Longing for but also avoiding touch: a more nuanced view of our "hunger for touch" during the time of COVID

Merle T. Fairhurst, Justin Sulik, David Moore, Wenhan Sun, Francis McGlone

SM1: Descriptive overview

Here we report participant demographics (Table S1), as well as distributions of key variables (Figs. S1 & S2) which motivate our choice of a regression family.

Table S1

Participant demographics (Phase 1 recruitment)

		Isolating	
	Total (N=1788)	**No (N=304)**	**Yes (N=1484)**
Age			
Mean (SD)	36.2 (12.3)	35.2 (12.4)	36.4 (12.2)
Median [Min, Max]	34.0 [18.0, 82.0]	32.0 [18.0, 74.0]	34.0 [18.0, 82.0]
Gender			
Woman	1268 (70.9%)	194 (63.8%)	1074 (72.4%)
Man	493 (27.6%)	107 (35.2%)	386 (26.0%)
Nonbinary/no answer	27 (1.5%)	3 (1.0%)	24 (1.6%)
Education			
None	6 (0.3%)	3 (1.0%)	3 (0.2%)
Primary education	8 (0.4%)	3 (1.0%)	5 (0.3%)
Secondary education	221 (12.4%)	42 (13.8%)	179 (12.1%)
Undergrad degree/equivalent	968 (54.1%)	183 (60.2%)	785 (52.9%)
Postgrad degree/equivalent	585 (32.7%)	73 (24.0%)	512 (34.5%)

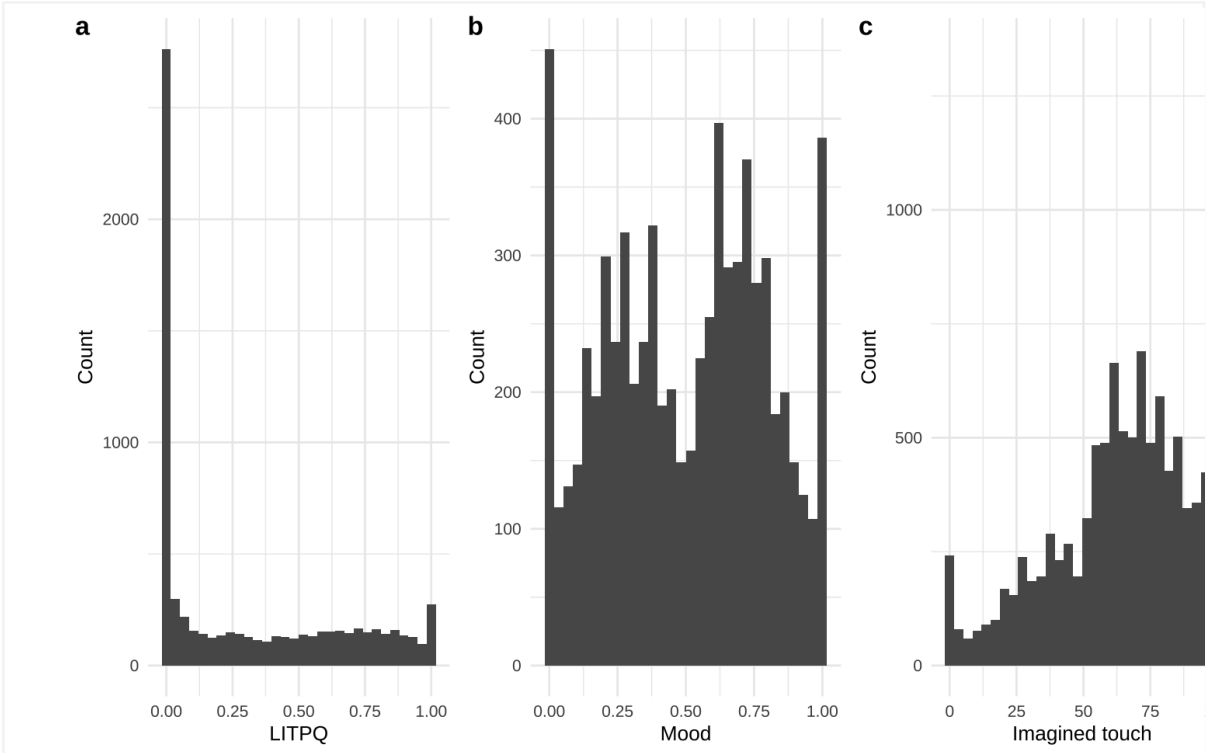

Figure S1. *Histograms showing the distributions of (a) preference for touch, (b) mood and (c) imagined touch variables. The bounded nature of the variables, combined with much of the weight lying at the extremes of the scales, would render standard (Gaussian) linear regressions inappropriate.*

