "stretch" its temporal-spatial boundaries through globalization, financialization, and digitalization (e.g., remote work, surveillance of labor; Harvey, 1990; Snyder, 2016). Yet flexibility for some (the wealthy) is inherently experienced as precarity for others (the majority workforce), as the astronomic rise in income inequality over the neoliberal period attests. The debt economy is a primary example of this process, making financial debt an important variable for study (Lazarrato, 2012). Complex debt mechanisms allow companies, universities, and banks to profit off finance (flexibility), while also justifying decreased social rights and spending as consumers are forced to take on larger mortgages, student loans, and insurance payments (precarity). Precarity is thus the individualization of risk engendered by flexible capitalism; flexibility and precarity are two aspects of the same unfolding social process, and factors such as SES moderate which aspect a given individual experiences in their life.

As the economy increases in temporal-spatial flexibility and complexity, workers are forced to keep pace and become more flexible/precarious themselves. All individuals in societies

of the Global North are expected to conform to the high-TSD standards of flexible capitalism in spite of the lack of material security, certainty of the future, and command over movement through space characteristic of low SES (Auyero, 2010; Carvounas & Ireland, 2008; Elias, 1992). The moderating impacts of social class and prior socialization into high-TSD culture becomes critical: With relation to the temporal-spatial demands of flexible capitalism, lower SES individuals are in a double-bind. On the one hand, they are largely socialized in a way that is less conducive to the development of psychological TSD, and subject to environmental factors and events that often make the future uncertain and space uncontrollable (Pepper & Nettle, 2017). On the other, they are bombarded with cultural messages that echo the Protestant Work Ethic (Weber, 2013), suggesting everyone should be able to agentically master their time use in the service of personal advancement (flexibility).

We agree that a normative spatiotemporal orientation can be a valuable asset to lower SES people, in the sense that it should afford them more proactive coping tendencies. We diverge from the conventional conclusion that often follows, namely, that interventions to increase future orientation, conscientiousness, or planning capability will produce substantial beneficial outcomes for lower SES people.[2] This conventional position is incomplete (and perhaps erroneous) in two ways. It ignores the fact that individual differences such as future orientation are not mere abstract psychological tendencies, but are, to a considerable extent, the product of structural affordances (indexed by TSD) which are differentially distributed according to social class. Second, it overlooks that any effort to improve one's station by pursuing high-TSD affordances and adopting a high-TSD orientation represents a tremendous burden for lower SES individuals. This idea mirrors recent work on the "dark side" of traits typically presumed to

[2] Note that this conventional position has also been critiqued in other recent work (Sheehy-Skeffington, 2020; cf. Special Issue **109)**.

be beneficial such as conscientiousness, with some studies showing that conscientiousness predicts negative psychological outcomes following bouts of unemployment (Boyce et al., 2010) or income loss (Boyce et al., 2016). People high in TSD who are low in SES may thus be more attuned to abstract and temporally extended financial stressors (e.g., avoiding or paying off debt), and may also suffer greater stress in response as the precarity of flexible capitalism renders proactive coping quite difficult. Alternatively, people high in both TSD and SES may not be driven to proactively avoid debt because their economic position renders debt an adaptive, flexible tool, rather than a precarious burden (Lazzarato, 2012).

In summary, spatiotemporal orientations are important variables for understanding how people cope with the stressors generated by precarious life under flexible capitalism. People who are habitually higher in TSD will cope with stressors in ways that extend beyond the present and into the future, whereas people who are habitually lower in TSD will cope with stressors in more present-oriented, contextually embedded ways. Importantly, individual differences in TSD are afforded by access to disembedding devices, which is in turn closely related to an individual's social standing. However, as access to disembedding devices has grown for lower SES individuals, there has come to be greater variation in TSD within social class groups. This potential for the adoption of high TSD among lower SES individuals, coupled with contemporary cultural messaging, has created a prescriptive mandate for lower SES individuals to adopt high TSD standards in order to cope with the precarious realities of flexible capitalism. We expect higher TSD to be associated with more proactive coping, especially among lower SES individuals; but we also expect it to be associated with greater levels of stress, reflecting the struggle of lower SES, high-TSD individuals to attain greater spatiotemporal agency in the face of substantial situational constraints.

Current Studies

In the present investigation, we hope to elaborate and complicate research on the relationship between SES, spatiotemporal orientations, and coping. In order to do so, we investigate the interactions between SES and indicators of TSD on stress and coping at multiple levels of analysis. We investigate the relationships between cultural TSD, disembedding devices, and coping with debt at the state- (Study 1) and county-level (Study 2) in the US. Then, we investigate the impact of individual-level TSD on stress and coping for individuals of varying socioeconomic standings (Studies 3-4). Importantly, in the present paper we do not operationalize precarity per se, but rather seek to illuminate a particular manifestation of the experience of flexibility/precarity under flexible (neoliberal) capitalism. The foregoing theoretical analysis yields three primary hypotheses to test in these data:

H1: Distal affordances and Cultural TSD (based on geographical indicators reflecting disembedding devices and collective patterns of behavior across various regions) will predict proactive coping with debt, such that higher TSD will be associated with lower debt delinquency rates in a given geographical location (Studies 1-2). Additionally, distal affordances for TSD will interact with indicators of SES to predict proactive coping with debt, such that higher TSD will be associated with lower debt delinquency rates, particularly for less wealthy geographical locations (Study 2).

H2: Individual-level TSD will interact with indicators of SES to predict more optimism about financial futures, such that TSD will more strongly predict optimistic debt expectations for lower SES individuals. (Study 3)

H3: Individual-level TSD will interact with indicators of SES to predict stress, such that TSD will predict greater stress for lower SES individuals. (Study 4)

As an additional corollary to these hypotheses, we predict that TSD indicators will remain significant predictors of stress and coping when controlling for the related, but distinct, constructs of Conscientiousness (Studies 1, 3-4) and Future Orientation (Studies 3-4). Conscientiousness is a personality trait characterized by self-control, goal-directed behavior, and industriousness (Roberts et al., 2009), while future orientation is a stable individual difference variable that indexes planning and focus on future goals (Zimbardo & Boyd, 2015). Both constructs overlap considerably with the extended temporal aspects of TSD, and have been associated with proactive coping tendencies (e.g., Aspinwall, 2005; Straud et al., 2015). However, past studies on these constructs may be limited in that they (1) have often ignored the culturally and historically situated nature of such ways of being, (2) have not typically acknowledged the relevance of spatial orientations, and (3) have not assessed the structural and technological affordances for extending activity and planning across greater spatial and temporal distances (Obschonka et al., 2018; Schmitt et al., 2021). TSD attempts to bridge these gaps in past literature both theoretically – by situating spatiotemporal orientations within broader literatures on the sociocultural and historical production of these ways of being – and empirically – by assessing TSD at multiple levels of analysis in ways that acknowledge structural and technological affordances. Thus, it is important that we compare and control for these related variables.

