```
library(nlme)
library(lme4)
library(RLRsim)

#Unconditional means model:
model1 <- lme(Variable_of_Interest ~ 1, data=data, random= ~ 1 | Child_no,
method="ML", control = lmeControl(opt = "optim"))

#Intraclass coefficient:
tau.sq <- as.numeric(VarCorr(model1)[1,1])
sigma.sq <- as.numeric(VarCorr(model1)[2,1])
tau.sq/(tau.sq+sigma.sq)

#Unconditional growth model:
model2 <- lme(Variable_of_Interest ~ Age, data=data, random= ~ 1 | Child_no,
method="ML", control = lmeControl(opt = "optim"))

#Ordinary least squares regression:
model3 <- lm(Variable_of_Interest ~ Age, data=data)

#Comparison of model2 and model3
exactLRT(m = model2, m0 = model3)

#Unconditional growth model with random intercepts and slopes:
model4 <- lme(Variable_of_Interest ~ Age, data=data, random= ~ Age | Child_no,
method="ML", control = lmeControl(opt = "optim"))

#Comparison of model2 and model4:
m0 <- lmer(Variable_of_Interest ~ Age + (1|Child_no), data = data)
mA <- update(m0, .~. + (0 + Age|Child_no))
mSlope <- update(mA, .~. - (1|Child_no))
exactRLRT(mSlope, mA, m0)

#Quadratic model with orthogonal polynomials:
model5 <- lme(Variable_of_Interest ~ poly(Age, 2), random = ~ poly(Age, 2) | Child_no,
data=data, method="ML", control = lmeControl(opt = "optim"))

#Estimation of the linear model with poly function:
model6 <- lme(Variable_of_Interest ~ poly(Age, 1), random = ~poly(Age, 1) | Child_no,
data=data, method="ML",control = lmeControl(opt = "optim"))

#Comparison of the linear and quadratic models:
anova(model5, model6)
```