Moral conventional: Study 1

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Study 1

Participants

Overall age demographics

```
study1_data %>%
  distinct(subid, site, age)%>%
  group_by(site)%>%
  summarise_at('age',
               list(~mean(., na.rm=T),
                    ~sd(., na.rm=T),
                    ~median(., na.rm=T),
                    ~min(., na.rm=T),
                    ~max(., na.rm=T),
                    ~sum(!is.na(.))))%>%
  dplyr::rename("n" = "sum")%>%
  dplyr::select(site, n, mean, sd, median, min, max)%>%
  mutate(total.n = sum(n))%>%
  knitr::kable()
```

site	n	mean	sd	median	min	max	total.n
Canada	80	7.812817	1.590593	7.927447	5.084189	10.80082	268
India	73	9.516169	1.319499	10.198494	7.159480	10.99247	268
Iran	84	7.657024	1.612185	7.945000	4.970000	10.35000	268
Korea	31	8.980645	1.030993	8.400000	7.800000	10.60000	268

```
##total mean age, sd
mean(study1_data$age)
```

```
## [1] 8.363044
```

```
sd(study1_data$age)
```

```
## [1] 1.67056
```

```r
length(unique(study1_data$subid))
```

```
## [1] 268
```

Age bin and sex counts

```r
study1_data %>%
  distinct(subid, site, age.bin, sex)%>%
  group_by(site, age.bin, sex)%>%
  summarise(n = n())%>%
  group_by(site)%>%
  mutate(total.site.n = sum(n))%>%
  knitr::kable()
```

```
## `summarise()` has grouped output by 'site', 'age.bin'. You can override using
## the `.groups` argument.
```

site	age.bin	sex	n	total.site.n
Canada	5-6	F	13	80
Canada	5-6	M	17	80
Canada	7-8	F	11	80
Canada	7-8	M	17	80
Canada	9-10	F	14	80
Canada	9-10	M	8	80
India	7-8	F	7	73
India	7-8	M	21	73
India	9-10	F	14	73
India	9-10	M	19	73
India	9-10	NA	12	73
Iran	5-6	F	15	84
Iran	5-6	M	16	84
Iran	7-8	F	12	84
Iran	7-8	M	18	84
Iran	9-10	F	15	84
Iran	9-10	M	8	84
Korea	7-8	F	9	31
Korea	7-8	M	9	31
Korea	9-10	F	3	31
Korea	9-10	M	10	31

```r
study1_data %>%
  distinct(subid, site, sex)%>%
  group_by(site, sex)%>%
  summarise(n = n())%>%
  group_by(site)%>%
  mutate(total.site.n = sum(n))%>%
  knitr::kable()
```

```
## `summarise()` has grouped output by 'site'. You can override using the
## `.groups` argument.
```

site	sex	n	total.site.n
Canada	F	38	80
Canada	M	42	80
India	F	21	73
India	M	40	73
India	NA	12	73
Iran	F	42	84
Iran	M	42	84
Korea	F	12	31
Korea	M	19	31

Ratings for moral and conventional items by testing site

Descriptives

```
x <- study1_data %>%
  filter(q_kind == 0)%>%
  group_by(site, task)%>%
  summarise_at('answer',
               list(~mean(., na.rm=T),
                    ~sd(., na.rm=T),
                    ~median(., na.rm=T),
                    ~min(., na.rm=T),
                    ~max(., na.rm=T),
                    ~sum(!is.na(.))))%>%
  dplyr::rename("n" = "sum")%>%
  dplyr::select(site, task, n, mean, sd, median, min, max)%>%
  knitr::kable()

#testing recoding
tmp <- study1_data %>%
  mutate(answer = case_when(answer == 1 ~ 6,
            answer == 2 ~ 5,
            answer == 3 ~ 4,
            answer == 4 ~ 3,
            answer == 5 ~ 2,
            answer == 6 ~ 1))

y <- tmp %>%
   filter(q_kind == 0)%>%
  group_by(site, task)%>%
  summarise_at('answer',
               list(~mean(., na.rm=T),
                    ~sd(., na.rm=T),
                    ~median(., na.rm=T),
                    ~min(., na.rm=T),
                    ~max(., na.rm=T),
```

```
                    ~sum(!is.na(.))))%>%
  dplyr::rename("n" = "sum")%>%
  dplyr::select(site, task, n, mean, sd, median, min, max)%>%
  knitr::kable()
```