STUDY 1

In order to assess the role of TSD in coping with financial stress at the cultural level, we analyzed the relationships between US state-level TSD, average household debt, and average debt delinquency rates over time using a cross-lagged panel model. We hypothesized that TSD would negatively predict debt delinquency rates over time, as a demonstration of how TSD affords proactive coping with financial stressors. Our sample included all 50 states and Washington, D.C. (n = 51) using data at two time points (2013 and 2019). Analyzing variables of interest at two time points allowed us to use a cross-lagged panel model to account for potential variation in TSD over time, as well as to assess possible causal directions in the relationships between cultural-level TSD and proactive financial coping (Little, 2013).

Method

State-Level (Cultural) TSD

Following Keefer et al. (2019), we estimated cultural TSD using aggregated US state-level data from the American Time Use Survey (ATUS) on two measures: (1) the number of unique settings occupied and (2) the number of activities that individuals in each state reported engaging in during the course of a single day. Consistent with theorizing on TSD, such a measure reflects cultural patterns of behavior that convey a level of comfort with the flexible use of time stretched across diverse spaces. This measure was found to predict a variety of cultural psychological and economic variables, including lower state-level collectivism and tightness, higher household income, and more health behavior. The 2013 estimates of state-level TSD were the same used by Keefer et al. (2019). This consisted of data from 148,345 individuals on these two measures using ATUS data from 2003-2013. Responses on the two items were averaged at the state level, and the resultant state-level variables were highly correlated ($r(49) = .68$, $p <$

.001). These were standardized and averaged to form the 2013 state-level TSD estimates. The same procedure was followed to create estimates for 2019: we used 2014-2019 ATUS data from 62,241 individuals, averaged responses on the two measures in each state, found that these were again highly correlated ($r(49) = .69$, $p < .001$), and standardized and averaged them to compute the 2019 state-level TSD estimates.

Conscientiousness

We utilized state-level estimates of conscientiousness calculated by Rentfrow and colleagues (2008) in order to assess differences in how TSD and conscientiousness might predict proactive coping with debt.

State-level Debt

We used state-level averages for total household debt in US dollars in both 2013 and 2019, including mortgage, student, auto, and credit card debt. We also used state-level debt delinquency rate across these types of consumer debt for 2013 and 2019 (Federal Reserve Bank of New York, 2019). State-level rate of debt delinquency reflects the percent of borrowers who have unpaid debts past due on at least one kind of consumer debt, reflecting difficulties in proactively coping with debt. Research on debt commonly assesses both objective amounts of debt and measures of debt delinquency, as these exhibit different outcomes for borrowers (e.g., Sweet, 2021).

Methods of Analysis

We estimated a model of the cross-lagged associations between TSD, debt delinquency rates, and average total household debt in 2013 and 2019. All variables included in the model were *z* transformed. TSD in 2019 was regressed on 2013 TSD, debt delinquency, and total debt.

Debt delinquency in 2019 was regressed onto 2013 TSD, debt delinquency, and total debt. Total debt in 2013 was regressed onto 2013 TSD, debt delinquency, and total debt.

In supplemental analyses, we controlled for standard regional economic variables (median household income, unemployment, economic inequality, education, population density) as well as state-level estimates of conscientiousness (Noss, 2014; Obschonka et al., 2013). Likewise, because neighboring geographic regions cannot necessarily be considered independent observations, a fundamental assumption of linear regression may be violated when conducting OLS regression analyses on geographical data (Tobler, 1970). As such, we tested for spatial autocorrelation of the residuals in the analyses presented below. Focal analyses (i.e., effects of TSD on future debt delinquency) were substantively unchanged when accounting for covariates, and we did not find evidence of spatial autocorrelation (See Table S1 in Supplemental Materials).

Power Analysis

A sensitivity power analysis conducted in G*Power (Faul et al., 2009) revealed that a sample of 51 would be sufficient to detect an f^2 of .16 at 80% power for the unique effect of state-level TSD on debt delinquency beyond regional covariates.

Results

See Table 1 for means, standard deviations, and correlations between variables of interest. 2013 TSD was negatively associated with debt delinquency in both 2013 ($r(49) = -.59$, $p < .001$) and 2019 ($r(49) = -.76$, $p < .001$), which remained significant when partialling out regional covariates. However, TSD in 2013 was also positively associated with total debt ($r(49) = .29$, $p = .036$) and marginally so in 2019 ($r(49) = .27$, $p = .057$), though neither effect was significant when partialling out regional covariates. Comparing this pattern of associations to

conscientiousness, conscientiousness was positively associated with debt delinquency in 2019 ($r(49) = .31$, $p = .030$), and negatively with total debt in both 2013 ($r(49) = -.37$, $p = .008$) and 2019 ($r(49) = -.31$, $p = .025$). However, these associations were no longer significant when partialling out regional covariates. This suggests that cultural-level TSD may afford proactive coping with financial stressors in a way that is distinct from regional variation in personality.

Table 2 and Figure 1 present summaries of the cross-lagged panel model which showed perfect fit (RMSEA = 0, CFI = 1, TLI = 1, SRMR = 0). TSD, debt delinquency, and total debt were all highly stable over time, as evidenced by positive, relatively strong autoregressive effects. TSD in 2019 was also negatively predicted by 2013 debt delinquency ($b = -.19$, SE = .10, $p = .046$) and positively predicted by total debt ($b = .26$, SE = .08, $p = .001$). This suggests that states with more delinquent debt in 2013 saw decreases in TSD, while states with more debt in absolute terms in 2013 saw increases in TSD in 2019.

For the focal cross-lagged pathways predicting debt delinquency in 2019, all cross-lagged effects were significant. Debt delinquency in 2019 was negatively predicted by 2013 levels of both TSD ($b = -.43$, SE = .09, $p < .001$), and total debt ($b = -.20$, SE = .07, $p = .004$). This suggests that states with higher cultural levels of TSD in 2013 saw subsequent decreases in debt delinquency rates, perhaps indicating more proactive coping with debt over time[3].

For cross-lagged pathways predicting total debt in 2019, we did not observe significant effects of TSD in 2013 ($b = -.04$, SE = .04, $p = .340$), or debt delinquency in 2013 ($b = -.02$, SE =

[3] The small state-level sample size in Study 1 ($n = 51$) is perhaps underpowered to meaningfully detect the unique effect of TSD on future debt delinquency rates when controlling for all other variables (unadjusted $f^2 = 1.36$, adjusted $f^2 = .04$). However, even the (significant) relatively small effect size of TSD on future debt delinquency rates observed here when accounting for all covariates may be a meaningful effect at this level of analysis. For instance, Rentfrow and colleagues' (2008) work in geographical psychology suggests that at the state level, the observed effect size of $f^2 = .04$ could be considered a "medium" effect size worth considering in the context of such exploratory research. However, a post-hoc power analysis revealed that this adjusted effect size achieved a power of .29.

.03, p = .596). This suggests that state-level indebtedness was highly stable over time, and that neither TSD nor debt delinquency rates in 2013 could account for changes in total indebtedness over time.

