EDA

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Data sets:

Experiment 1

```
E1 <- exp1_data_to_include %>%
    select(participant, TrialID, StimulusType, Condition, PrimeDuration, Prime, Target,
        corr, rt) %>%
    mutate(participant = factor(participant), TrialID = factor(TrialID))

head(E1)
```

```
## # A tibble: 6 x 9
##   participant    TrialID StimulusType Condition PrimeDuration Prime Target  corr
##   <fct>          <fct>   <fct>        <fct>     <fct>         <chr> <chr>  <int>
## 1 5755c957eb80c~ 229     Word         Unrelated 33 ms         frin~ MOTHER     1
## 2 5755c957eb80c~ 400     Nonword      Identical 50 ms         wear~ WEAROX     1
## 3 5755c957eb80c~ 103     Word         Identical 33 ms         boun~ BOUNCE     1
## 4 5755c957eb80c~ 324     Nonword      Identical 33 ms         stei~ STEIKH     1
## 5 5755c957eb80c~ 183     Word         Unrelated 33 ms         slea~ MILDEW     1
## 6 5755c957eb80c~ 66      Word         Identical 33 ms         gosp~ GOSPEL     1
## # ... with 1 more variable: rt <dbl>
```

Experiment 2

```
E2 <- exp2_data_to_include %>%
    select(participant, TrialID, StimulusType, Condition, PrimeDuration, Prime, Target,
        corr, rt) %>%
    mutate(participant = factor(participant), TrialID = factor(TrialID))

head(E2)
```

```
## # A tibble: 6 x 9
##   participant    TrialID StimulusType Condition PrimeDuration Prime Target  corr
##   <fct>          <fct>   <fct>        <fct>     <fct>         <chr> <chr>  <int>
## 1 55b75944fdf99~ 454     Nonword      Unrelated 33 ms         tond~ SCOUGE     1
## 2 55b75944fdf99~ 277     Nonword      Unrelated 16 ms         unig~ PETAIN     1
## 3 55b75944fdf99~ 181     Word         Unrelated 33 ms         wint~ GLANCE     1
## 4 55b75944fdf99~ 35      Word         Unrelated 16 ms         vani~ SOCKET     0
## 5 55b75944fdf99~ 263     Nonword      Unrelated 16 ms         vack~ DOLICA    -1
## 6 55b75944fdf99~ 200     Word         Unrelated 33 ms         admi~ BEACON     1
## # ... with 1 more variable: rt <dbl>
```