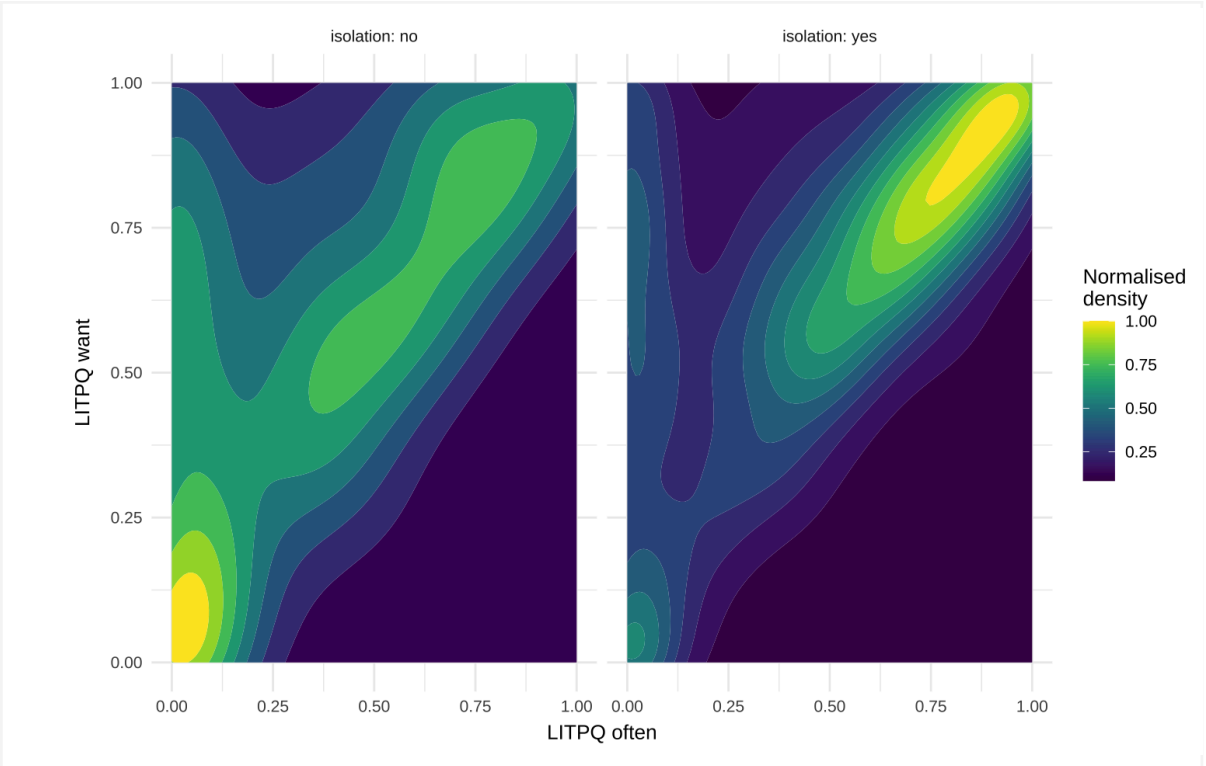

Figure S2. *2D density plots of both LITPQ subscales, split by whether participants reported being in isolation or not. As frequency of (and desire for) interpersonal touch are demonstrably related (cf. the bright peaks where y ≈ x above), this is just intended as an overview of how that relation shifts as a function of isolation.*

SM2: Recruitment phase

We re-recruited participants over four survey phases via follow-up emails (see Methods). Participant re-recruitment for subsequent survey phases was based on voluntary responses to follow-up emails, and all subsequent phases had fewer respondents than phase 1 (phase 2 n=367, phase 3 n=362, phase 4 n=304). Thus, rather than seeking to isolate any specific effect of time, we use this data in an exploratory way, simply examining which effects from Figs. 2 and 5 were relatively consistent over recruitment phases. To do so, we added survey phase as a predictor to the models of touch, isolation and mood described in the main text, including two-way interactions between phase and each other predictor.