Discussion

State-level TSD was associated with less debt delinquency both cross-sectionally and longitudinally in a cross-lagged panel model. This suggests that TSD at this broad cultural level – indexed by patterns of behavior adopted by a large group of people in a geographical region – may be an important resource for proactive coping with financial debt, one of the major facets of life under flexible capitalism. However, investigating these relationships at the US state-level provides a relatively small sample of geographical units, too small to detect the unique effects of TSD on debt delinquency rates for regions that differ in terms of income and economic wellbeing. In Study 2 we sought to analyze similar relationships with a more fine-grained geographical analysis at the US county-level, and to focus on more distal structural affordances for TSD, rather than regional patterns of behavior.

STUDY 2

In Study 2, we focused on distal affordances for TSD in the context of a more fine-grained geographical level of analysis. Specifically, we assessed the relationships between US county-level access to disembedding devices, average household debt, and average debt delinquency rates. Our full sample included counties in all 50 states and Washington, D.C. (n = 2,945). We did not have county-level estimates of conscientiousness or future orientation, so we could not compare this proxy for TSD to these variables at the county level. The larger sample of geographic units in Study 2 allowed us to test for the hypothesized interaction between (affordances for) TSD and SES on coping with financial stressors.

Method

Access to Disembedding Devices

We utilized 5-year estimates from 2017 American Community Survey data (United States Census Bureau, 2017) on five variables indicating access to disembedding devices at the county level. These included percentage of households in each state with (1) broadband internet access, (2) a desktop or laptop, (3) a smartphone, (4) a tablet or other portable computer, and (5) any other kind of computer. These five variables were standardized and averaged to form a reliable composite (α = .89). In the interest of ensuring convergent validity of this operationalization of the distal affordances for TSD, we tested whether the same indicator of access to disembedding devices at the *state* level was associated our measure of cultural-level TSD. These variables were indeed positively and somewhat strongly correlated (rs(49) = .50-58, p < .001; See Supplemental Materials Table S2).

County-level Debt

County-level total amount of debt is not publicly available, so we used county-level estimated debt-to-income-ratio (Ahn et al., 2018). The other county-level debt data were compiled by researchers at the Urban Institute (Braga et al., 2019), based on estimates from the 2014-2018 American Community Survey. As a measure of debt delinquency, we used the percent of borrowers in a given county who had any debt in collections, meaning any debt that is past due (analogous to the state-level delinquent debt rates used in Study 1).

Median Household Income

As a proxy for SES, we used data on median household income from County Health Rankings and Roadmaps (2020). This measure allows us to approximate the broader economic contexts in which people in these counties live by assessing access to wealth and resources (Oishi, 2014; Stephens et al., 2014).

Regional Control Variables

We controlled for standard regional variables: county-level unemployment rate, education, income inequality, population density, and debt-to-income ratio (County Health Rankings and Roadmaps, 2020).

Methods of Analysis

We tested and accounted for spatial autocorrelation of the residuals in the analyses presented below.

Power Analysis

A sensitivity power analysis revealed that the full sample of 2,945 counties would be sufficient to detect an f^2 of .0027 at 80% power for the hypothesize interaction between county-level internet access and income on debt delinquency. However, missing data for some covariates left a sample of 2,635, which would be sufficient to detect an f^2 of .003.

Results

See Table 3 for means, standard deviations, and correlations. See Supplementary Materials (Table S3) for models that account for spatial autocorrelation between counties. Analyses held when accounting for spatial autocorrelation.

Access to disembedding devices was weakly associated with higher debt-to-income ratios ($r(3138) = .12$, $p < .001$), but was negatively associated with debt delinquency rates ($r(2945) = -.46$, $p < .001$). Both effects remained significant when partialling out regional covariates. This suggests that in spite of higher debt burdens (debt-to-income ratios), counties with increased access to the structural affordances for TSD were less likely to have delinquent debt. Access to disembedding devices was strongly associated with higher median household income ($r(3141) = .78$, $p < .001$), which was also associated with higher debt-to-income ratios ($r(3138) = .19$, $p < .001$) and lower debt delinquency rates ($r(3138) = -.56$, $p < .001$) in a similar pattern.

We then tested for the hypothesized moderating effect of median household income in the relationship between access to disembedding devices and debt delinquency. We regressed debt delinquency rates onto access to disembedding devices, median household income, their interaction, and regional covariates after standardizing focal independent variables. We observed a significant interaction, $b = .17$, $SE = .02$, $t(2626) = 9.97$, $p < .001$, $f^2 = .02$. Probing the simple effects, access to disembedding devices negatively predicted debt delinquency at low (-1 SD) income ($b = -.12$, $SE = .03$, $t(2626) = 3.75$, $p < .001$), and positively at high (+1 SD) income ($b = .23$, $SE = .04$, $t(2626) = 5.25$, $p < .001$), while there was no effect at mean levels of income ($b = .06$, $SE = .03$, $t(2626) = 1.66$, $p = .096$). Johnson-Neyman analysis revealed that at median household incomes below $40,948.66, access to disembedding devices negatively predicted debt delinquency rates, and positively predicted debt delinquency rates above median household

incomes of $50,822.63. See Figure 2 for a summary of this interaction, and Supplemental Materials (Figures S1) for depictions the interaction with raw data and Johnson-Neyman analyses plotted.

Discussion

In Study 2, we used county-level data on use of disembedding devices to assess how distal structural affordance for TSD interacted with household income to predict effective coping with debt. Conceptually replicating Study 1, we showed that county-level TSD affordances negatively predicted debt delinquency rates, albeit with weaker effects than at the cruder state level. More specifically, TSD affordances negatively predicted debt delinquency for poorer, and positively predicted debt delinquency for wealthier counties, except in the case of medical debt delinquency rates. Across Studies 1-2, we found evidence that geographical estimates of TSD generally predict adaptive coping with debt, especially for poorer geographical areas. This suggests that (affordances for) TSD may benefit lower SES individuals to engender a sense of spatiotemporal agency in the face of debts. In the next studies, we assess the role of TSD at the individual level in coping with various stressors.

STUDY 3

In Study 3, we moved from probing cultural- and structural-level analyses of TSD to analyzing individual-level TSD. We conducted a correlational study to assess how individual-level TSD may be associated with financial stress and coping. Specifically, we investigated how TSD relates to expectations about future debt, and how this association may differ based on an individual's subjective SES. Lower SES individuals typically experience more stress and fatalism about future debts (Schmitt et al., 2020), but an untested possibility is that TSD may buffer these effects by giving lower SES individuals a greater sense of optimism about their financial futures. We therefore hypothesized that TSD would buffer future debt expectations for lower SES individuals, such that those high in TSD, but low in SES would report greater optimism about how much future debt they would have. We also tested whether this hypothesized pattern would also hold for conscientiousness and future orientation, to compare how these similar constructs relate to TSD.

Method

Participants

Two-hundred ninety-three US participants were recruited on MTurk in August 2018 and paid $1.50 to participate. Removing those who failed attention checks left a total of 247 participants (39% women; M_{Age} = 33.31, SD_{Age} = 9.88; 70.4% White/Caucasian, 13% Black/African-American, 7.7% Hispanic/Latinx, 6.1% Asian American, 2.4% Native American, .4% Other). Participants were allowed to select more than one race/ethnicity. These participants were recruited for a separate study of the effect of trauma risk factors on spatiotemporal cognition. For the present analysis, we focus on the subset of variables described below, but the study also included the Adverse Childhood Experiences questionnaire (Felitti et al., 1998) and

the DES-II questionnaire (Bernstein et al., 1993). Unless otherwise indicated, participants responded to items on 7-point Likert scales (1 = strongly disagree, 7 = strongly agree).