Delta Plots

```r
quibble <- function(x, q = seq(.1, .9, .2)) {
  tibble(x = quantile(x, q), q = q)
}



E1 %>%
  group_by(participant, StimulusType, Condition, PrimeDuration,corr) %>%
  summarise(RT = list(quibble(rt, seq(.1, .9, .2)))) %>%
  tidyr::unnest(RT) -> data.E1.quantiles

data.E1.quantiles %>%
  filter(corr==1) %>%
  select(-corr) %>%
  group_by(StimulusType,PrimeDuration,Condition,q) %>%
  summarize(RT=mean(x))%>%
  ungroup()-> vincentiles.E1


#Priming Effect (unrelated - identity):

vincentiles.E1 %>%
  arrange(desc(Condition))%>%
  group_by(StimulusType,PrimeDuration,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ungroup()%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line()+
  geom_point()+
  ylim(-60, +60)+
  xlim(450, 950)+
  xlab("Mean RT per quantile")+
  ylab("Priming effect (delta)")+
  ggtitle("Experiment 1")+
  facet_wrap(~StimulusType + PrimeDuration)+
  theme_minimal()-> DeltaE1.PrimingEffect

DeltaE1.PrimingEffect
```
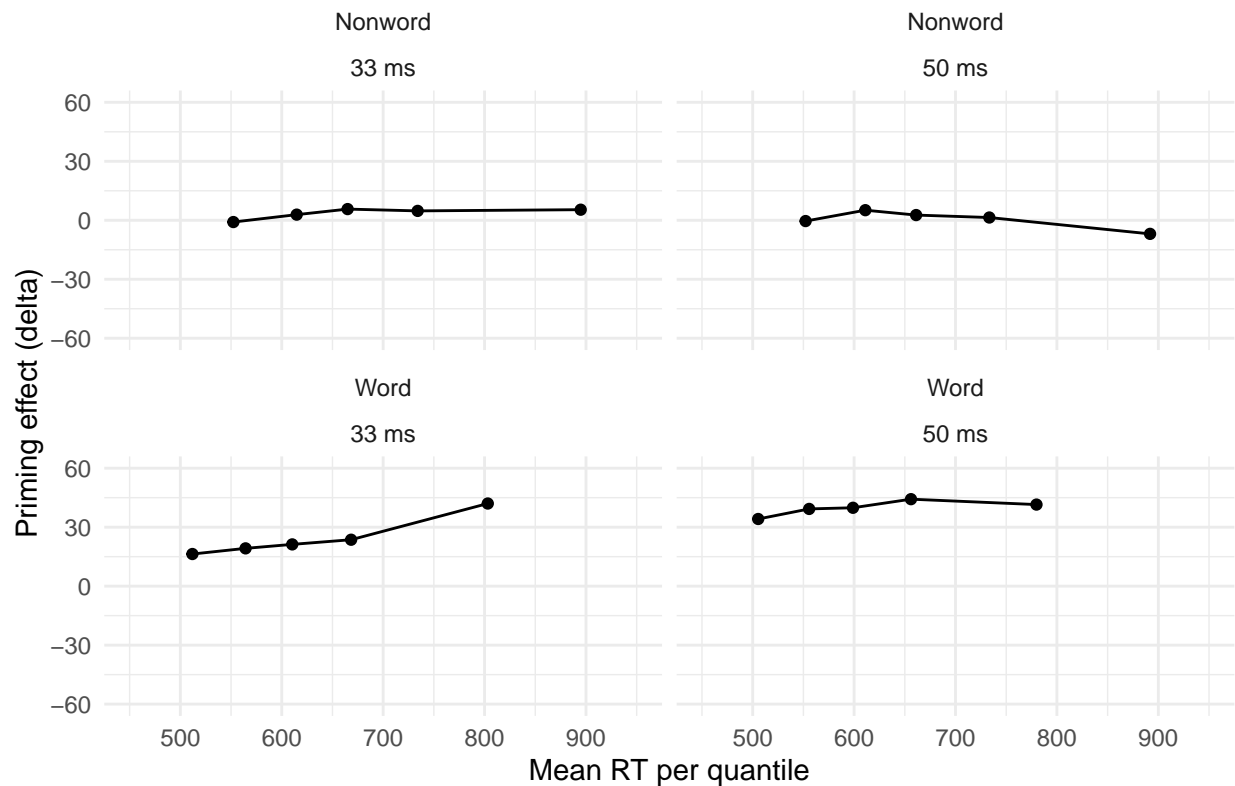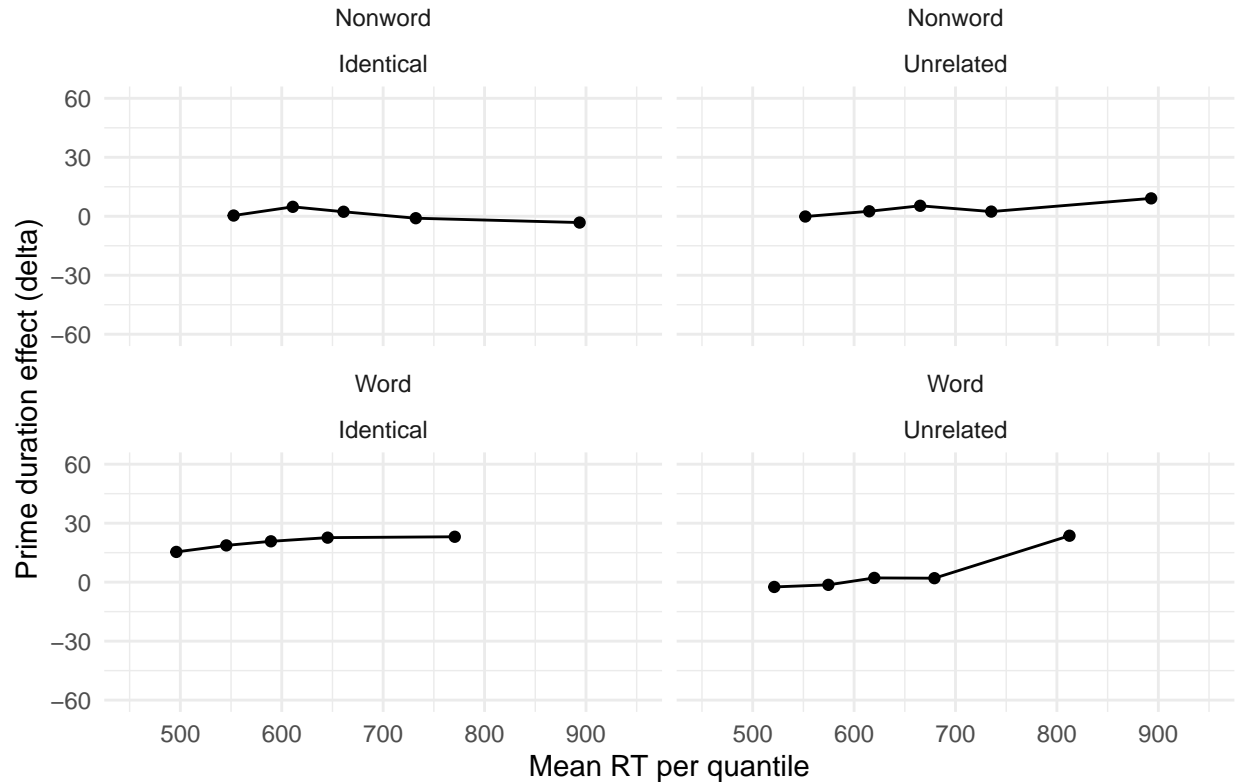
Experiment 1


```
#Prime Duration Effect (33ms - 50 ms):

vincentiles.E1 %>%
  group_by(StimulusType,Condition,q) %>%
 summarize(MRT=mean(RT),
           Delta=diff(rev(RT)))%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line()+
  geom_point()+
  ylim(-60, +60)+
  xlim(450, 950)+
  xlab("Mean RT per quantile")+
  ylab("Prime duration effect (delta)")+
  ggtitle("Experiment 1")+
  facet_wrap(~StimulusType + Condition)+
  theme_minimal()-> DeltaE1.PrimeDurationEffect

DeltaE1.PrimeDurationEffect
```