Full numeric details are provided in the online analysis scripts (https://osf.io/tpnrw/overview?view_only=c0c12edc479f4c2cab8a7e031c00d09f). However, this section is primarily exploratory and descriptive in nature, and we think it is ultimately more useful to simply eyeball how similar or dissimilar the associations plotted in Fig. S3 are across recruitment phases.

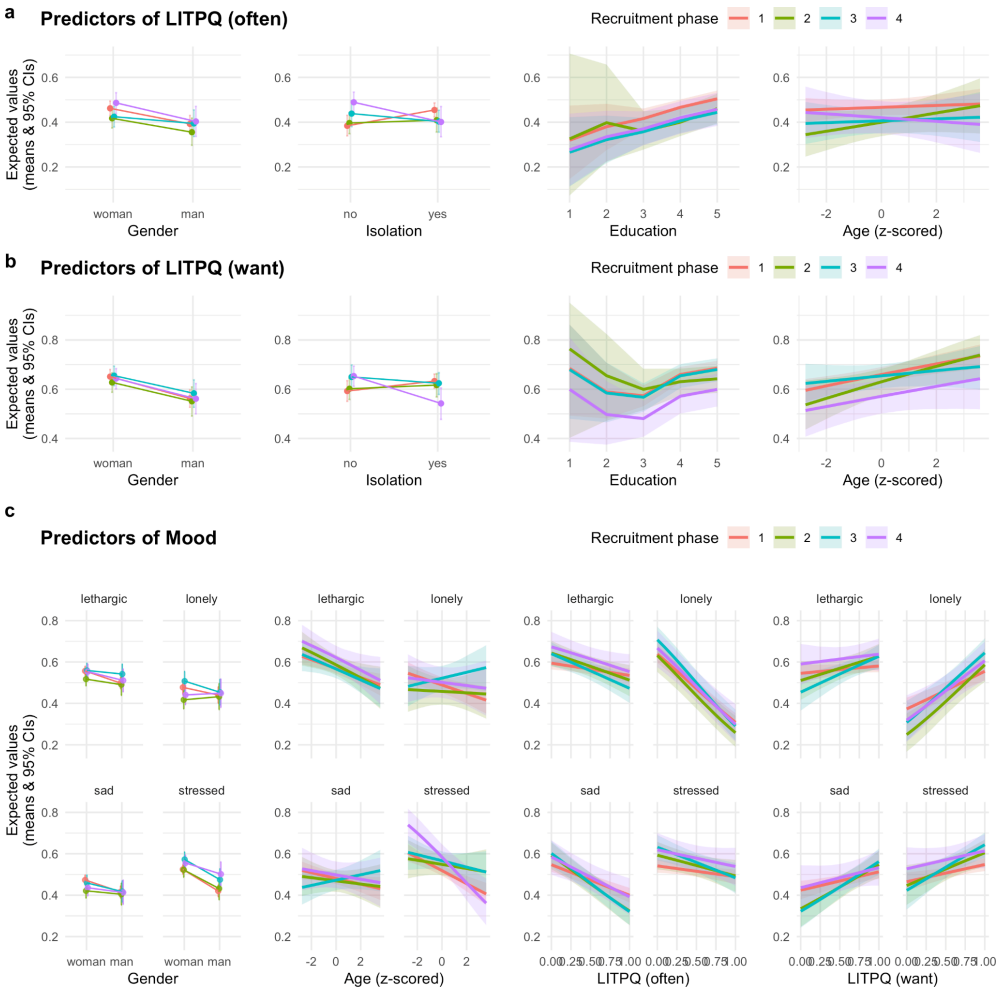

Fig. S3. *Expected values of the model posterior predictive distributions (means and 95% CIs) for the same regression models as in Figs. 2 & 5, though including two-way interactions between recruitment phase and each of the other predictors. (a) Predicting LITPQ often, (b) Predicting LITPQ want, (c) Predicting mood.*

It is quite obvious, for instance, that receiving affective touch more often (LITPQ often, Fig. S3c) is fairly consistently associated with lower loneliness as reported in the main text (phase 2: b = −0.366 [−0.467, −0.263]; phase 3: b = −0.416 [−0.517, −0.311]; phase 4: b = −0.368 [−0.493, −0.239]). Similarly, wanting affective touch more (LITPQ want) is consistently associated with higher reported loneliness, again as reported in the main text (phase 2 b = 0.332 [0.198, 0.463]; phase 3 b = 0.330 [0.193, 0.463]; phase 4 b = 0.284 [0.127, 0.439]).