Subjective Socioeconomic Status

Participants were asked to indicate their subjective socioeconomic status (SSS) using the MacArthur Ladder scale, which asks participants to select a rung of a ladder representing their standing in society and is anchored with the bottom rung (1) indicating the least well off and the top (10) indicating the most well off. Responses ranged across the scale, but tended toward the midpoint.

Individual difference predictors

Individual-level TSD was assessed with the 8-item scale created and validated in prior research ($\alpha = .68$; Keefer et al., 2019). However, a factor analysis of the 8 items using a much larger sample than the original paper revealed a two-factor structure, which was used in the present paper (see Supplemental Materials Table S5). The first factor, which we call "planning with devices", included 5 items ($\alpha = .60$) related to the extension of activities across time using different disembedding devices (e.g., "I find it hard to know what I'll be doing tomorrow without looking at my planner"). The second factor, which we call "spatial flexibility", included two items ($r = .51$) related to stretching activity across space (e.g., "I feel perfectly comfortable moving through many different environments in the course of a day"). Conscientiousness was assessed with the 12-item BFI-2 on a 5-point Likert scale ($\alpha = .91$; Soto & John, 2017). Future orientation was assessed with the 12-item ZTPI on a 5-point Likert scale ($\alpha = .81$; Zimbardo & Boyd, 2015).

Expected debt

Participants completed two items used in prior research (Study 2 in Schmitt et al., 2020) assessing their expected future debt: "In FIVE (TEN) years, do you expect to have more debt, less debt, or about the same?" (1 = Much less debt; 4 = About the same; 7 = Much more debt). Items were highly correlated (r = .79, p < .001) and were averaged to form a reliable composite. Participants tended to be somewhat optimistic about their future debt (see Table 4).

Power Analysis

A sensitivity power analysis revealed that a sample of 247 would be sufficient to detect an f^2 of .03 at 80% power for intended moderation analyses.

Results

See Table 4 for means, standard deviations, and correlations. To test our hypothesis that TSD would interact with SSS to predict expected debt, we first regressed expected debt onto TSD – planning with devices, SSS, and their interaction, finding a significant interaction, b = .19, SE = .04, $t(242) = 4.50$, p < .001, f^2 = .08. This effect remained significant when controlling for covariates (future orientation and conscientiousness), b = .17, SE = .04, $t(239) = 4.02$, p < .001, f^2 = .06. Probing simple effects, TSD – planning with devices did not predict debt expectations at low (-1 SD) SSS (b = -.10, SE = .13, $t(239) = .74$, p = .459), but positively predicted debt expectations at mean (b = .22, SE = .10, $t(239) = 2.18$, p = .031) and high (+1 SD) SSS (b = .54, SE = .13, $t(239) = 4.22$, p < .001). A Johnson-Neyman analysis revealed that at all levels of SSS below 1.49, TSD – planning with devices negatively predicted expected debt, while it positively predicted expected debt at levels of SSS above 4.76. We then regressed expected debt onto the TSD – spatial flexibility, SSS, and their interaction, finding a significant interaction, b = .09, SE = .04, $t(242) = 2.42$, p = .016, f^2 = .02. This effect remained significant when controlling for covariates, b = .09, SE = .04, $t(239) = 2.44$, p = .016, f^2 = .02. Probing

simple effects, TSD – spatial flexibility negatively predicted debt expectations at low (-1 SD) SSS (b = -.23, SE = .09, t(239) = 2.49, p = .013), but did not predict debt expectations at mean (b = -.07, SE = .07, t(239) = .90, p = .368) or high (+1 SD) SSS (b = .10, SE = .11, t(239) = .95, p = .341). A Johnson-Neyman analysis revealed that at all levels of SSS below 3.91, TSD – spatial flexibility negatively predicted expected debt. These interactions are depicted in Figure 3.

We performed a similar analysis testing for an interaction between conscientiousness and SSS, finding a significant interaction in the opposite direction, b = -.18, SE = .06, t(240) = 3.28, p = .001, f^2 = .04. A Johnson-Neyman analysis revealed that at all SSS levels below 4.90, conscientiousness did not predict expected debt, while it negatively predicted expected debt for all levels of SSS above 4.60. Performing a similar analysis testing for an interaction between future orientation and SSS did not yield a significant effect, b = .15, SE = .09, t(240) = 1.65, p = .103, f^2 = .01.

Discussion

In Study 3, individual-level TSD interacted with subjective socioeconomic status to predict debt expectations such that for lower SES individuals, TSD – spatial flexibility negatively predicted debt expectations, while for higher SES individuals, TSD – planning with devices positively predicted debt expectations. Of the two identified factors of the TSD scale, “planning with devices” tended to interact more strongly with SES. Importantly, conscientiousness and future orientation showed different patterns of results when interacting with SES. This suggests that TSD is distinct from these conceptually similar constructs, and that it may play an important role in the way that people from different social strata cope with financial stressors.

STUDY 4

In Study 4, we experimentally manipulated subjective socioeconomic status to test whether the interaction between TSD and SES on responses to financial stress could be demonstrated under experimental conditions. We measured individual-level TSD, manipulated SSS, and measured stress as an outcome. We hypothesized that among participants manipulated to feel that they were relatively lower in wealth and status, TSD would positively predict stress, indicating higher TSD may predispose individuals to be more sensitive to information about threats to their financial status and well-being. Extrapolating from this experimental hypothesis to the broader social world, confirmatory evidence would attest to the "double-bind" of TSD for those who struggle with precarity: It can equip them with cognitive tools and skills to feel more confident about the future (Study 3), but can also make them experience greater stress in response to financial threats (Study 4).

Method

Participants

123 US undergraduate students in an introductory psychology course participated for course credit (34% male, 65% female, 1% transgender; M_{age} = 18.99, SD_{age} = 1.72; 70.7% White, 8.1% Black, 10.6% Asian, 3.2% Native Hawaiian/Pacific Islander, 8.9% American Indian/Alaskan Native, 27.6% Hispanic/Latinx, and 8.9% other). Participants were again allowed to select more than one race/ethnicity. Only 86 of the 123 participants completed measures of TSD and future orientation because they were assessed in a pre-measure that was not a strict requirement. Participants who did not complete measures of future orientation and TSD were thus excluded from the focal analyses of interactions between these variables and the manipulation.

Procedure

We first measured TSD and future orientation in a mass survey of introductory psychology students. We then brought participants who signed up for this study into the lab in groups of 3 where they completed all other measures on computers in private cubicles. After the study was complete, participants were debriefed on the purpose of the study and were granted course credit.