Experiment 1


```
#Priming Effect (unrelated - identity):

vincentiles.E1 %>%
  filter(StimulusType == "Word")%>%
  arrange(desc(Condition))%>%
  group_by(PrimeDuration,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ungroup()%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line(size = .75)+
  geom_point(size = 2)+
  geom_hline(yintercept = 0, color = "darkmagenta", alpha = .25)+
  ylim(-60, +60)+
  xlim(450, 850)+
  xlab("Mean RT per quantile")+
  ylab("Effect (in ms)")+
  ggtitle("Priming Effect")+
  facet_wrap(~PrimeDuration)+
  theme_minimal()+
  theme(plot.title = element_text(size = 12),
        axis.text=element_text(size=10),
        axis.title=element_text(size=10))-> DeltaE1.PrimingEffect.W
```

```r
#Prime Duration Effect (33ms - 50 ms):

vincentiles.E1 %>%
  filter(StimulusType == "Word")%>%
  group_by(Condition,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ggplot(aes(y=Delta, x=MRT)) +
  geom_line(size = .75)+
  geom_point(size = 2)+
  geom_hline(yintercept = 0, color = "darkmagenta", alpha = .25)+
  ylim(-60, +60)+
  xlim(450, 850)+
  xlab("Mean RT per quantile")+
  ylab("Effect (in ms)")+
  ggtitle("Prime duration effect")+
  facet_wrap(~ Condition)+
  theme_minimal()+
  theme(plot.title = element_text(size = 12),
        axis.text=element_text(size=10),
        axis.title=element_text(size=10))-> DeltaE1.PrimeDurationEffect.W


#pdf("Fig_deltasE1.pdf", height = 5)

cowplot::plot_grid(DeltaE1.PrimingEffect.W,
                   DeltaE1.PrimeDurationEffect.W,
                   ncol = 1,
                   labels = c("A", "B"))+
  plot_annotation(title = "Experiment 1: 33 vs. 50 ms",
                  theme = theme(plot.title = element_text(size = 14)))
```
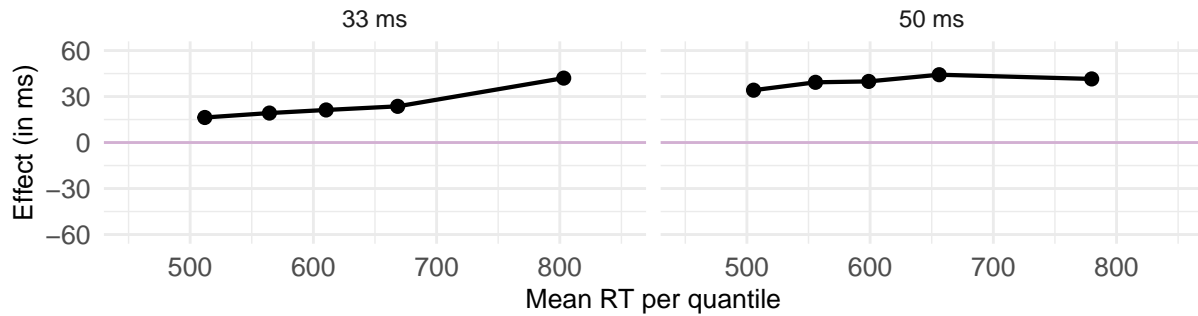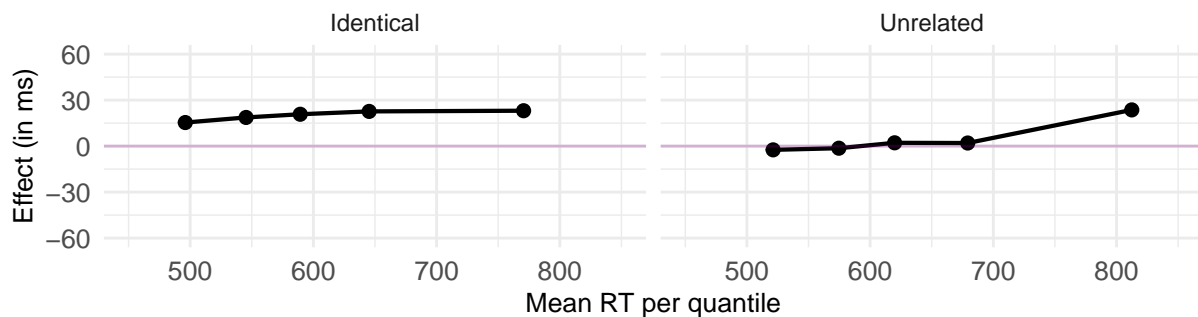
Experiment 1: 33 vs. 50 ms