In contrast, many associations were less stable over time. For instance, the association between gender and loneliness is variable: phase 1 results in the main text indicated that men reported lower loneliness than women, but conditional effects for gender in other phases had CIs that included zero, and even then at least one parameter estimate was numerically positive rather than negative (phase 2 b = 0.012 [−0.053, 0.080]; phase 3 b = −0.050 [−0.111, 0.013]; phase 4 b = −0.006 [−0.077, 0.065]).

SM3: Cross-country variation in touch and mood

Here, we explore differences in mood and affective touch across countries, using only phase 1 data. We do this in two ways:

1. A more bottom-up data-driven way, clustering mood and affective touch (LITPQ) responses—assigning participants to clusters according to the distance of their responses from the mean of each cluster (*k*-means clustering with 4 clusters);
2. A more top-down, model-driven way, extracting random effects from models underlying Figs. 2 & 5.

For this, we group countries according to United Nations (UN) geographic regions, re-running regression models with region (e.g., "Western Europe") in place of country as a random effect. That way, countries with relatively few respondents could still contribute to broader geographic patterns in this exploratory analysis. As previously, full results are at https://osf.io/tpnrw/overview?view_only=c0c12edc479f4c2cab8a7e031c00d09f (including the grouping of nationalities into UN georegions), with an overview presented here.

For the data-driven clustering approach, the number of participants assigned to each cluster were as follows: cluster 1=398; cluster 2=442; cluster 3=421; cluster 4=500. For participants assigned to each cluster, we calculated the by-cluster averages (and 95% confidence intervals) for all variables in the algorithm's input (Fig. S4a). It appears that clusters 1 and 3 (compared to clusters 2 and 4) are characterized by higher affective touch responses. This contrast is especially stark for LITPQ (often). We thus refer to 1 and 3 as 'high-touch' clusters with 2 and 4 then being 'low-touch' clusters. Dark vs light coloring tracks this distinction in Fig. S4a. In contrast, clusters 3 and 4 both reflect more negative moods than clusters 1 and 2 do. The clusters are particularly spread out for loneliness. We thus refer to 3 and 4 as 'negative affect' clusters, with 1 and 2 then being 'positive affect' clusters. Cold vs warm coloring tracks this distinction in Fig. S4a. Consistent with regression results above, each high-touch cluster showed less negative affect overall than its low-touch counterpart.