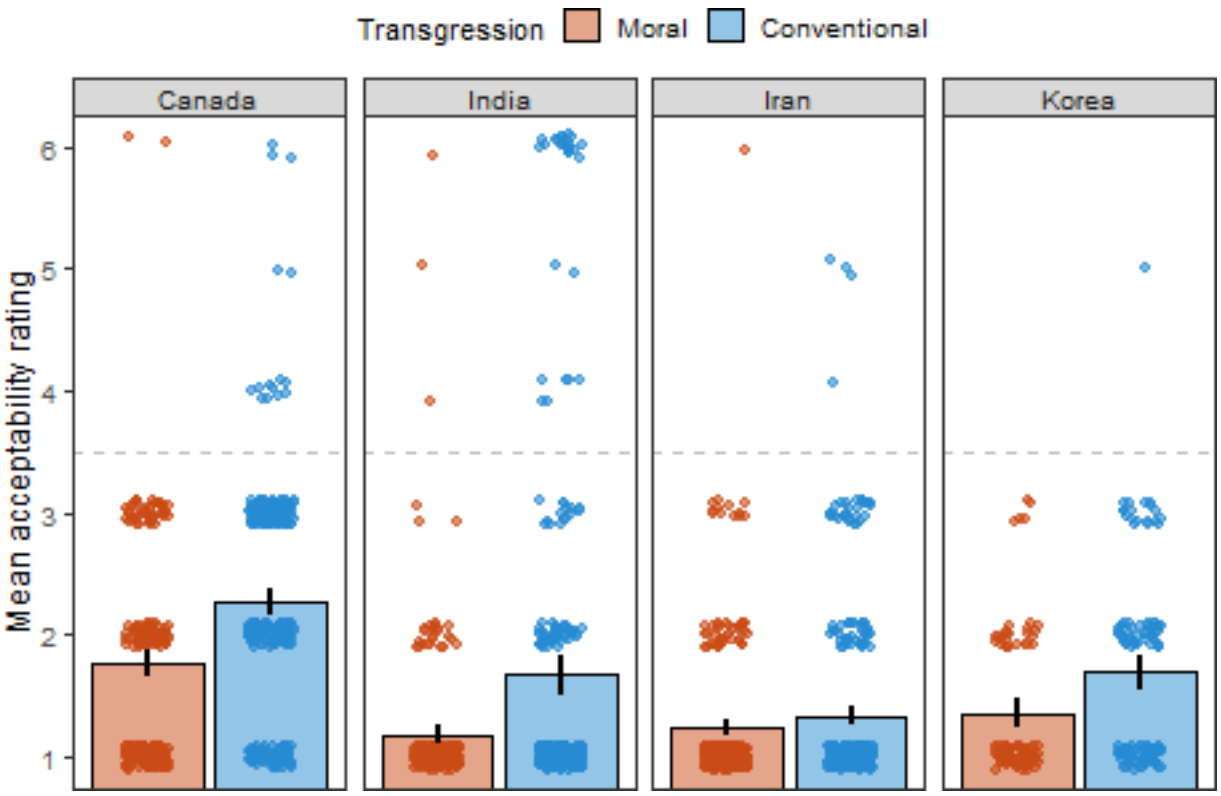
Visualization of mean rating (all items collapsed) by site

```
library(ggthemes)

study1_data %>%
  filter(q_kind == 0)%>%
  mutate(task = factor(task, levels = c("moral", "conv"),
                       labels = c("Moral", "Conventional")))%>%
  ggplot(aes(x = task, y = answer, fill = task, color = task)) +
  stat_summary(fun = mean, position = position_dodge(width = .9),
               geom="bar", alpha = .5, colour = "black") +
  geom_point(position=position_jitter(width = .18, height = .1),
             size=1.5,
             alpha = .6,
             show.legend=FALSE,
             inherit.aes = TRUE) +
  geom_hline(yintercept = 3.5, color = "grey", linetype = "dashed") +
  facet_grid(~site) +
  coord_cartesian(ylim = c(1, 6)) +
  stat_summary(fun.data = "mean_cl_boot", geom="linerange",
               position = position_dodge(width=0.9), size = 1, color = "black") +
  theme(legend.position = "top",
        axis.text.x = element_blank(),
        axis.ticks.x = element_blank(),
        legend.key.size = unit(.5, 'cm'),
        legend.text = element_text(size = 10),
        legend.title = element_text(size = 11),
        legend.margin=margin(t = 0, unit='cm'),
        text = element_text()) +
  langcog::scale_color_solarized() +
  langcog::scale_fill_solarized() +
  # scale_color_hc("darkunica") +
  # scale_fill_hc("darkunica") +
  labs(y = "Mean acceptability rating",
       x = "",
       fill = "Transgression") +
  scale_y_continuous(breaks = seq(1,6, 1))
```

```
## Warning: Using ‘size‘ aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use ‘linewidth‘ instead.
## This warning is displayed once every 8 hours.
## Call ‘lifecycle::last_lifecycle_warnings()‘ to see where this warning was
## generated.
```

```
## Warning: Removed 7 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
```

```
## Removed 7 rows containing non-finite outside the scale range
## (`stat_summary()`).

## Warning: Removed 7 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
ggsave("mean_ratings_study1.png", height = 3)
```

```
## Saving 6.5 x 3 in image

## Warning: Removed 7 rows containing non-finite outside the scale range
## (`stat_summary()`).

## Warning: Removed 7 rows containing non-finite outside the scale range
## (`stat_summary()`).

## Warning: Removed 7 rows containing missing values or values outside the scale range
## (`geom_point()`).
```

Visualization of ratings by age by site

```
fig_1_v1 <- study1_data %>%
  filter(q_kind == 0)%>%
  dplyr::rename("Transgression" = "task")%>%
```

```
  mutate(Transgression = factor(Transgression, levels = c("moral", "conv"),
                                labels = c("Moral", "Conventional")))%>%
  ggplot(aes(x = age, y= answer, color = Transgression, fill = Transgression)) +
  geom_point(position = position_jitter(width = .0, height = .0),
             alpha = .4) +
  geom_smooth(method ="lm", fullrange = TRUE) +
  langcog::scale_color_solarized() +
  langcog::scale_fill_solarized() +
  labs(x = "Age",
       y = "Acceptability Rating") +
  scale_y_continuous(breaks = seq(1,6, 1)) +
  facet_grid(~site, scale = "free_x") +
  # theme_minimal() +
  theme(strip.text.x = element_text(size = 16),
        strip.text.y = element_text(size = 16, ),
        axis.text.x = element_text(angle = 0, size = 16, ),
        axis.text.y = element_text(size = 16),
        legend.text = element_text(size = 16),
        legend.title = element_text(size = 16),
        axis.title.x= element_text(vjust = -1, size=16),
        axis.title.y= element_text(vjust = 2.5, size=16),
        legend.position = "top") +
  theme(text=element_text(family = "serif")) +
  theme(axis.text.y = element_text(margin = margin(0, 0, 0, 15))) +
  theme(panel.spacing = unit(2, "lines")) +
  scale_y_continuous(expand = c(0, 0)) +
  scale_x_continuous(expand = c(0, 0)) +
  scale_fill_manual(values = c(viridis::viridis(3), viridis::viridis(4))) +
  scale_color_manual(values = c(viridis::viridis(3), viridis::viridis(4)))
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
## Scale for fill is already present.
## Adding another scale for fill, which will replace the existing scale.
## Scale for colour is already present.
## Adding another scale for colour, which will replace the existing scale.
```