Individual Difference Predictors. Individual-level TSD was assessed using the same 8-item scale as in Study 3. Once again, scores on the five-item planning with devices (M = 4.49, SD = 1.18, α = .75) and the two-item spatial flexibility (M = 4.78, SD = 1.14, r = .35) subscales were aggregated to form reliable composites. Future orientation was assessed using the same scale as in Study 3 (M = 3.46, SD = .40, α = .75). Conscientiousness was assessed using 2-items from the TIPI on a 7-point Likert scale (M = 5.48, SD = 1.25, r = .53; Gosling et al., 2003).

Subjective Socioeconomic Status Manipulation. Participants' subjective socioeconomic status was manipulated using the personal relative deprivation manipulation from Callan and colleagues (2011), which has been used to manipulate both subjective socioeconomic status and status more generally in several past studies (e.g., Brown-Iannuzzi et al., 2015; Greitemeyer & Sagioglou, 2018). Participants were given a cover story that the study was interested in financial behavior and discretionary income. Participants completed filler items to add legitimacy, including a 19-item financial conscientiousness scale, personality, race, ethnicity, age, and gender, as well as average monthly income and expenditures on housing, food, clothing, transportation, and debt payments. These data were not analyzed (except for conscientiousness) as they had no bearing on the feedback that participants received.

Participants were then told that a database would be used to calculate their Comparative Discretionary Income (CDI) Index Score which would tell them how much discretionary income they had compared to people who match their profile. They then saw loading screens that read "Accessing database. Please Wait…" and "Calculating your CDI Index Score based on people who match your profile..." in order to increase believability. Participants were then randomly assigned to one of two conditions. Those in the high SSS condition received a CDI Index score of + $144 ($n$ = 61), and those in the low SSS condition received a score of - $523 ($n$ = 62). In both conditions, the score was accompanied by a graph depicting the received score in comparison with the average score of people who matched their profile. This manipulation was designed to make participants in the high SSS condition experience an inflated sense of relative social status and wealth, and for participants in the low SSS condition to experience a deflated sense of relative social status and wealth. Participants were then instructed that the rest of the study assessed other financial decision-making behaviors.

Manipulation Check. Participants in both conditions completed the MacArthur Ladder scale as a manipulation check (M = 6.05, SD = 1.09).

Stress. Stress was assessed with the 14-item Perceived Stress Scale (PSS; Cohen et al., 1983). The PSS includes items on 5-point Likert scale such as "In the last month, how often have you been upset because of something that happened unexpectedly?" (M = 2.97, SD = .47, α = .80).

Power Analysis

A sensitivity power analysis revealed that a sample of 86 (participants with full data) would be sufficient to detect an f^2 of .09 at 80% power for intended moderation analyses.

Results

The SSS manipulation was successful, as evidenced by a significant difference in Macarthur Ladder scores between the high (M = 6.39, SD = 1.81) and low (M = 5.71, SD = 1.95) subjective wealth conditions, $t(121) = 2.02$, $p = .046$, $d = .36$. There were no differences in stress between high (M = 3.01, SD = .39) and low (M = 2.93, SD = .53) subjective wealth conditions, $t(114) = .92$, $p = .359$, $d = .17$.

We tested for the predicted interaction between TSD and condition on stress. We regressed stress onto TSD – planning with devices, condition, and their interaction, and found evidence of a significant interaction, $b = .31$, $SE = .09$, $t(78) = 3.28$, $p = .002$, $f^2 = .13$. This effect remained significant when controlling for covariates (future orientation and conscientiousness), $b = .29$, $SE = .09$, $t(74) = 3.07$, $p = .003$, $f^2 = .12$. In the low SSS condition, TSD – planning with devices significantly predicted higher stress (b = .23, SE = .07, $t(74) = 3.22$, $p = .002$), but there was no effect in the high SSS condition, (b = -.06, SE = .07, $t(74)$ = -.87, $p = .384$). This interaction is depicted in Figure 4. We then regressed stress onto TSD – spatial flexibility, condition, and their interaction, and did not find evidence of a significant interaction, $b = .11$, $SE = .10$, $t(78) = 1.05$, $p = .297$, $f^2 = .01$. This effect was also not significant when controlling for covariates (future orientation and conscientiousness), $b = .06$, $SE = .11$, $t(74) = .58$, $p = .562$, $f^2 = .004$.

We also tested for the interaction between conscientiousness and condition on stress. We regressed stress onto conscientiousness, condition, and their interaction, and did not find evidence of a significant interaction, $b = .13$, $SE = .07$, $t(112) = 1.84$, $p = .069$, $f^2 = .03$. We also tested for the interaction between future orientation and condition on stress. We regressed stress onto future orientation, condition, and their interaction, and found evidence of a significant interaction, $b = .59$, $SE = .27$, $t(76) = 2.19$, $p = .032$, $f^2 = .06$. Future orientation had no effect on

stress in the low SSS condition (b = .28, SE = .19, $t(76)$ = 1.42, p = .159), nor in the high SSS condition (b = -.32, SE = .19, $t(76)$ = -1.67, p = .099), though these effects were in opposite directions and were significantly different from one another. These simple effects of future orientation predicted stress in the same direction as TSD – planning with devices, though the effect was stronger for the latter.

Discussion

In Study 4, we found that individual-level TSD exacerbated global perceptions of stress for participants exposed to an experimental manipulation of SSS, even when controlling for variation in conscientiousness and future orientation. For participants higher in TSD – planning with devices, receiving threatening information about their financial situation resulted in heightened stress perceptions. Individuals who adopt this abstracted and commodified orientation toward time may be more attuned to stressors that threaten their finances. We did not observe a similar interaction between manipulated SSS and TSD – spatial flexibility on stress, in spite of the conceptually similar interaction observed in the correlational analyses in Study 3. This could suggest that "planning with devices" and the temporal stretching of activity is the TSD factor which more strongly attunes individuals to financial stressors.

This finding adds nuance to past research on SES, spatiotemporal orientations, and coping. These results suggest that even though there are benefits to lower SES individuals adopting higher TSD (such as being able to cope with future debt; Studies 1-3), there are also potential costs in the form of increased stress under financial threat. However, in spite of feeling more stressed, it is possible that individuals high in TSD are better equipped to cope with financial stressors in the long term. Being able to function effectively in a society that rewards

high TSD behaviors may make financial stressors more salient and threatening, but may also result in behaviors that can alleviate this stressor more effectively.

GENERAL DISCUSSION

Across 4 studies, TSD measured at different levels was associated with adaptive financial coping, especially for less wealthy places and lower SES individuals in the United States. However, individual-level TSD also predicted greater stress in the face of financial threat. While high TSD may be an adaptive psychological resource for lower SES individuals, it may simultaneously be a detriment to mental health as it may increase the salience of financial stressors while also highlighting the increased difficulty of coping with such stressors due to the precarity of lower SES life under flexible capitalism. We reiterate our view that individual psychological differences often assumed to be adaptive (e.g., future orientation, residential mobility) may in fact be more complicated when situated within a structural context.