A Priming Effect

B Prime duration effect


```
#dev.off()
```

```
E2 %>%
  group_by(participant, StimulusType, Condition, PrimeDuration,corr) %>%
  summarise(RT = list(quibble(rt, seq(.1, .9, .2)))) %>%
  tidyr::unnest(RT) -> data.E2.quantiles

data.E2.quantiles %>%
  filter(corr==1) %>%
  select(-corr) %>%
  group_by(StimulusType,PrimeDuration,Condition,q) %>%
  summarize(RT=mean(x))%>%
  ungroup()-> vincentiles.E2


#Priming Effect (unrelated - identity):

vincentiles.E2 %>%
  arrange(desc(Condition))%>%
  group_by(StimulusType,PrimeDuration,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ungroup()%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line()+
  geom_point()+
```
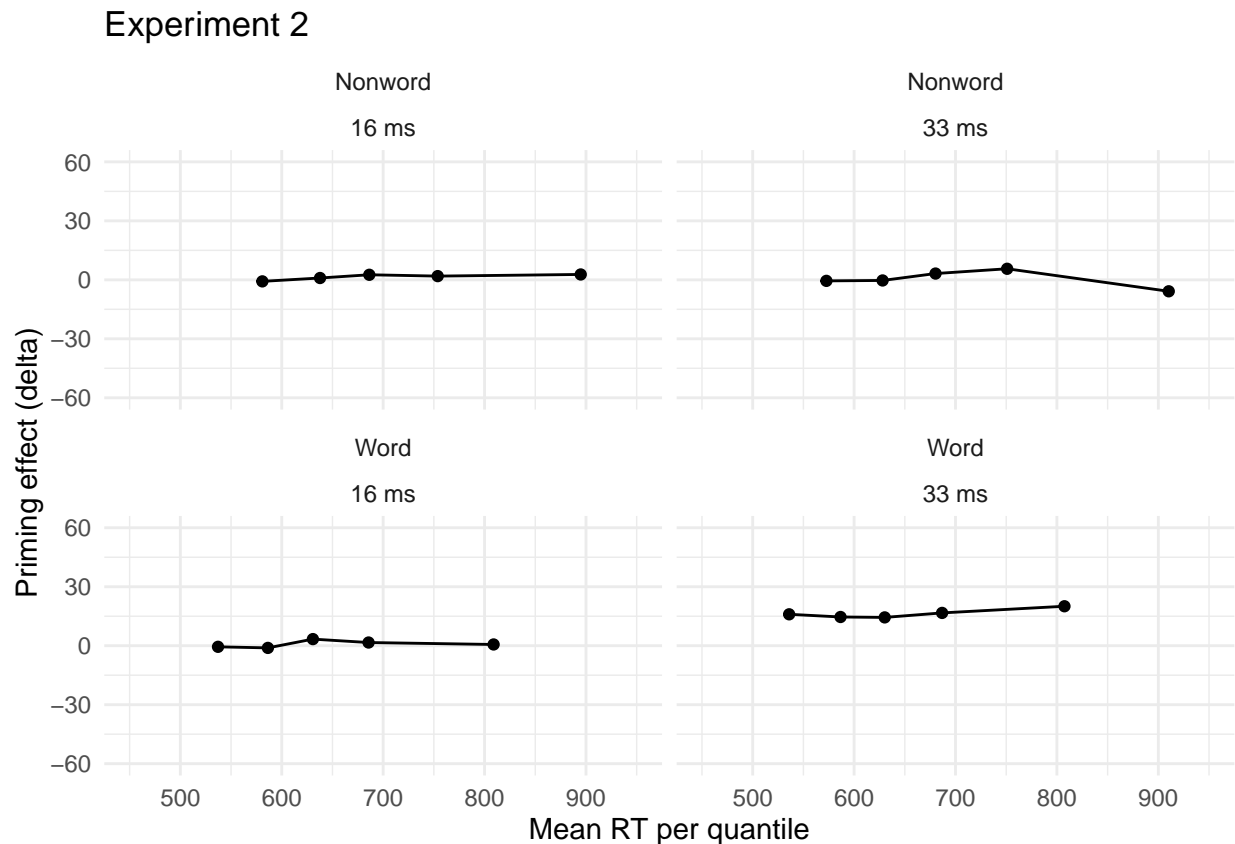
```