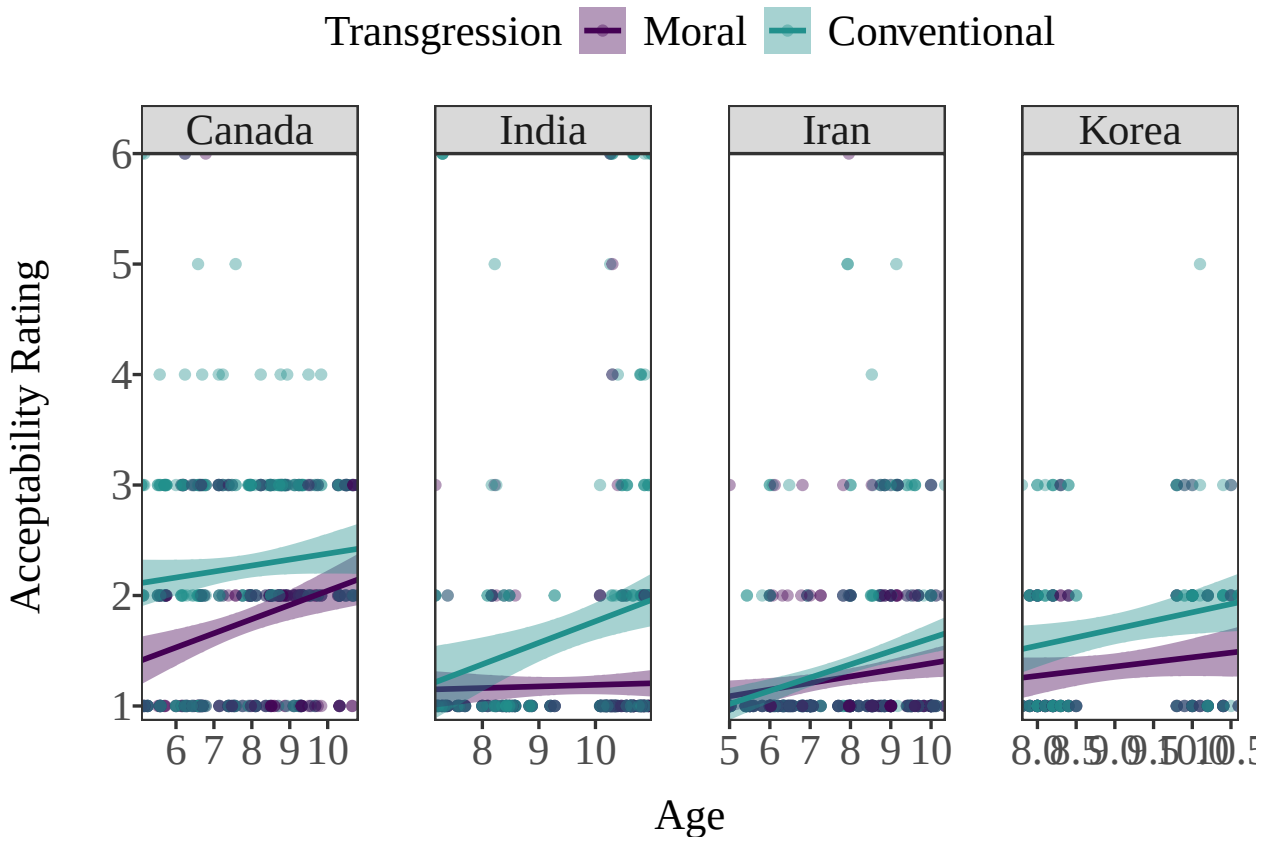
```
fig_1_v2 <- study1_data %>%
  filter(q_kind == 0)%>%
  dplyr::rename("Transgression" = "task")%>%
  mutate(Transgression = factor(Transgression, levels = c("moral", "conv"),
                                labels = c("Moral", "Conventional")))%>%
  ggplot(aes(x = age, y= answer, color = Transgression, fill = Transgression)) +
  geom_point(position = position_jitter(width = .0, height = .03),
             alpha = .4) +
  geom_smooth(method ="lm", fullrange = TRUE) +
  langcog::scale_color_solarized() +
  langcog::scale_fill_solarized() +
  labs(x = "Age",
       y = "Acceptability Rating") +
  scale_y_continuous(breaks = seq(1,6, 1)) +
  facet_grid(~site, scales = "free") +
  # scale_x_continuous(expand = c(0,0), ) +
```

```
  # scale_x_continuous(breaks = seq(5, 11, 1), expand = c(0,0), limits = c(5, 11)) +
  theme(strip.text.x = element_text(size = 16),
        strip.text.y = element_text(size = 16, ),
        axis.text.x = element_text(angle = 0, size = 16, ),
        axis.text.y = element_text(size = 16),
        legend.text = element_text(size = 16),
        legend.title = element_text(size = 16),
        axis.title.x= element_text(vjust = -1, size=16),
        axis.title.y= element_text(vjust = 2.5, size=16),
        legend.position = "top",
        plot.margin=unit(c(6,6,6,6),"mm")) +
  theme(text=element_text(family = "serif")) +
  theme(axis.text.y = element_text(margin = margin(0, 0, 0, 15))) +
  theme(panel.spacing = unit(2, "lines")) +
  scale_fill_manual(values = c(viridis::viridis(3), viridis::viridis(4))) +
   scale_color_manual(values = c(viridis::viridis(3), viridis::viridis(4)))
```

```
## Scale for fill is already present.
## Adding another scale for fill, which will replace the existing scale.
## Scale for colour is already present.
## Adding another scale for colour, which will replace the existing scale.
```

```
fig_1_v1
```

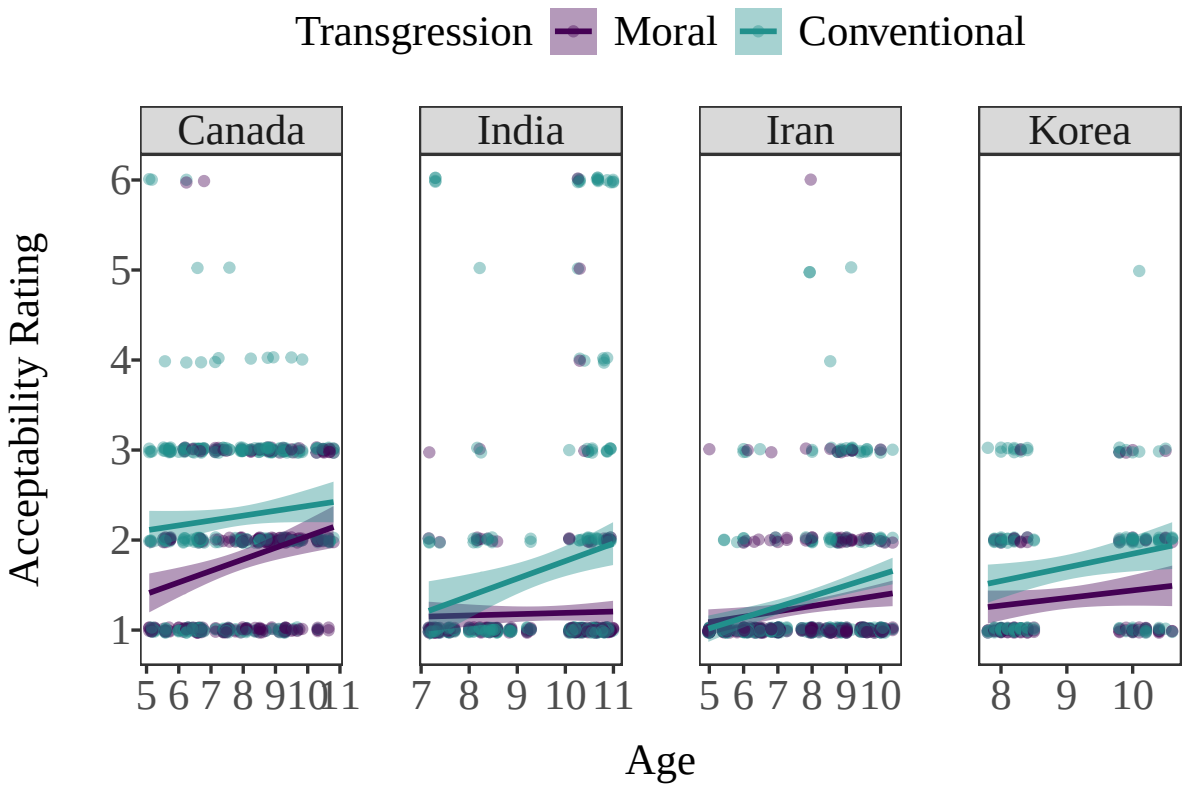
```
## `geom_smooth()` using formula = 'y ~ x'

## Warning: Removed 7 rows containing non-finite outside the scale range
## (`stat_smooth()`).

## Warning: Removed 7 rows containing missing values or values outside the scale range
## (`geom_point()`).
```




```
fig_1_v2
```

```
## `geom_smooth()` using formula = 'y ~ x'
```

```
## Warning: Removed 7 rows containing non-finite outside the scale range (`stat_smooth()`).
## Removed 7 rows containing missing values or values outside the scale range
## (`geom_point()`).
```