Increases in both TSD and the precarity of lower SES life share roots in the global advancement of flexible capitalism. However, with some notable exceptions (e.g., Bay-Cheng et al., 2015; Becker et al., 2021; Girerd et al., 2020; Sheehy-Skeffington, 2020), few empirical studies in psychology situate findings within the structural-cultural context of neoliberal and flexible capitalism, which has increased the temporal-spatial precarity of workers as potential "labor time" has been expanded to all hours of the day and all places (Alliez & Lazzarato, 2018; Standing, 2011). Psychological investigations of spatial (e.g., Lewicka, 2011) and temporal (e.g., Zimbardo & Boyd, 2015) orientations have often not acknowledged the historical roots of such orientations, perhaps inadvertently reifying the abstracted ways of being in time and space that typify the Global North. In doing so, psychologists risk responsibilizing lower class individuals and others caught in the precarity of the neoliberal economy for their failures to adopt supposedly individual-level behaviors and orientations (Dej, 2016; Schmitt et al., 2021; see also Special Issue **109**). This responsibilization does not only occur *within* contexts like the US, but

has also occurred as nations like the US have forced others in the Global South to adopt hegemonic, high TSD orientations through colonization and through the globalization of flexible, neoliberal capitalism. Thus, where the flexibility enjoyed by some in the Global North is connected to the precarity experienced by many in the Global South, it is possible that a similar "double-bind" has occurred in contexts in the Global South: people in formerly colonized places may be expected to conform to high TSD orientations, in spite of the potential costs of such ways of being (Schmitt et al., 2021).

Limitations and Future Directions

The present research had several limitations. The samples for our individual-level studies (Studies 3-4) over-represent white participants, as well as participants likely to be higher overall in TSD (i.e., those who "free-lance" through MTurk, or pursue a college education). We were limited in our samples in the capacity to assess the role of racial or ethnic differences, despite the fact that in the United States such differences are clearly related to financial stress and debt (McNally, 2011) and to temporal-spatial precarity more generally (Apostolidis, 2018). Therefore, it remains an open question whether TSD measures would also interact with minoritized racial or ethnic group membership to predict outcomes similarly as was the case for SES.[4]

More generally, our studies focused on the U.S. population (Studies 1-2) and student/online samples specifically (Studies 3-4). In this context, we understand precarity as

[4] While we focused on interactions between TSD and SES in the present paper, it is important to acknowledge that racial and ethnic minority status and SES are often linked and can interact to produce various outcomes (Chetty et al., 2020; Cole, 2009), especially in the United States with its long history of structural racism and racial capitalism (Leong, 2013). Unfortunately, across Studies 1, 3, and 4, we did not have adequate power, or our samples over-represented white individuals such that it was not possible to interrogate interactions between TSD, SES, and race or ethnicity. Given the fairly large sample of US counties in Study 2, however, we looked for such interactions at the county-level. See Supplemental Materials pp. S9-S11. Briefly, the advantages of TSD in facilitating proactive coping with debt may be limited to poorer areas *generally*, and such advantages are less apparent when considering the intersection of race or ethnicity with SES (i.e., in poorer counties with higher percentages of minoritized racial and ethnic groups).

manifesting primarily in a temporal-spatial form under flexible capitalism: In other words, individuals are increasingly expected to be flexible in their use of time and space to accommodate new employment and labor practices. In such a context, where structural affordances for TSD (such as internet access) are differentially available but generally widely distributed, our pattern of results appears to have good external validity. Lower-SES individuals in societies such as the United States seem capable of utilizing TSD resources to cope with financial threats, even at the potential cost of worse mental health. However, our findings may not generalize outside of the US or other "WEIRD" populations (Henrich et al., 2010), such as contexts of comparatively low access to TSD affordances and forms of precarity in the Global South and elsewhere that center around hierarchical geopolitical relations such as coloniality or the use of borders to control migration (see Special Issue **104**, **106**).

One potential limitation of the present research is that the TSD construct was assessed in several different ways across the studies: as a cultural-level index of population activity (Study 1); as a set of structural affordances such as internet access (Study 2); and as a psychological attitude construct (Studies 3-4). This is a limitation in the sense that further (ideally pre-registered) replication of the patterns for each operationalization would be desirable, as well as multi-level studies assessing both cultural and psychological TSD. We also only manipulated subjective SES in the present paper, and so perhaps future work should attempt to manipulate TSD or cue affordances for it to assess its role in driving responses to financial stressors.

However, in another sense this aspect of the research is a strength, insofar as it broadens our empirical understanding of the TSD construct (Keefer et al., 2019). Studies 3-4 in particular showed that the individual-level TSD scale actually breaks down into two subscales – planning with devices and spatial flexibility – and that the former seems more predictive of outcomes

pertaining to financial well-being. TSD – planning with devices contains items related to future planning, use of disembedding devices, and valuing time as an abstract resource; it also behaves differently from conscientiousness and future orientation, constructs with which it superficially overlaps. These findings suggest that future research should refine and further develop self-report measures of TSD.

Contribution to a Social Psychological Understanding of Precarity

One of the major aims of the present paper, and of the Special Issue in which it appears, is to bring social psychological theory and research to bear on the social issue and concept of precarity, heretofore largely explored in other disciplines. Other contributions to the present Special Issue – notably **101** – have attempted data-driven operationalizations of precarity, i.e., through subjective experiences of ontological and financial insecurity. We believe precarity is a complex social process that manifests at multiple levels, and therefore we consider it important to learn from empirical efforts such as those in Special Issue **101**.

At the same time, we have taken a somewhat different approach to conceptualizing and examining precarity in the current paper. When precarity is understood as the "darker side" of flexibility in contemporary capitalism, it becomes important to examine the role of moderating variables such as SES and cultural/individual TSD capacities. The same outcome – such as accruing and managing financial debt – may ultimately manifest as "flexibility" for some and as "precarity" for others, or as an ambivalent admixture of both, contingent on such factors. Accordingly, there may be an important role for conceptualizing precarity not so much as a stable state or trait of individuals, but rather as a continuous potential condition of risk that may manifest suddenly or gradually as individuals pursue the dictates of flexible capitalism.

This finally brings us to an important point of convergence across many papers in this Special Issue, one which signifies a key role for psychology in the study of precarity. As indicated especially by the findings of our present Study 4, an important way in which precarity manifests is as psychological stress. As Deleuze and Guattari (2003) summarize the relationship between societal flexibility and individual precarity:

> The only remaining element of work left under world capitalism is the molecular, or molecularized, individual, in other words the "mass" individual. The administration of a great organized molar security has as its correlate a whole micro-management of petty fears, a permanent molecular insecurity, to the point that the motto of domestic policymakers might be: a macropolitics of society by and for a micropolitics of insecurity (pp. 215-216).

Stated differently, the positive benefits attendant on a flexible economy – such as higher rates of voluntary mobility, the convenience of credit, or telecommuting – are largely built on the precarity of heightened stress about unstable and unpredictable futures. Although very few, if any, individuals under contemporary capitalism are immune from such stress, it is disproportionately distributed. The upper-middle class homeowner experiences the flexibility of packages delivered to their door at the expense of the psychological stress of the Amazon worker under tight surveillance and temporal-spatial control, stress which takes a long-term toll on the worker's body. Psychology must contribute to the study of precarity because the measurable and consequential stress of precarious workers is part of the material reality of flexible capitalism.

