Consider the prediction of a distal outcome using an intercept growth factor. The intercept growth factor is interpreted as what influences an outcome at the time point with time score zero. Consider a change in the time scores to centering at a different time point by a unit of 1.

For a linear growth model,

$Yt = i+s*t$,

changing time by 1,

$Yt = i+s*(t+1) = i+s +s*t$,

that is, it changes (i,s) to (i+s,s).

For the distal outcome regression,

$U = b1*i+b2*s$,

this means the following change:

$U = b1*(i+s)+b2*s = b1*i+(b1+b2)*s$,

so the change in time will change the coefficients from (b1,b2) to (b1,b1+b2). This shows that the slope of the regression of U on i stays the same when changing the centering.

When regressing the intercept on covariates, the slope does change as the centering changes. See for example the paper on the Mplus website:

Muthén, B. & Muthén, L. (2000). The development of heavy drinking and alcohol-related problems from ages 18 to 37 in a U.S. national sample. Journal of Studies on Alcohol, 61, 290-300.
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