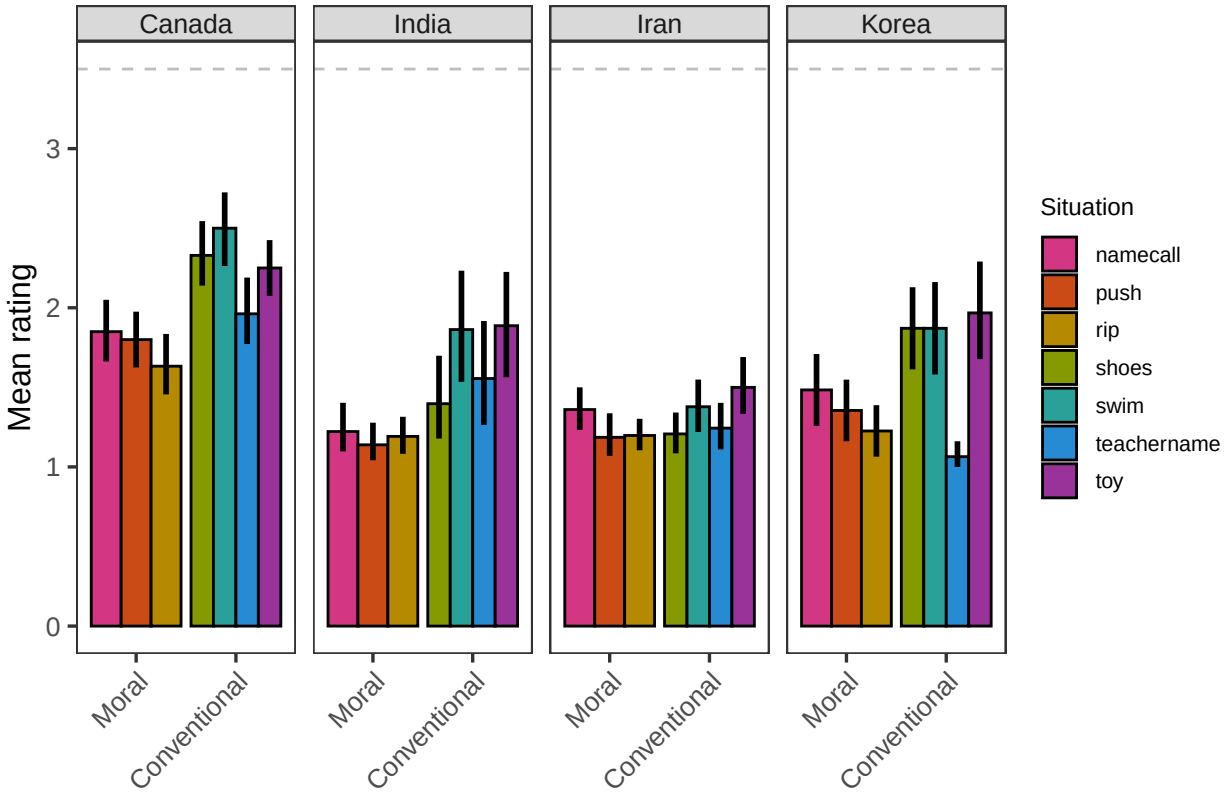



```
# ggsave("../Analyses/Figures/age_ratings.png", height = 3)
```

Visualization of mean rating (by item) by site

```
study1_data %>%
  filter(q_kind == 0)%>%
  mutate(task = factor(task, levels = c("moral", "conv"),
                       labels = c("Moral", "Conventional")))%>%
  ggplot(aes(x = task, y = answer, fill = item)) +
  stat_summary(fun = mean, position = position_dodge(width = .9),
               geom="bar", colour = "black") +
  stat_summary(fun.data = "mean_cl_boot", geom="linerange",
               position = position_dodge(width=0.9), size = 1, color = "black") +
  geom_hline(yintercept = 3.5, color = "grey", linetype = "dashed") +
  facet_grid(~site) +
  theme(legend.position = "right",
        legend.key.size = unit(.5, 'cm'),
        legend.text = element_text(size = 8),
        legend.title = element_text(size = 9),
        legend.margin=margin(t = 0, unit='cm'),
        axis.text.x = element_text(hjust = 1, angle = 45)) +
  langcog::scale_color_solarized() +
  langcog::scale_fill_solarized() +
  labs(y = "Mean rating",
       x = "",
       fill = "Situation")
```

```
## Warning: Removed 7 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
## Removed 7 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
```



Analyses of differences in rating between moral and conventional transgressions: Within-country

Pre-registered mixed-effects model: Rating ~ Transgression type (moral; conventional)*Age + (Transgression type|Subject) + (age|item).

We will iteratively remove item slopes, then subject slopes, then will remove item effects altogether if necessary.

High-level summary of these models: In general, we find a significant difference between moral and conventional items for every country except Iran, even when we include the item random intercept to the model, with the following qualifiers:

1. *The one exception* is Korea, where we *do not* find a significant difference when we include a random intercept of item to the model. This is because, while in general Korean children give higher ratings to conventional items, they give an extremely low rating to the “teachername” item. If you run the model without the item random intercept, there is a significant difference between moral and conventional items.
2. For India: In general, there is a significant interaction between age and task, and this holds true with or without item random intercept. If we remove the item random intercept, there is a significant difference between moral and conventional items.