ylim(-60, +60)+
xlim(450, 950)+
xlab("Mean RT per quantile")+
ylab("Priming effect (delta)")+
ggtitle("Experiment 2")+
facet_wrap(~StimulusType + PrimeDuration)+
theme_minimal() -> DeltaE2.PrimingEffect

DeltaE2.PrimingEffect
```
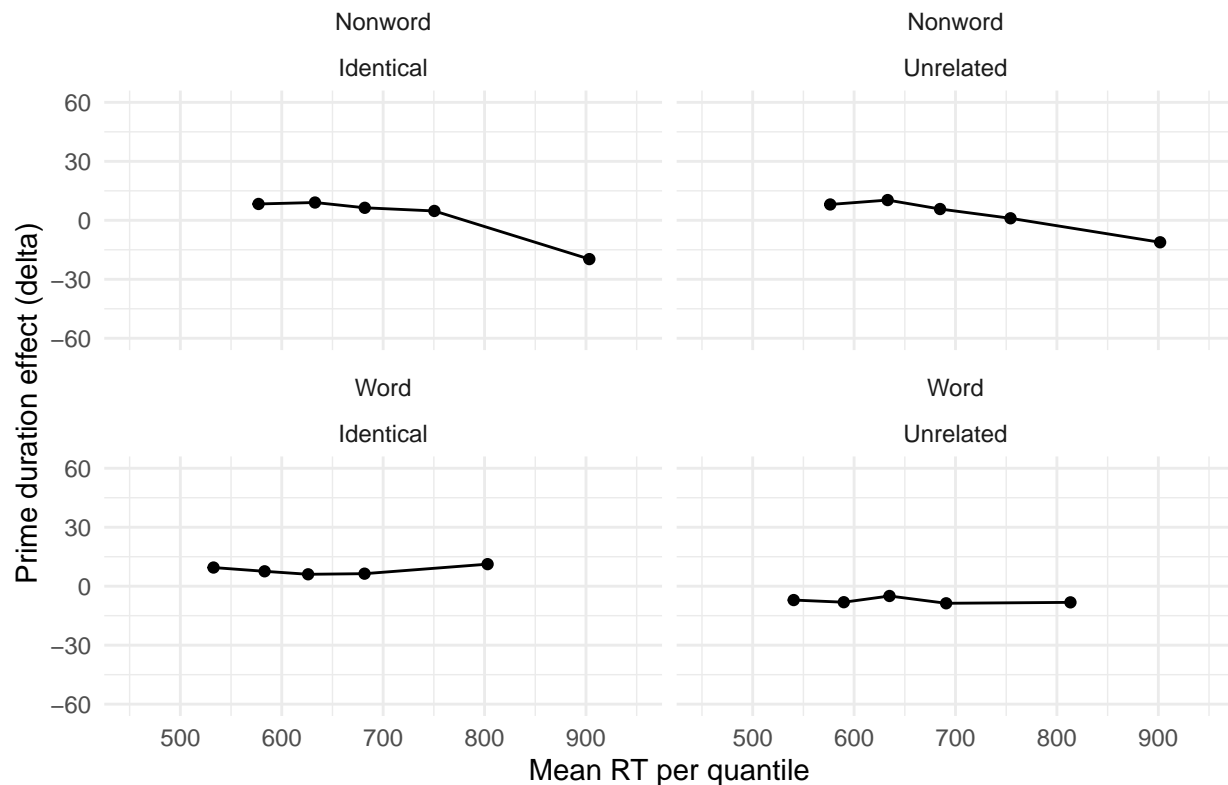
Experiment 2


```
#Prime Duration Effect (16ms - 33 ms):

vincentiles.E2 %>%
  group_by(StimulusType,Condition,q) %>%
 summarize(MRT=mean(RT),
           Delta=diff(rev(RT)))%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line()+
  geom_point()+
  ylim(-60, +60)+
  xlim(450, 950)+
  xlab("Mean RT per quantile")+
  ylab("Prime duration effect (delta)")+
  ggtitle("Experiment 2")+
  facet_wrap(~StimulusType + Condition)+
  theme_minimal() -> DeltaE2.PrimeDurationEffect
```

