**Appendix B**

**Testing Curvatures Along the Edge of a Response Surface**

Polynomial regression analysis [1–3] involves estimating a combined linear and quadratic regression model, represented by Equation 1:

(1) $Z=b\_{0 }+ b\_{1}X+b\_{2}Y+b\_{3}X^{2}+b\_{4}XY+b\_{5}Y^{2}+e.$

In our study, X and Y are global identity and local identity, respectively; Z is transformational leadership behaviors/ leadership effectiveness; b1 and b2 are the regression coefficients for global identity and local identity, respectively; b3 is the regression coefficient for global identity squared; b4 is the regression coefficient for the interaction between global and local identities; and b5 is the regression coefficient for local identity squared.

To test the curvatures of the four lines of interest along the edge of the response surface, we relied on the work presented by Cohen et al. [4] and Lee and Antonakis [5] and developed two equations.

Fig 2 demonstrates that the line between corners A (glocal identity type) and D (local identity type) represents subjects for whom the global identity value (X) is allowed to fluctuate freely in the defined range (from (-2) to 3), whereas the local identity (Y) value is fixed to Y\* (Y\* = 3 for this specific line, at the highest level of the local identity continuum). Hence, for this line, we replace Y with Y\* in Equation 1. The resulting equation is:

(2) $Z=\left(b\_{0 }+Y^{\*}\*b\_{2}+\left(Y^{\*}\right)^{2}\*b\_{5}\right)+ \left(b\_{1}+Y^{\*}\*b\_{4}\right)X+b\_{3}X^{2}+e.$

The curvature along this line (where is X allowed to fluctuate) equals $b\_{3}.$ Please note that the curvature is fixed and equals $b\_{3}$ for any choice of $Y^{\*}$.

The pattern for the mirror line, which connects corner B (global identity type) and corner C (marginal identity type), is the same. X (global identity) is allowed to fluctuate freely as for the previous line, and the local identity (Y) value is fixed to Y\* (specifically for this line, Y\* equals -2). Since the curvature does not depend on the specific Y\*, as explained for the line above, the curvature of this line will also equal$ b\_{3}$.

The line between corners A (glocal identity type) and B (global identity type) represents subjects for whom the global identity (*X*) value is fixed to X\* (X\* = 3 for this specific line), whereas the local identity value (*Y*) is allowed to fluctuate freely in the defined range (from (-2) to 3). For this line, we replace *X* with X\* in Equation 1 to obtain:

$$(3) Z=\left(b\_{0 }+ X^{\*}\*b\_{1}+\left(X^{\*}\right)^{2}\*b\_{3}\right)+\left(b\_{2}+X^{\*}\*b\_{4}\right)Y+b\_{5}Y^{2}+e.$$

Hence, the curvature along this line (where Y is allowed to fluctuate) equals $b\_{5}$. Again, please note that the curvature for this line equals $b\_{5}$ for any choice of $X^{\*}$.

Since the pattern of the mirror line between corner D (local identity type) and corner C (marginal identity type) is similar (i.e., the global identity (*X*) value is fixed to X\* (X\* = -2 for this specific line)), and the local identity value (*Y*) is allowed to fluctuate freely in the defined range (from (-2) to 3), this curvature also equals $b\_{5.}$

**References**

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