India

Model: Answer ~ Task + Age + Task:Age + (1|subid) + (1|item)

1. Interaction between task and age significantly improves the fit of the model ($\chi^2 = 7.68$, $p = .006$)
2. No significant difference between moral and conventional items ($\beta = 0.28$, $p = .11$)
3. No significant effect of age ($\beta = 0.02$, $p = .85$)
4. Significant interaction between transgression type and age: as children age, they are more likely to give higher ratings for conventional transgressions in comparison to moral transgressions ($\beta = .30$, $p = .006$)

```
#summary of item model
car::Anova(ratings.india, type = "III") ## for interaction
```

```
## Analysis of Deviance Table (Type III Wald chisquare tests)
##
## Response: answer
##               Chisq Df Pr(>Chisq)
## (Intercept) 60.4774  1  7.443e-15 ***
## task         3.1259  1   0.077057 .
## age.c        0.0357  1   0.850100
## task:age.c   7.7081  1   0.005497 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
knitr::kable(summary(ratings.india)$coef)
```

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	1.1695669	0.1503933	18.487775	7.7767207	0.0000003
taskconv	0.2825694	0.1598221	8.210336	1.7680248	0.1140694
age.c	0.0222982	0.1179853	129.880388	0.1889914	0.8503946
taskconv:age.c	0.2983360	0.1074563	426.931430	2.7763464	0.0057392

Iran

Model: Answer ~ Task + Age + (task|subid) + (1|item)

1. Interaction between task and age does not significantly improve model fit ($\chi^2 = 3.10$, $p = .08$)
2. No significant difference between moral and conventional items ($\beta = 0.09$, $p = .41$)
3. Significant effect of age, with increases in ratings as children age ($\beta = 0.14$, $p = .002$)

```
## here are main effects from full model
knitr::kable(summary(ratings.iran.base)$coef)
```

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	1.3060139	0.0768252	7.468143	16.9998095	0.0000003
taskconv	0.0857732	0.0969928	6.237079	0.8843259	0.4093127

	Estimate	Std. Error	df	t value	Pr(>|t|)
age.c	0.1359640	0.0418156	81.959545	3.2515116	0.0016672

Canada

Model: Answer ~ Task + Age + (1|subid) + (1|item)

1. Interaction between task and age does not significantly improve the fit of the model ($\chi^2 = 2.87$, $p = .09$)
2. Significant difference between moral and conventional items ($\beta = 0.50$, $p = .02$)
3. Significant effect of age ($\beta = 0.14$, $p = .02$)

```
## Summary of main effects
knitr::kable(summary(ratings.canada.base)$coef)
```

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	1.8085894	0.0726861	157.34714	24.882189	0.0000000
taskconv	0.4978766	0.0704746	476.43610	7.064628	0.0000000
age.c	0.1433067	0.0603768	77.92947	2.373539	0.0200817

Korea **NB** with Korea dataset: When we include the item random effect, we find that there is **no** difference between moral and conventional items. This means that the variance in the intercepts associated with these items that there is reason to call into question whether there is an overall difference between these moral and conventional items. I confirmed that this is driven by the abnormally low ratings for the "teachername" item. If you remove this item and run the model, you find that the difference between moral and conventional is significant.

Model: Answer ~ Task + Age + (1|subid) + (1|item)

1. The task x age interaction does not significantly improve the fit of the model ($\chi^2 = 0.71$, $p = .40$)
2. No significant difference between moral and conventional items ($\beta = 0.34$, $p = .25$)
3. Marginal effect of age, with increases in ratings as children age ($\beta = 0.20$, $p = .06$)

Summary of main effects with item random effect

```
#summary of main effects
knitr::kable(summary(ratings.korea.base)$coef)
```

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	1.2792961	0.2037838	6.011542	6.277712	0.0007541
taskconv	0.3387097	0.2572231	4.999999	1.316793	0.2450298
age.c	0.2043363	0.1025683	28.999996	1.992196	0.0558387

Summary of main effects without item-level random effect

```
knitr::kable(summary(ratings.korea.noitem)$coef)
```

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	1.2792961	0.0892714	62.73404	14.330416	0.0000000
taskconv	0.3387097	0.0901517	185.00000	3.757109	0.0002302
age.c	0.2043363	0.1025683	29.00000	1.992196	0.0558387

=====

Judgments of transgression acceptability under certain circumstances

Descriptives

```
study1_data %>%
  mutate(task = factor(task, levels = c("moral", "conv")))%>%
  filter(q_kind != 0)%>%
  group_by(site, q_kind_label, task)%>%
  summarise_at('answer',
               list(~mean(., na.rm=T),
                    ~sd(., na.rm=T),
                    ~sum(!is.na(.))))%>%
  dplyr::rename("n" = "sum")%>%
  dplyr::select(site, task, q_kind_label, n, mean, sd)%>%
  knitr::kable()
```

site	task	q_kind_label	n	mean	sd
Canada	moral	Everyone else	240	0.0958333	0.2949777
Canada	conv	Everyone else	320	0.1937500	0.3958543
Canada	moral	Faraway country	240	0.0958333	0.2949777
Canada	conv	Faraway country	321	0.2242991	0.4177711
Canada	moral	Rule at school	240	0.3375000	0.4738452
Canada	conv	Rule at school	320	0.4812500	0.5004308
India	moral	Everyone else	214	0.2476636	0.4326674
India	conv	Everyone else	291	0.3402062	0.4745945
India	moral	Faraway country	216	0.0925926	0.2905340
India	conv	Faraway country	291	0.0756014	0.2648146
India	moral	Rule at school	217	0.2165899	0.4128732
India	conv	Rule at school	291	0.2542955	0.4362146
Iran	moral	Everyone else	258	0.0387597	0.1933969
Iran	conv	Everyone else	331	0.0664653	0.2494707
Iran	moral	Faraway country	258	0.0426357	0.2024270
Iran	conv	Faraway country	330	0.0909091	0.2879164
Iran	moral	Rule at school	258	0.1395349	0.3471773
Iran	conv	Rule at school	329	0.1489362	0.3565679
Korea	moral	Everyone else	93	0.1397849	0.3486433
Korea	conv	Everyone else	123	0.3333333	0.4733326
Korea	moral	Faraway country	93	0.0107527	0.1036952
Korea	conv	Faraway country	123	0.0325203	0.1781029