Experiment 2

Nonword
Identical

Nonword
Unrelated

Word
Identical

Word
Unrelated

Prime duration effect (delta)

Mean RT per quantile

```
#Priming Effect (unrelated - identity):

vincentiles.E2 %>%
  filter(StimulusType == "Word")%>%
  arrange(desc(Condition))%>%
  group_by(PrimeDuration,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ungroup()%>%
ggplot(aes(y=Delta, x=MRT)) +
  geom_line(size = .75)+
  geom_point(size = 2)+
  geom_hline(yintercept = 0, color = "darkmagenta", alpha = .25)+
  ylim(-60, +60)+
  xlim(450, 850)+
  xlab("Mean RT per quantile")+
  ylab("Effect (in ms)")+
  ggtitle("Priming Effect")+
  facet_wrap(~PrimeDuration)+
  theme_minimal()+
  theme(plot.title = element_text(size = 12),
        axis.text=element_text(size=10),
        axis.title=element_text(size=10))-> DeltaE2.PrimingEffect.W
```

```r
#Prime Duration Effect (16ms - 33 ms):

vincentiles.E2 %>%
  filter(StimulusType == "Word")%>%
  group_by(Condition,q) %>%
  summarize(MRT=mean(RT),
            Delta=diff(rev(RT)))%>%
  ggplot(aes(y=Delta, x=MRT)) +
  geom_line(size = .75)+
  geom_point(size = 2)+
  geom_hline(yintercept = 0, color = "darkmagenta", alpha = .25)+
  ylim(-60, +60)+
  xlim(450, 850)+
  xlab("Mean RT per quantile")+
  ylab("Effect (in ms)")+
  ggtitle("Prime duration effect")+
  facet_wrap(~ Condition)+
  theme_minimal()+
  theme(plot.title = element_text(size = 12),
        axis.text=element_text(size=10),
        axis.title=element_text(size=10))-> DeltaE2.PrimeDurationEffect.W

#pdf("Fig_deltasE2.pdf", height = 5)

cowplot::plot_grid(DeltaE2.PrimingEffect.W,
                   DeltaE2.PrimeDurationEffect.W,
                   ncol = 1,
                   labels = c("A", "B"))+
  plot_annotation(title = "Experiment 2: 16 vs. 33 ms",
                  theme = theme(plot.title = element_text(size = 14)))
```
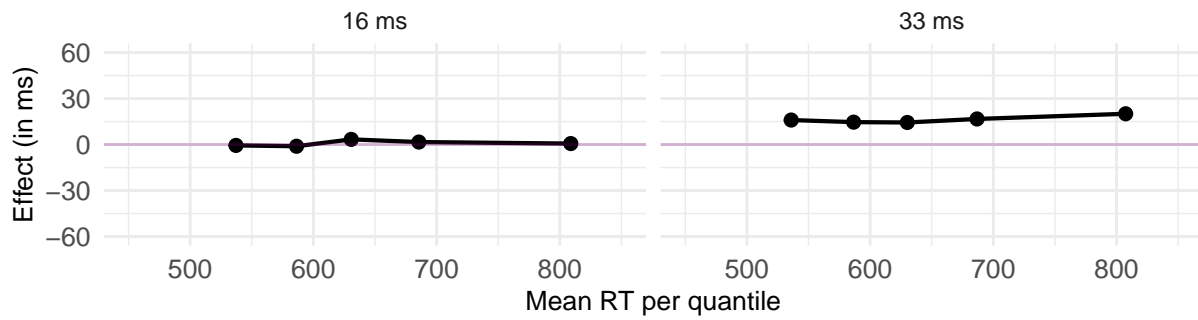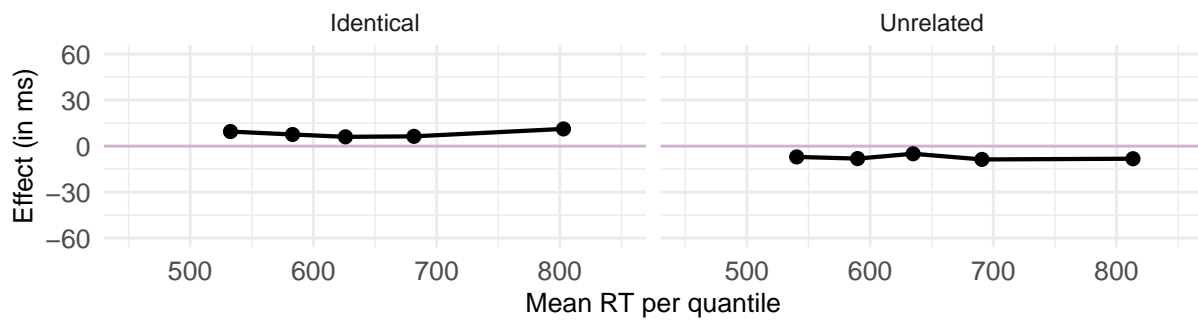
Experiment 2: 16 vs. 33 ms