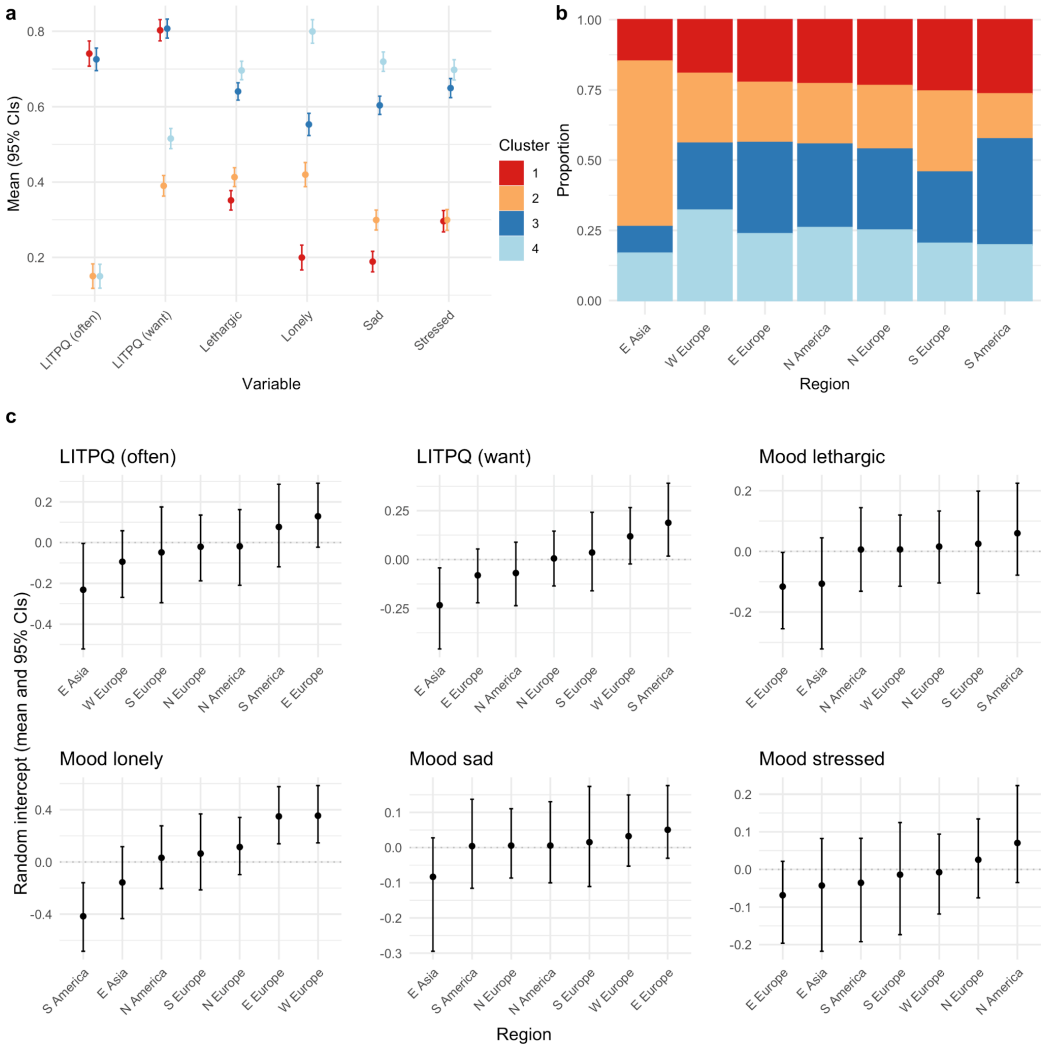

Figure S4. *Cross cultural differences in touch and mood. (a) Average by-cluster values for the indicator variables (with 95% confidence intervals). (b) The proportion of respondents in each cluster, split by UN geographical region. (c) Random intercepts (means with 95% credible intervals) for the models in Figs. 2 & 5, except with UN geographical region replacing participant nationality as random effect (N=north, W=west, S=south, E=east).*

Fig. S4b then plots the proportion of participants in each cluster, split by UN geographic region (here only showing the 7 regions with the largest sample sizes, ordered by proportion assigned to cluster 1). Participants from the East Asian region—which in our sample was almost entirely mainland China—were mostly in low-touch positive-affect cluster 2 (58.9%) with only 24.2% in either of the high-touch clusters (1 and 3). No other region had a clear majority in any one cluster. Most dissimilar from East Asia in this sample was South America—in our sample, mostly Colombians, followed by Chileans—where most participants were assigned to either of the high-touch clusters (64.1% across clusters 1 and 3).

Pivoting to a complementary model-based view of regional differences (Fig. S4c, still focusing on the 7 UN regions with the largest sample sizes), we stress that these are random intercepts from regression models described above—they are not average values for each region along each of the mood and touch variables. Rather, they can be interpreted as indicating how much we would need to shift our predictions for each region, relative to what we would expect given the

main effects reported for models in Figs. 2 & 5. Thus, for example, the random intercepts for LITPQ (often) indicate that, even accounting for variation in frequency of affective touch as a function of age, gender, education and isolation status, we would predict lower touch ratings for participants from East Asia. Similarly, the random intercepts for LITPQ (want) indicate that, apart from aforementioned effects of age, gender, education and isolation status, participants from East Asia reported wanting affective touch less while participants from Western Europe reported wanting it more. For the mood variables, all CIs included 0 except for loneliness: Beyond effects of gender, age, education, isolation status and both frequency and desire for affective touch, participants from South America reported being less lonely than otherwise expected while those from Western and Eastern Europe were more lonely.