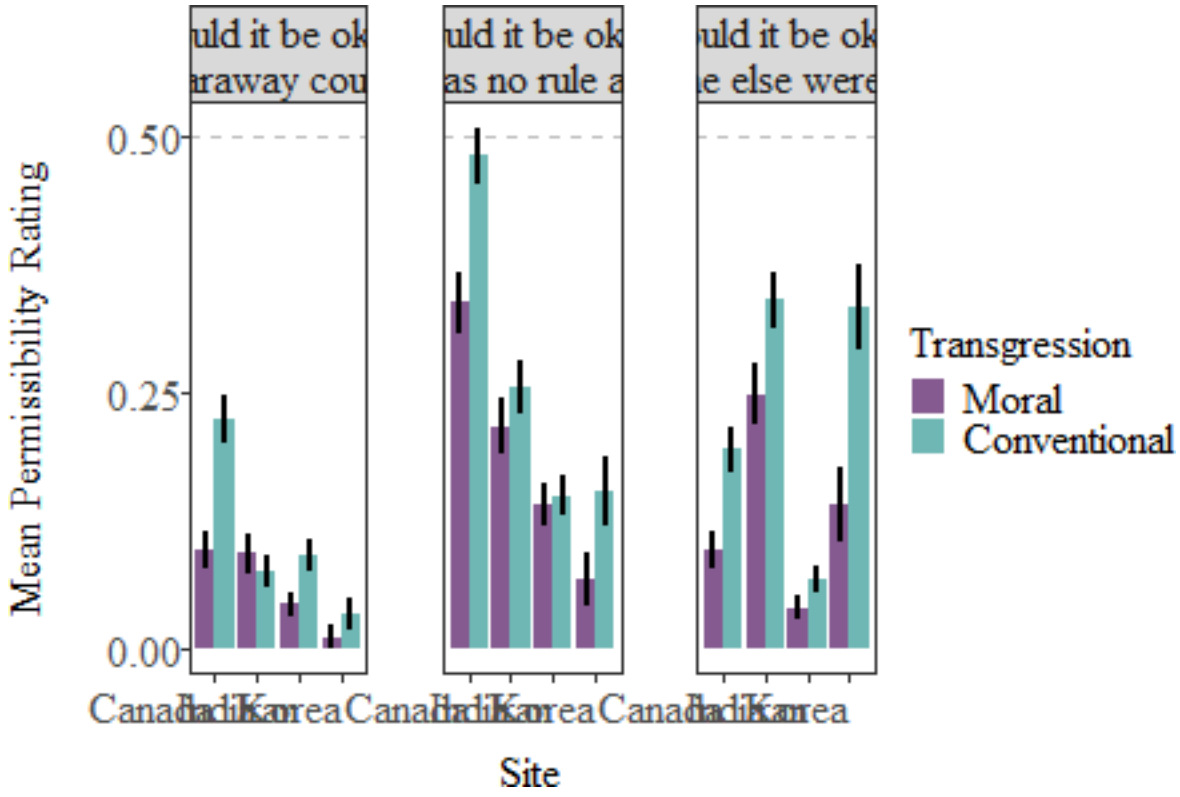
site	task	q_kind_label	n	mean	sd
Korea	moral	Rule at school	89	0.0674157	0.2521612
Korea	conv	Rule at school	117	0.1538462	0.3623531

Visualization of acceptability (all items collapsed) by site

```
fig_2_v1 <- study1_data %>%
  filter(q_kind != 0)%>%
  mutate(task = factor(task, levels = c("moral", "conv"),
                       labels = c("Moral", "Conventional")),
         q_kind_label = factor(q_kind_label, levels = c("Faraway country",
                                                        "Rule at school",
                                                        "Everyone else"),
                               labels = c("Would it be okay \nin a faraway country?",
                                          "Would it be okay \nif there was no rule against it?",
                                          "Would it be okay \nif everyone else were doing it?")))%>%
  ggplot(aes(x = site, y = answer, fill = task)) +
  stat_summary(fun = mean, position = position_dodge(width = .9),
               geom="bar", alpha = .65) +
  geom_hline(yintercept = .5, color = "grey", linetype = "dashed") +
  facet_grid(~q_kind_label) +
  stat_summary(fun.data = "mean_se", geom="linerange",
               position = position_dodge(width=0.9), size = 1, color = "black") +
  # scale_fill_brewer(palette = "Dark2") +
  # langcog::scale_fill_solarized()+
  # scale_fill_hc("darkunica") +
  labs(y = "Mean Permissibility Rating",
       x = "Site",
       fill = "Transgression")  +
  theme(axis.text.x = element_text(hjust = 1, angle = 45),
        legend.key.size = unit(.5, 'cm'),
        legend.text = element_text(size = 10),
        legend.title = element_text(size = 11),
        legend.margin=margin(t = 0, unit='cm'),
        plot.title = element_text(size = 12),
         text = element_text()) +
  guides(fill = guide_legend(title.position = "top" )) +
  scale_y_continuous(breaks = seq(0, 1,.25)) +
  theme(strip.text.x = element_text(size = 16),
        strip.text.y = element_text(size = 16, ),
        axis.text.x = element_text(angle = 0, size = 16, ),
        axis.text.y = element_text(size = 16),
        legend.text = element_text(size = 16),
        legend.title = element_text(size = 16),
        axis.title.x= element_text(vjust = -1, size=16),
        axis.title.y= element_text(vjust = 2.5, size=16),
        legend.position = "right",
        plot.margin=unit(c(6,6,6,6),"mm")) +
  theme(text=element_text(family = "serif")) +
  theme(axis.text.y = element_text(margin = margin(0, 0, 0, 15))) +
  theme(panel.spacing = unit(2, "lines")) +
```

```
  scale_fill_manual(values = c(viridis::viridis(3), viridis::viridis(4)))

fig_2_v1
```

```
## Warning: Removed 26 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
## Removed 26 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
```




```
# fig2_table <- study1_data %>%
#   filter(q_kind != 0)%>%
#   mutate(task = factor(task, levels = c("moral", "conv"),
#                        labels = c("Moral", "Conventional")),
#          q_kind_label = factor(q_kind_label, levels = c("Everyone else",
#                                                         "Faraway country",
#                                                         "Rule at school" ),
#                                labels = c("Would it be okay \nif everyone else were doing it?",
#                                           "Would it be okay \nin a faraway country?",
#                                           "Would it be okay \nif there was no rule against it?"))) %>
#   select()

  #
  # mutate(Part = as.numeric(Part)) %>%
  # group_by(CONDITION) %>%
  # summarise(participants = n()/12,
  #           critical_trials = n(),
  #           count_include = sum(Part, na.rm = T),
```

```
#           prop_include = mean(Part, na.rm = T),
#           sd_include = sd(Part, na.rm = T),
#           se_include = sd_include/sqrt(critical_trials))
```

Analysis of acceptability ratings by transgression type: Within-country

Pre-registration: Response (yes/no) ~ Transgression type (moral; conventional) *Age + (transgression type|subject) +(age|item). Once again we will begin with a maximal random effects structure, and iteratively remove coefficients until the model converges. We will begin first by removing the slope of the item effect, then of subject, and if necessary removing the item effect altogether.