A   Priming Effect
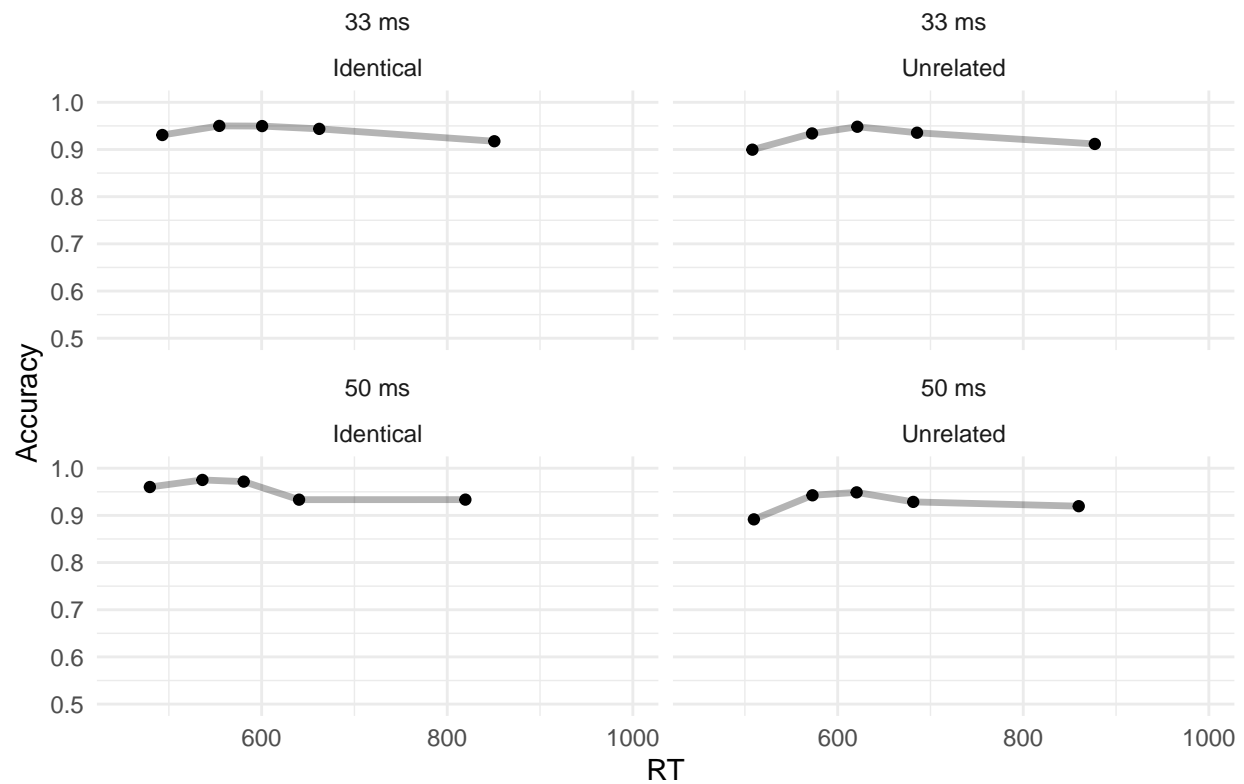

B   Prime duration effect

CAF

```r
E1 %>%
  group_by(participant, StimulusType, Condition, PrimeDuration) %>%
  mutate(Quantile = cut_number(rt, n = 10, labels = c(1,1,2,2,3,3,4,4,5,5))) %>%
  ungroup() %>%
  group_by(participant, StimulusType, Condition, PrimeDuration, Quantile) %>%
  summarize(Macc=mean(corr),
            Mrt=mean(rt)) %>%
  ungroup() -> data.caf.E1


data.caf.E1 %>%
  filter(StimulusType=="Word")%>%
  group_by(Condition, PrimeDuration, Quantile) %>%
    summarize(Macc2=mean(Macc),
            Mrt2=mean(Mrt)) %>%
  ggplot(aes(x=Mrt2, y=Macc2, )) +
geom_line(alpha=.3, size=1.2) +
  geom_point()+
  ylim(0.5, 1)+
  xlim(450, 1000)+
  facet_wrap(~PrimeDuration+Condition)+
  ggtitle("Accuracy as a function of RT in Experiment 1. Word data")+
  theme_minimal()+
  xlab("RT")+
  ylab("Accuracy") -> CAF.E1.W

CAF.E1.W
```
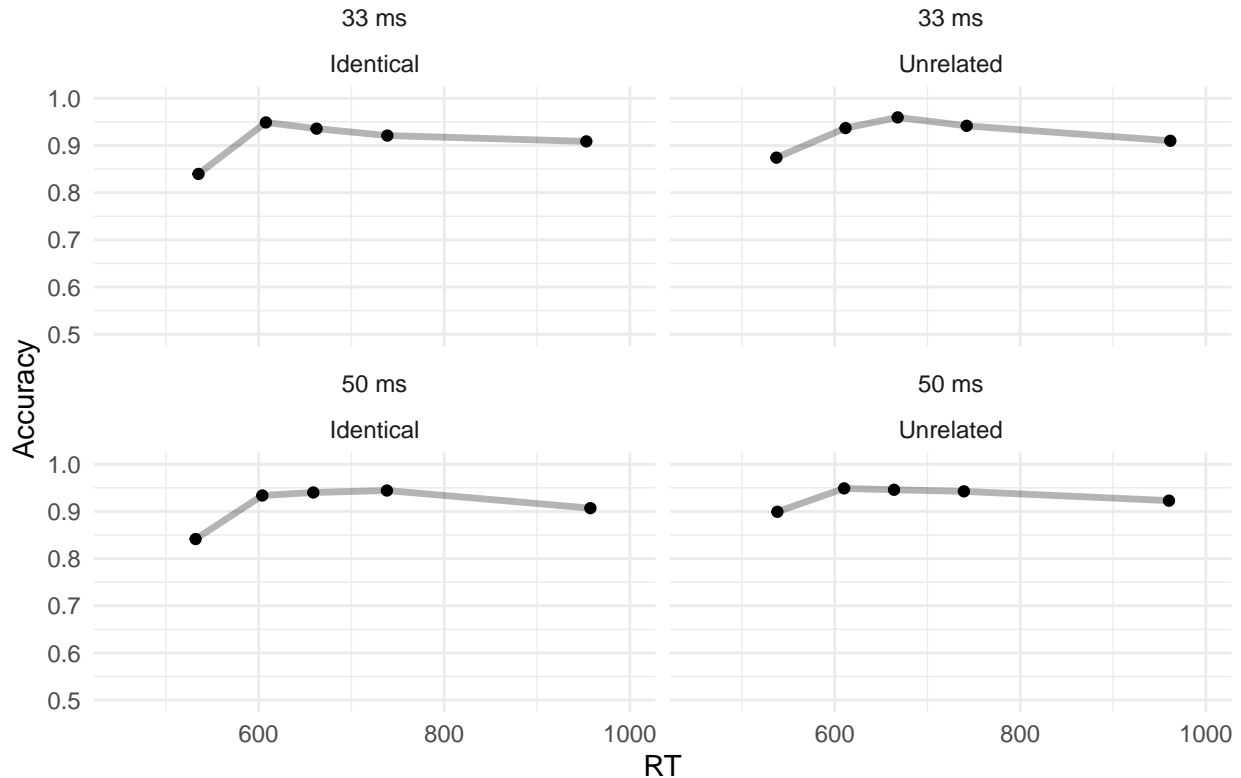
Accuracy as a function of RT in Experiment 1. Word data


```
data.caf.E1 %>%
  filter(StimulusType=="Nonword")%>%
  group_by(Condition, PrimeDuration, Quantile) %>%
    summarize(Macc2=mean(Macc),
           Mrt2=mean(Mrt)) %>%
  ggplot(aes(x=Mrt2, y=Macc2, )) +
  geom_line(alpha=.3, size=1.2) +
  geom_point()+
  ylim(0.5, 1)+
  xlim(450, 1000)+
  facet_wrap(~PrimeDuration+Condition)+
  ggtitle("Accuracy as a function of RT in Experiment 1. Nonword data")+
  theme_minimal()+
  xlab("RT")+
  ylab("Accuracy") -> CAF.E1.NW

CAF.E1.NW
```

