Thanks to Michael Tooley for the following proof.

(1) $\Pr(A\&B\&C) = Pr\big(A, (B\&C)\big)\ x \Pr(B\&C) = \Pr(A\&B\&C) = Pr\big(B, (A\&C)\big)\ x \Pr(A\&C)$

Therefore,

(2) $Pr\big(A, (B\&C)\big) = \dfrac{Pr\big(B, (A\&C)\big)\ x \Pr(A\&C)}{\Pr(B\&C)}$

Replacing A, B, and C by H2, O, and B, we have

(3) $Pr\big(\mathrm{H2}, (O\&B)\big) = \dfrac{Pr\big(O, (\mathrm{H2}\&B)\big)\ x \Pr(\mathrm{H2}\&B)}{\Pr(O\&B)}$

Replacing A, B, and C by H1, O, and B, we have

(4) $Pr\big(\mathrm{H1}, (O\&B)\big) = \dfrac{Pr\big(O, (\mathrm{H1}\&B)\big)\ x \Pr(\mathrm{H1}\&B)}{\Pr(O\&B)}$

Dividing (3) by (4) gives one

(5) $\dfrac{Pr\big(\mathrm{H2}, (O\&B)\big)}{Pr\big(\mathrm{H1}, (O\&B)\big)} = \dfrac{Pr\big(O, (\mathrm{H2}\&B)\big)\ x \Pr(\mathrm{H2}\&B)}{Pr\big(O, (\mathrm{H1}\&B)\big)\ x \Pr(\mathrm{H1}\&B)}$

However

(6) $\Pr(\mathrm{H2}\&B) = \dfrac{\Pr(\mathrm{H2}/B)}{\Pr(B)}$ and

(7) $\Pr(\mathrm{H1}\&B) = \dfrac{\Pr(\mathrm{H1}/B)}{\Pr(B)}$

Substituting (6) and (7) into (5) then gives one

(8) $\dfrac{Pr\big(\mathrm{H2}, (O\&B)\big)}{Pr\big(\mathrm{H1}, (O\&B)\big)} = \dfrac{Pr\big(O, (\mathrm{H2}\&B)\big)\ x \Pr(\mathrm{H2}/B)}{Pr\big(O, (\mathrm{H1}\&B)\big)\ x \Pr(\mathrm{H1}/B)}$

Then, since we are given that

(9) $Pr\big(O, (\mathrm{H2}\&B)\big) > Pr\big(O, (\mathrm{H1}\&B)\big)$

and

(10) $\Pr(\mathrm{H2}/B) \geq \Pr(\mathrm{H1}/B)$

It follows from (8) that

(11) $Pr\big(\mathrm{H2}, (O\&B)\big) > Pr\big(\mathrm{H1}, (O\&B)\big)$