Conclusion

While hegemonic psychological research may employ interventions to increase spatiotemporal agency for lower class individuals (see Estrada-Villalta & Adams, 2018), agency

cannot on its own be expected to override existing structures. Adopting higher TSD is not the same for a lower SES individual as it is for one who has been structurally endowed with it, nor is it likely that forced attempts to increase TSD will unilaterally serve as a means to climb the socioeconomic ladder. Rather, the adoption of TSD in a context that does not readily afford it likely creates a double-bind in which adaptive present-oriented coping strategies are eschewed for arduous, stress-inducing future-oriented ones. Thus, future research may seek to further problematize mainstream assumptions about spatiotemporal orientations. Further, future research should seek to document and accompany instances of active resistance to the dominant ways of understanding time and space (Watkins, 2015). Research on TSD may enhance our understanding of precarity largely by bridging the gap between structural and psychological phenomena in psychological research.

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Tables

Table 1. Means, standard deviations, and correlations with state-level variables. Coefficients above the diagonal represent zero-order Pearson's *r* coefficients, while those below the diagonal represent partial *r* coefficients accounting for median household income, unemployment, economic inequality, education, and population density (*Study 1*).

Variables	*M*	*SD*	1	2	3	4	5	6	7
1. TSD 2013	0	.92	–	.74***	-.59***	-.76***	.29*	.27†	-.11
2. TSD 2019	0	.92	.57***	–	-.56***	-.73***	.47***	.47***	-.26†
3. Debt Delinquency 2013	6.58%	1.45%	-.44**	-.29*	–	.78***	-.14	-.13	.22
4. Debt Delinquency 2019	6.03%	1.17%	-.55***	-.45**	.70***	–	-.38**	-.37**	.31*
5. Total Debt 2013	$44,067	$11,663	-.29†	-.05	.42**	.31*	–	.98***	-.37**
6. Total Debt 2019	$50,166	$12,532	-.26†	-.01	.38**	.30*	.95***	–	-.31*
7. Conscientiousness	0	1	.18	-.06	.11	.26†	.03	.09	–

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 2. Regression estimates for cross-lagged panel model of state-level variables (*Study 1*).

	Estimate	**SE**	***z***	***p***
TSD 2019				
TSD 2013	.53	.11	4.93	<.001
Debt Delinquency	-.19	.10	-2.00	.046
Total Debt	.26	.08	3.21	.001
Debt Delinquency 2019				
TSD 2013	-.43	.09	-4.70	<.001
Debt Delinquency	.53	.08	6.51	<.001
Total Debt	-.20	.07	-2.86	.004
Total Debt 2019				
TSD 2013	-.04	.04	-.95	.340
Debt Delinquency	-.02	.03	-.53	.596
Total Debt	.99	.03	35.58	<.001

Table 3. Means, standard deviations, and correlations with county-level variables. Coefficients above the diagonal represent zero-order Pearson's *r* coefficients, while those below the diagonal represent partial *r* coefficients accounting for unemployment, economic inequality, education, and population density (*Study 2*).

Variables	***M***	***SD***	**1**	**2**	**3**	**4**
1. Disembedding Devices	0	.82	–	.12***	-.47***	.78***
2. Debt-to-Income Ratio	1.68	.87	.11***	–	.12***	.19***
3. Debt Delinquency	32.76%	11.51%	-.34***	-.10***	–	-.56***
4. Median HH Income	$49,522	$12,887	.72***	.18***	-.43***	–

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 4. Means, standard deviations, and correlations with state-level variables (*Study 3*).

Variables	*M*	*SD*	1	2	3	4	5
1. Subj. Socioeconomic Status	4.90	1.91	–				
2. TSD – Planning with Devices	4.48	.99	.28***	–			
3. TSD – Spatial Flexibility	4.92	1.30	.24***	.32***	–		
4. Conscientiousness	3.79	.81	-.03	.08	.20**	–	
5. Future orientation	3.68	.54	-.08	.39***	.16*	.60***	–
6. Expected Debt	2.81	1.43	.04	.09	-.11†	-.25***	-.17**

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Figures

Figure 1. Cross-lagged panel model for state-level variables (*Study1*).