Accuracy as a function of RT in Experiment 1. Nonword data


```
E2 %>%
  group_by(participant, StimulusType, Condition, PrimeDuration) %>%
  mutate(Quantile = cut_number(rt, n = 10, labels = c(1,1,2,2,3,3,4,4,5,5))) %>%
  ungroup() %>%
  group_by(participant, StimulusType, Condition, PrimeDuration, Quantile) %>%
  summarize(Macc=mean(corr),
            Mrt=mean(rt)) %>%
  ungroup() -> data.caf.E2


data.caf.E2 %>%
  filter(StimulusType=="Word")%>%
  group_by(Condition, PrimeDuration, Quantile) %>%
    summarize(Macc2=mean(Macc),
            Mrt2=mean(Mrt)) %>%
  ggplot(aes(x=Mrt2, y=Macc2, )) +
geom_line(alpha=.3, size=1.2) +
  geom_point()+
  ylim(0.5, 1)+
  xlim(450, 1000)+
  facet_wrap(~PrimeDuration+Condition)+
  ggtitle("Accuracy as a function of RT in Experiment 2. Word data")+
  theme_minimal()+
  xlab("RT")+
  ylab("Accuracy") -> CAF.E2.W
```

Accuracy as a function of RT in Experiment 2. Word data
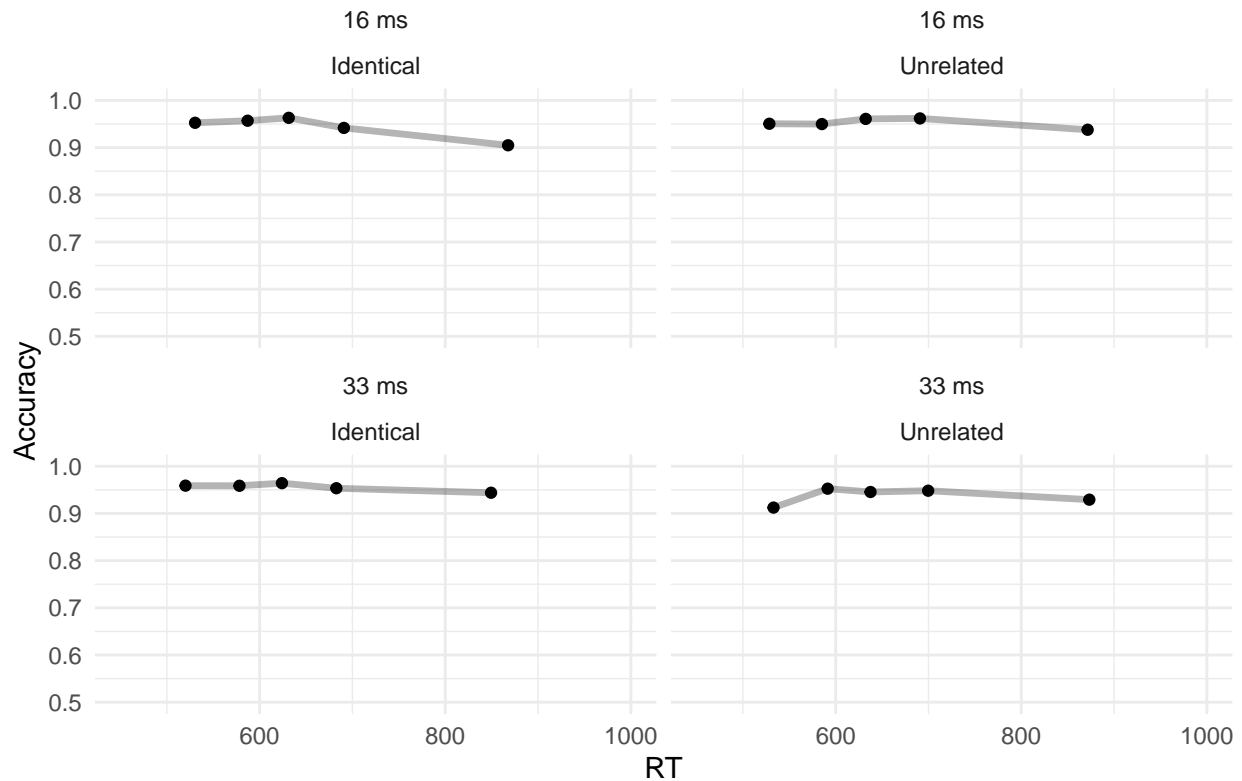

```
data.caf.E2 %>%
  filter(StimulusType=="Nonword")%>%
  group_by(Condition, PrimeDuration, Quantile) %>%
    summarize(Macc2=mean(Macc),
              Mrt2=mean(Mrt)) %>%
  ggplot(aes(x=Mrt2, y=Macc2, )) +
  geom_line(alpha=.3, size=1.2) +
  geom_point()+
  ylim(0.5, 1)+
  xlim(450, 1000)+
  facet_wrap(~PrimeDuration+Condition)+
  ggtitle("Accuracy as a function of RT in Experiment 2. Nonword data")+
  theme_minimal()+
  xlab("RT")+
  ylab("Accuracy") -> CAF.E2.NW

CAF.E2.NW
```

Accuracy as a function of RT in Experiment 2. Nonword data