Esbensen, Bertsch, and Snover Reply: In [1] we showed that including dynamic polarization and corrections to the far-field approximation tends to raise the S factor $S(E)$ inferred from ^{8}B Coulomb dissociation (CD) data at low $p + {}^7$Be relative energy E, and reduce the apparent discrepancy (shown in Figs. 19 and 20 of Ref. [2]) between CD and direct radiative capture (DC) determinations of $S(E)$, particularly for the "RIKEN2" CD experiment of Kikuchi *et al.* [3].

The preceding Comment by Gai [4] focuses on the slope obtained from a fit of the function $S(E) = a(1 + bE)$ to the RIKEN2 data. Gai presents the value $b = 0.4 \pm 0.1\ \mathrm{MeV}^{-1}$, which he contrasts with the value $b = 0.51 \pm 0.11\ \mathrm{MeV}^{-1}$ plotted in Fig. 19 of Ref. [2]. Gai claims that this 1σ slope difference is significant, and stems from the use of "... a subset of the RIKEN2 data, and a neglect of the systematic error (8.6%) discussed by Kikuchi *et al.*" [3] in the analysis of Ref. [2]. However, the systematic error was not neglected in [2], and the choice of fitting range accounts for only half of the 1σ difference—the remainder is due to revised uncertainties for the RIKEN2 data that are presented for the first time in Gai's Comment.

In [2] the fit was made to $S(E)$ values and "statistical" uncertainties given in a numerical file [5] shown in Table I, columns 1–4. According to [5], these are the values and uncertainties shown in Fig. 1 of [3]. Reference [3] states that an additional "common systematic uncertainty of 8.4%" applies to these data. Such a common uncertainty should not be included in this fitting, since it applies equally to all points, and hence it does not enter in the determination of the uncertainty in b. The fit result for $E \leq 1.125$ MeV (using the mean uncertainties shown in column 5 of Table I) is $b = 0.51 \pm 0.11\ \mathrm{MeV}^{-1}$, the same as shown in Fig. 19 of Ref. [2]. Subtracting the (rough) $0.25\ \mathrm{MeV}^{-1}$ slope correction estimated in [1] results in $0.26 \pm 0.11\ \mathrm{MeV}^{-1}$ (neglecting the uncertainty in the slope correction itself), in agreement with the DC result of $0.31 \pm 0.02\ \mathrm{MeV}^{-1}$ [2]. The fit result for $E \leq 1.375$ MeV, the same data range that Gai fit, is $b = 0.45 \pm 0.08\ \mathrm{MeV}^{-1}$, which does not differ significantly from the $b = 0.51\ \mathrm{MeV}^{-1}$ value.

Gai presents RIKEN2 data with the same central values as in [3], but with different total uncertainties. To account for Gai's new uncertainties, a systematic uncertainty of 9%, 5%, 4%, 8%, and 5% must be folded with the uncertainty shown in Table I, column 5, for each of the 5 points, from top to bottom, respectively. Gai does not specify the decomposition of this systematic uncertainty into variable and common components, and thus the reader cannot check directly his asserted slope and its uncertainty. However, Gai's uncertainties allow a common uncertainty in the range 0–4%. Assuming 0% common uncertainty, we obtain $b = 0.40 \pm 0.17\ \mathrm{MeV}^{-1}$. The other extreme, 4% common uncertainty, yields $b = 0.39 \pm 0.14\ \mathrm{MeV}^{-1}$. Thus the uncertainty on b from Gai's data must lie between ± 0.14 and $\pm 0.17\ \mathrm{MeV}^{-1}$, which is significantly larger than the $\pm 0.1\ \mathrm{MeV}^{-1}$ value that Gai quotes. Hence, if the data in Gai's Comment Fig. 1 are correct, then the slope of the revised RIKEN2 data is too uncertain to draw any meaningful conclusions.

TABLE I. Low energy ($E \leq 1.375$ MeV) RIKEN2 data. Columns 1–4: data from Ref. [4]. Column 5: geometrical mean uncertainties $\sigma_{\mathrm{geo}} = (\sigma^+ * \sigma^-)^{1/2}$. Column 6: total uncertainties from Gai's Comment. All uncertainties are in units of eV b.

E (MeV)	$S_{17}(E)$ (eV b)	σ^-	σ^+	σ_{geo}	σ(Gai)
0.375	17.48	0.47	0.47	0.47	1.71
0.625	19.84	0.49	0.42	0.45	1.08
0.875	21.44	0.50	0.49	0.49	1.05
1.125	22.52	2.15	0.81	1.32	2.30
1.375	24.13	1.16	0.82	0.98	1.64

Irrespective of the question of a slope anomaly, we note that the estimated rough scaling factor of 1.2 given in [1], if applied to the RIKEN2 $S_{17}(0)$ value of 19.0 eV b shown in Fig. 20 of Ref. [2], would raise $S_{17}(0)$ to ≈ 23 eV b, improving the agreement with DC. We note that it is difficult to fit the published RIKEN2 angular distribution at 625 keV relative energy (see Fig. 2 of [3], Fig. 3 of [1], and Figs. 4–6 of [6]), and thus all slopes and $S_{17}(E)$ values derived from the RIKEN2 data at low relative energy, as well as our estimated $0.25\ \mathrm{MeV}^{-1}$ slope correction and 1.2 scaling factor, are only approximate estimates. Nevertheless, it is clear from [1] that the corrections discussed there are significant for the conditions of the RIKEN2 measurements.

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[1] H. Esbensen, G. F. Bertsch, and K. A. Snover, Phys. Rev. Lett. **94**, 042502 (2005).
[2] A. R. Junghans *et al.*, Phys. Rev. C **68**, 065803 (2003).
[3] T. Kikuchi *et al.*, Eur. Phys. J. A **3**, 213 (1998). See also Phys. Lett. B **391**, 261 (1997).
[4] Moshe Gai, preceding Comment, Phys. Rev. Lett. **96**, 159201 (2006).
[5] T. Motobayashi (private communication); N. Iwasa (private communication).
[6] K. Ogata *et al.*, Phys. Rev. C **73**, 024605 (2006).