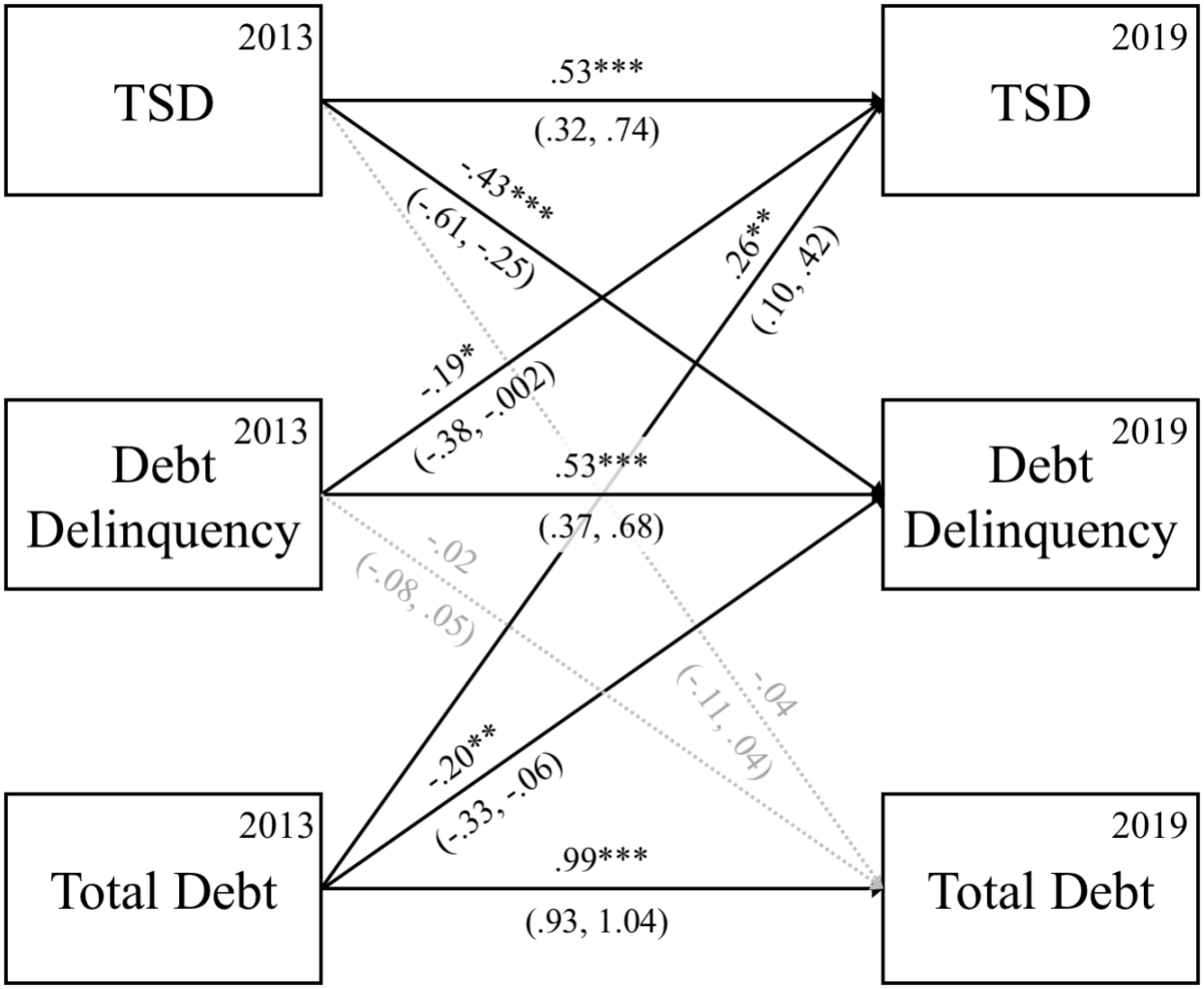
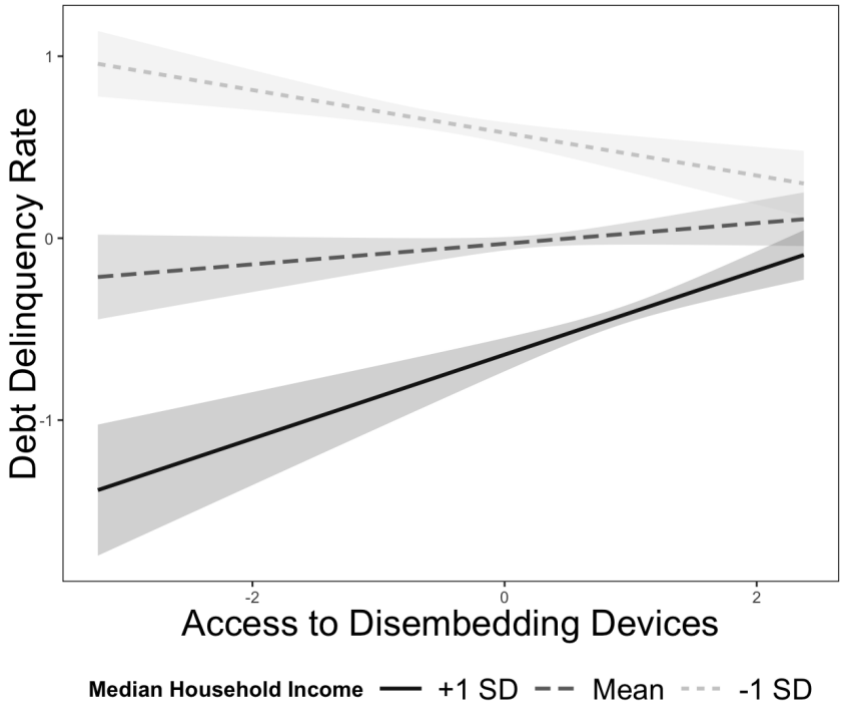
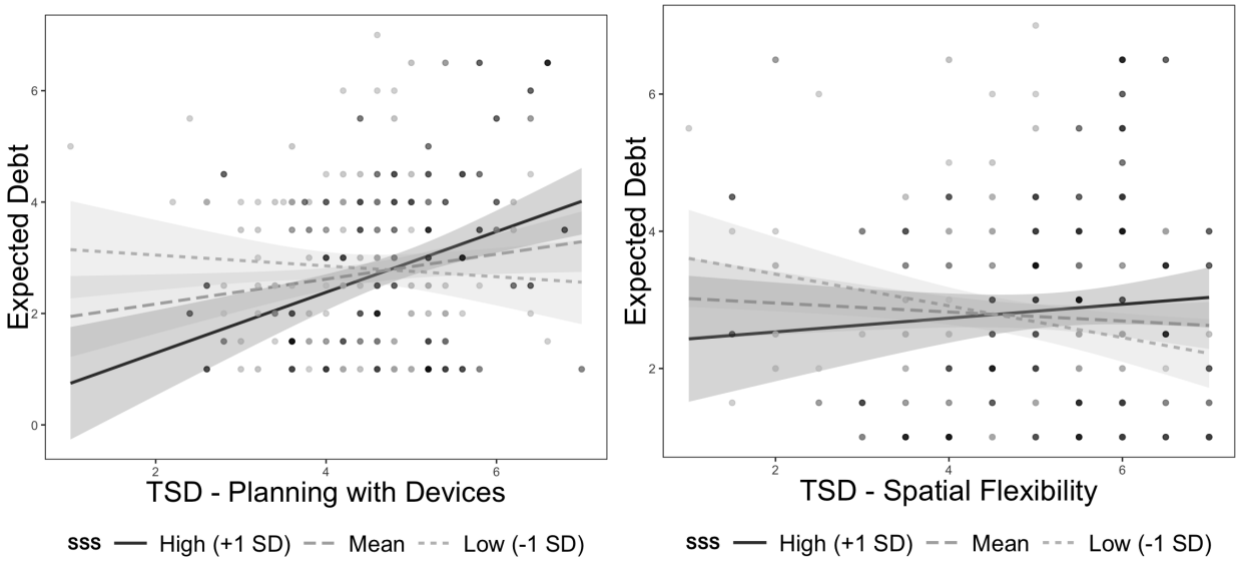


Figure 2. Interaction between access to disembedding devices and median household income on debt delinquency.



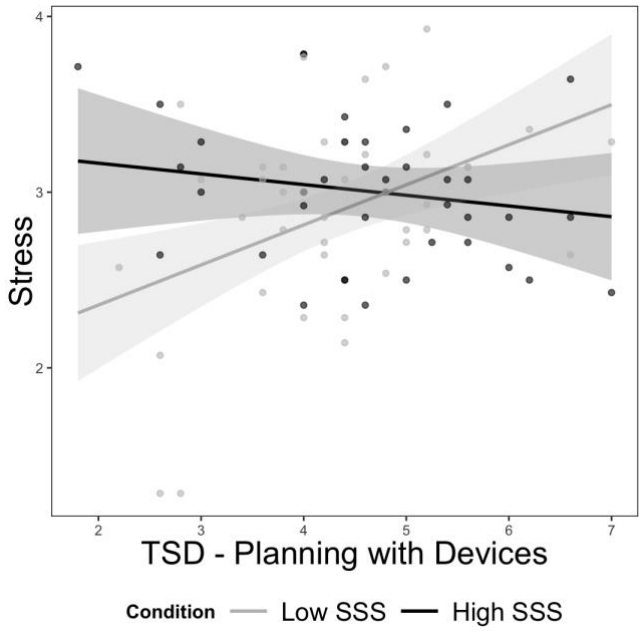
***Note*.** Shaded areas represent 95% confidence intervals around the estimate. See supplemental materials (Figures S1) for figure with raw data plotted.

Figure 3. Interactions between TSD (planning with devices and spatial flexibility factors) and subjective socioeconomic status (SSS) on expected debt (*Study 3*).



Note. Shaded areas represent 95% confidence intervals around the estimate.

Figure 4. Interaction between planning with devices and subjective socioeconomic status (SSS) manipulation on stress (*Study 4*).



Note. Shaded areas represent 95% confidence intervals around the estimate.