India **High level summary** No significant difference between moral and conventional items for acceptability.

If everyone else were doing it: Answer ~ Task + Age + (1|subid) + (1|item)

1. Interaction between task and age not significant, so dropped from the model (χ^2 = 0.19, p = 0.66)
2. No significant difference in acceptability between moral and conventional (β = 1.11, p = .09)
3. No significant effect of age (β = -0.15, p = 0.82)

```
##summary of main effects
knitr::kable(summary(everyone.india.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.1088772	0.9929649	-3.1309034	0.0017427
taskconv	1.1179786	0.6740584	1.6585783	0.0972008
age.c	-0.1515524	0.7040587	-0.2152554	0.8295682

Far-away country: Answer ~ task + age + (1|subid) **Note** model with random item effect does not converge, so this is our only model

1. Interaction between task and age not significant (χ^2 = 0.56, p = 0.46)
2. No significant difference between tasks (β = -.26, p = .45)
3. No significant effect of age (β = -0.60, p = .07)

```
##Main effects
knitr::kable(summary(faraway.india.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-2.7038691	0.4367826	-6.1904231	0.0000000
taskconv	-0.2645507	0.3530355	-0.7493602	0.4536401
age.c	-0.5908460	0.3305487	-1.7874702	0.0738615

Rule at school: Answer ~ Task + Age + (1|subid) + (1|item)

1. No significant interaction between task and age ($\chi^2 = 0.02$, $p = 0.89$)
2. No significant differences between tasks ($\beta = 0.40$, $p = .21$)
3. No significant effect of age ($\beta = 0.15$, $p = .80$)

```
#Main effects
knitr::kable(summary(rule.india.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-2.6722815	0.6013307	-4.4439465	0.0000088
taskconv	0.3984077	0.3147845	1.2656520	0.2056377
age.c	0.1463927	0.4724081	0.3098861	0.7566476

Iran High level summary No significant effects of task - some marginal effect in "everyone else" and "rule at school"

If everyone else were doing it: Answer ~ Task + Age + (1|subid) **Note** The model with the item random effect does not converge, so this is our only model

1. Interaction between task and age not significant, so dropped from the model ($\chi^2 = 0.08$, $p = 0.77$)
2. No significant difference in acceptability between moral and conventional ($\beta = 1.03$, $p = .06$)
3. No significant effect of age ($\beta = 0.61$, $p = 0.42$)

```
##summary of main effects
knitr::kable(summary(everyone.iran.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-8.6110644	1.4518651	-5.931036	0.0000000
taskconv	1.0280234	0.5491974	1.871865	0.0612253
age.c	0.6049413	0.7439287	0.813171	0.4161200

Far-away country: Answer ~ task + age + (1|subid) + (1|item)

1. Interaction between task and age not significant ($\chi^2 = 0.0007$, $p = 0.98$)
2. No significant difference between tasks ($\beta = 2.74$, $p = .05$)
3. No significant effect of age ($\beta = 0.60$, $p = .49$)

```
##Main effects
knitr::kable(summary(faraway.iran.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-12.6207763	1.9750797	-6.3900087	0.0000000

	Estimate	Std. Error	z value	Pr(>|z|)
taskconv	2.7443718	1.4205557	1.9319001	0.0533718
age.c	0.5994695	0.8770105	0.6835374	0.4942674

Rule at school: Answer ~ Task + Age + (1|subid) + (1|item)

1. No significant interaction between task and age ($\chi^2 = 0.68$, $p = 0.41$)
2. No significant differences between tasks ($\beta = 0.56$, $p = .43$)
3. No significant effect of age ($\beta = -0.61$, $p = .43$)
4. No significant interaction between age and task ($\beta = -0.44$, $p = .42$)

```
#Main effects
knitr::kable(summary(rule.iran.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-8.2298522	1.2546832	-6.5593071	0.0000000
taskconv	0.6423313	0.4472391	1.4362144	0.1509413
age.c	0.2996045	0.6480059	0.4623484	0.6438315

Canada **High level summary** There is a significant difference between moral and conventional items for every scenario, regardless of whether we include the item random effect or not.

If everyone else were doing it: Answer ~ Task + Age + (1|subid) + (1|item)

1. Interaction between task and age not significant, so dropped from the model ($\chi^2 = 0.62$, $p = 0.43$)
2. Significant difference in acceptability between moral and conventional ($\beta = 1.42$, $p = .02$)
3. No significant effect of age ($\beta = 0.80$, $p = 0.07$)

```
##summary of main effects
knitr::kable(summary(everyone.canada.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-4.2897440	0.7832951	-5.476537	0.0000000
taskconv	1.4235859	0.6039689	2.357052	0.0184207
age.c	0.7969995	0.4370348	1.823652	0.0682046

Far-away country: Answer ~ task + age + (1|subid) + (1|item)

1. Interaction between task and age not significant ($\chi^2 = 1.20$, $p = .27$)
2. Significant difference between tasks ($\beta = 1.50$, $p = .02$)
3. No significant effect of age ($\beta = -.24$, $p = .45$)

```
##summary of main effects
knitr::kable(summary(faraway.canada.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.8498583	0.6535797	-5.890419	0.0000000
taskconv	1.5017141	0.6512281	2.305972	0.0211122
age.c	-0.2412393	0.3182165	-0.758098	0.4483923

Rule at school: Answer ~ Task + Age + (1|subid) + (1|item)

1. No significant interaction between task and age ($\chi^2 = 2.77$, $p = 0.10$)
2. Significant differences between tasks ($\beta = 1.53$, $p = .03$)
3. Significant effect of age ($\beta = -1.01$, $p = .02$)

```
#Main effects
knitr::kable(summary(rule.canada.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-1.975871	0.6823190	-2.895816	0.0037817
taskconv	1.533025	0.6908249	2.219123	0.0264784
age.c	-1.006612	0.4459201	-2.257382	0.0239842

Korea High level summary Significant differences between tasks in the "everyone else is doing it" regardless of whether model includes item random effect

If everyone else were doing it: Answer ~ Task + Age + (1|subid) + (1|item)

1. Interaction between task and age not significant, so dropped from the model ($\chi^2 = 0.83$, $p = 0.36$)
2. Significant difference in acceptability between moral and conventional ($\beta = 1.73$, $p = .006$)
3. Significant effect of age ($\beta = 1.77$, $p = 0.01$)

```
##summary of main effects
knitr::kable(summary(everyone.korea.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.667272	0.8159399	-4.494537	0.0000070
taskconv	1.730027	0.6301385	2.745471	0.0060424
age.c	1.773927	0.7124752	2.489808	0.0127812

Far-away country: Answer ~ task + age + (1|subid) + (1|item)

1. Interaction between task and age not significant ($\chi^2 = 1.77$, $p = 0.20$)
2. No significant difference between tasks ($\beta = -1.12$, $p = .39$)
3. No significant effect of age ($\beta = -0.23$, $p = .77$)

```
##Main effects
knitr::kable(summary(faraway.korea.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-4.6876380	1.2251435	-3.8261951	0.0001301
taskconv	1.1194218	1.2883020	0.8689126	0.3848950
age.c	-0.2293222	0.7745087	-0.2960873	0.7671634

Rule at school: Answer ~ Task + Age + (1|subid) + (1|item)

1. No significant interaction between task and age ($\chi^2 = 2.69$, $p = 0.10$)
2. No significant differences between tasks ($\beta = 1.50$, $p = .11$)
3. Marginal significant effect of age ($\beta = 1.95$, $p = .049$)

```
##Main effects
knitr::kable(summary(rule.korea.base)$coef)
```

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-5.543478	1.4510567	-3.820304	0.0001333
taskconv	1.499992	0.9335060	1.606837	0.1080901
age.c	1.948940	0.9924811	1.963705	0.0495643

====

Differences in ratings across cultures: Answer ~ Site x Task x Age + (1|subid)

Tested for significance using likelihood ratio tests and nested model comparison.

1. Significant effect of site ($\chi^2 = 92.13$, $p < .001$)
2. Significant effect of transgression type ($\chi^2 = 87.96$, $p < .001$)
3. Significant effect of age ($\chi^2 = 20.57$, $p < .001$)
4. Two-way interaction between task and age ($\chi^2 = 7.06$, $p = .008$)
5. Two-way interaction between site and task ($\chi^2 = 25.50$, $p < .001$)
6. NO two-way interaction between site and age ($\chi^2 = 0.35$, $p = .95$)
7. Three-way interaction between site, task, and age ($\chi^2 = 14.71$, $p = .002$)

Pairwise comparisons for this omnibus model

```
library(lsmeans)
```

```
## Loading required package: emmeans
```

```
## Welcome to emmeans.
## Caution: You lose important information if you filter this package's results.
## See '? untidy'
```

```
## The 'lsmeans' package is now basically a front end for 'emmeans'.
## Users are encouraged to switch the rest of the way.
## See help('transition') for more information, including how to
## convert old 'lsmeans' objects and scripts to work with 'emmeans'.
```

```
emmeans(omnibus.full, pairwise~site*task, adjust = "none")
```

```
## NOTE: Results may be misleading due to involvement in interactions
```

```
## $emmeans
##  site   task  emmean     SE  df lower.CL upper.CL
##  Canada moral   1.83 0.0727 520    1.689     1.97
##  India  moral   1.17 0.0960 525    0.981     1.36
##  Korea  moral   1.30 0.1289 517    1.050     1.56
##  Iran   moral   1.29 0.0727 504    1.148     1.43
##  Canada conv    2.29 0.0677 399    2.156     2.42
##  India  conv    1.45 0.0896 406    1.274     1.63
##  Korea  conv    1.60 0.1200 397    1.364     1.84
##  Iran   conv    1.42 0.0686 406    1.283     1.55
##
## Degrees-of-freedom method: kenward-roger
## Confidence level used: 0.95
##
## $contrasts
##  contrast                    estimate     SE   df t.ratio p.value
##  Canada moral - India moral    0.6625 0.1204  523   5.503  <.0001
##  Canada moral - Korea moral    0.5290 0.1480  518   3.575  0.0004
##  Canada moral - Iran moral     0.5414 0.1028  512   5.266  <.0001
##  Canada moral - Canada conv   -0.4570 0.0701 1593  -6.522  <.0001
##  Canada moral - India conv     0.3824 0.1153  447   3.315  0.0010
##  Canada moral - Korea conv     0.2316 0.1403  426   1.651  0.0995
##  Canada moral - Iran conv      0.4139 0.0999  462   4.142  <.0001
##  India moral - Korea moral    -0.1335 0.1607  520  -0.831  0.4065
##  India moral - Iran moral     -0.1211 0.1204  517  -1.006  0.3149
##  India moral - Canada conv    -1.1196 0.1174  478  -9.534  <.0001
##  India moral - India conv     -0.2801 0.0930 1595  -3.013  0.0026
##  India moral - Korea conv     -0.4309 0.1537  442  -2.804  0.0053
##  India moral - Iran conv      -0.2486 0.1179  480  -2.108  0.0356
##  Korea moral - Iran moral      0.0124 0.1480  514   0.084  0.9334
##  Korea moral - Canada conv    -0.9861 0.1456  488  -6.774  <.0001
##  Korea moral - India conv     -0.1466 0.1569  477  -0.934  0.3506
##  Korea moral - Korea conv     -0.2974 0.1241 1592  -2.397  0.0167
##  Korea moral - Iran conv      -0.1151 0.1460  490  -0.788  0.4308
##  Iran moral - Canada conv     -0.9984 0.0993  451 -10.052  <.0001
##  Iran moral - India conv      -0.1590 0.1153  442  -1.378  0.1687
##  Iran moral - Korea conv      -0.3098 0.1403  423  -2.207  0.0278
##  Iran moral - Iran conv       -0.1275 0.0707 1615  -1.803  0.0715
##  Canada conv - India conv      0.8394 0.1123  404   7.478  <.0001
##  Canada conv - Korea conv      0.6887 0.1378  398   4.998  <.0001
##  Canada conv - Iran conv       0.8710 0.0963  403   9.040  <.0001
##  India conv - Korea conv      -0.1508 0.1498  401  -1.007  0.3147
##  India conv - Iran conv        0.0315 0.1128  406   0.280  0.7799
##  Korea conv - Iran conv        0.1823 0.1382  400   1.319  0.1880
```

```
##
## Degrees-of-freedom method: kenward-roger
```